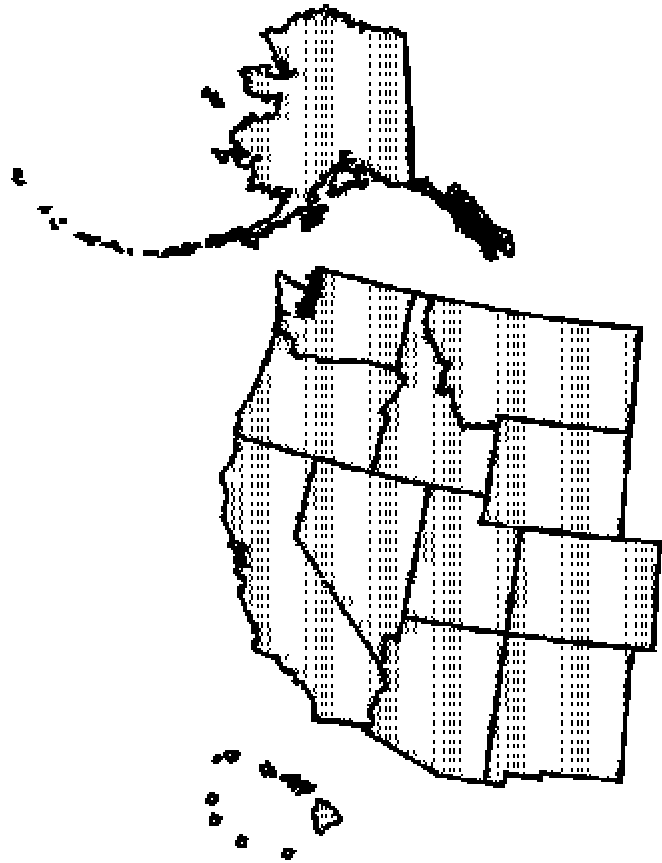


MINUTES OF THE MEETING OF
THE WESTERN ASSOCIATION OF
AGRICULTURAL EXPERIMENT STATION DIRECTORS

ALASKA
AM. SAMOA
ARIZONA
CALIFORNIA
COLORADO
GUAM
HAWAII
IDAHO
MICRONESIA
MONTANA
NEVADA
NEW MEXICO
N. MARIANA ISLANDS
OREGON
UTAH
WASHINGTON
WYOMING



Viscount Suite Hotel
Tucson, Arizona
April 3-5, 1991

SUMMARY OF ACTIONS

1.0 Adopted the agenda 1

2.0 Approved the minutes of the November 11, 1990 meeting as circulated 1

3.0 Accepted the Treasurer's Report 2

4.0 Recommended that the ESCOP/NASULGC Water Quality Assessment of \$8450 be apportioned to members of the WDA using the same formula which is used to calculate each state's assessment for the Director-at-Large and WDA Special Fund accounts; that the current Water Quality Assessment be paid immediately from the Director-at-Large Account; and the billing for the Water Quality Assessment will come as a line item assessment in August 2

5.0 Recommended that increases in the off-the-top funding for the Interregional Projects (IR-001, IR-002, IR-004, IR-005, IR-007) be approved at the requested level, or at the level of Hatch Funds increase, whichever is lower 2

6.0 Recommended that Western Regional Projects be funded at the following levels:

W-006	Plant Introduction (WA)	\$307,867	
W-084	Biological Control (CA)	30,000	
W-106	Regional Research Coordination	45,000	
			. . . . . 3

7.0 Heard the RIC Report and approved recommendations for:

a. extended projects

W-176	Housing and Locational Decisions of the Maturing Population: Opportunities for the Western Region	59
W-178	Water Management and Conservation in Western Irrigated Agriculture	59

b. revised projects

W-006	Plant Genetic Resource Conservation and Utilization	59
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c. new projects

W-	Chemistry and Engineering to Minimize Irrigated Agriculture's Effects on Water Quality	60
W-	Improvement of Rural and Agricultural Sample Survey Methods	60

d. deferred or rejected projects or WRCCs

W-112	Reproductive Performance in Domestic Ruminants	59
NRSP-	National Planning and Coordination Project	60
WRCC-67	Evaluating Biological and Institutional Potentials, Inducements and Constraints in the Process of Transition to Sustainable Agriculture	61
WRCC-78	Genetic Variability in Cyst and Root-knot Nematodes of the Western Region	62
WRCC-79	Grazing Animal Behavior and Nutritional Status of Domestic Ruminants	62
WRCC-	Cool Season Food Legume Improvement	62

e. extended or renewed WRCCs

WRCC-01	Beef Cattle Breeding Research in Western Region	60
WRCC-27	Potato Variety Development	61
WRCC-66	Biology and Control of the Russian Wheat Aphid	61
WRCC-69	Coordination of IPM Research Programs for the	

	Semiarid Regions of the Western United States	61
f.	new WRCCs	
	WRCC-80 Alternative Crops for the Western Region	62
g.	assigned administrative Advisors for:	
	W-110 Interactions Among Bark Beetles, Pathogens, and Conifers	
	in North American Forests. G. Mason (FS-CA) and N. C.	
	Toscano (CA-R), Co-AAAs, to replace W. W. Allen (CA-B)	63
	W-133 Benefits and Costs in Natural Resource Planning.	
	H. Vaux (CA-R) to replace J. M. Hughes (CO) and serve as	
	Co-AA with E. Bell (FS-CA)	63
	W-143 Nutrient Bioavailability--A Key to Human Nutrition.	
	J. Kinsella (CA-D) to replace M. J. Woodburn (OR)	63
	W-167 Work, Stress and Families. S. Helmick (OR) to	
	replace S. G. Laughlin (CA-B)	63
	W-173 Stress Factors of Farm Animals and Their Effects on	
	Performance. C. C. Kaltenbach (AZ) to replace L. J. Koong (OR)	63
	W-174 Predicting the Nutritive Value of Alfalfa Hay in the	
	Western Region. R. S. Pardini (NV) to replace L. J. Koong (OR)	63
	W-180 Identification, Behavioral Ecology, Genetics and	
	Management of African Honey Bees. G. H. Erickson (ARS-AZ)	
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	of Agricultural Crops. G. H. Erickson (ARS-AZ) and	
	G. W. Ware (AZ), Co-AAAs, to replace W. W. Allen (CA-B)	63
	WRCC-57 Community Participation, Work, and Retirement Among	
	the Elderly. S. Helmick (OR) to replace M. J. Woodburn (OR)	63
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	M. Jensen (AZ), Co-AAAs, to replace S. Hoyt (WA)	63
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	Process. H. Ferris (CA-D) to replace S. D. Van Gundy (CA-R)	64
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	Domestic Ruminants. L. J. Koong (OR) and T. R. Dutson (OR),	
	Co-AAAs, to replace C. C. Kaltenbach (AZ)	64
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WESTERN ASSOCIATION OF AGRICULTURAL EXPERIMENT STATION DIRECTORS
Viscount Suite Hotel, Tucson, Arizona
April 3-5, 1991

MINUTES

ATTENDANCE:

ALASKA	James V. Drew	NEW MEXICO	Gary Cunningham
ARIZONA	C. Colin Kaltenbach		Dinus M. Briggs
	Merle Jensen	OREGON	Thayne R. Dutson
	George W. Ware		Sandra Helmick
CALIFORNIA	David E. Schlegel		L. J. (Kelvin) Koong
	James Lyons		V. Van Volk
COLORADO	Helen F. McHugh	UTAH	H. Paul Rasmussen
GUAM	Chin T. Lee	WASHINGTON	
IDAHO	Gary A. Lee		James J. Zuiches
	Richard Heimsch	WYOMING	Al Gale
MONTANA	R. Garth Sasser	ARS	Jan van Schilfgaarde
NEVADA	Donald Mathre	CSRS	William D. Carlson
	Ronald S. Pardini	FS	Laurence Lassen
		DIRECTOR-AT-LARGE (DAL)	L. L. Boyd
		OWDAL	Harriet Sykes

1.0 Call to order

The meeting was called to order by Chair G. A. Lee.

2.0 Welcome to Arizona

Kaltenbach welcomed participants to Arizona.

3.0 Introductions and announcements

The attendees introduced themselves.

4.0 Adoption of agenda

The motion was made and seconded to adopt the agenda. MOTION CARRIED. The agenda is included as Appendix A, pp. 21-22.

5.0 Approval of minutes of 11/11/90 meeting

The motion was made and seconded to approve the minutes of the November 11, 1990 meeting as circulated. MOTION CARRIED.

6.0 Chair's report/interim actions

Lee reported that only two items have surfaced during the interim period of November 1990 to the present. Both relate to approval of ad hoc WRCCs. Zuiches and Kaltenbach requested the establishment of a WRCC- "Youth at Risk: Cultural Diversity and Its Influence." A second request for establishment of an ad hoc WRCC- "Cool Season Food Legume Improvement" was received from Zuiches and Heimsch. The RIC members were polled and, as a majority of RIC approved, Lee established the ad hoc WRCCs for one year, to January 15, 1992.

7.0 Executive Committee report

Lee reported that the Executive Committee met April 2, 1991. Many of the Executive Committee agenda items are part of the WDA agenda and will be reported as the item is discussed.

As a summary, actions will need to be taken on: the Water Quality Assessment; appointment of a committee to review the salary structure and the salary recommendation for the DAL; appointment of a committee to begin planning for a search for a new DAL when Boyd retires at the end of 1992; and off-the-top funding for interregional projects and regional trusts.

8.0 Treasurer's report

Mathre distributed the Treasurer's report, included as Appendix B, pp. 23-25.

Boyd reported that the Western Directors Association Special Account will cover travel for representatives to ESCOP, ESCOP Interim, ESCOP Budget Subcommittees, ESCOP Special Initiatives Group, and ESCOP Research Planning Group. Some expenses for meetings have not yet been turned in. With Schlegel as Chair of ESCOP for 1992, Kaltenbach as Chair of the ESCOP FY94 Budget Group and Gale serving as the Western representative to the ESCOP FY94 Budget Group, expenses on the account for next year will be heavier than usual. Representatives are requested to estimate their costs and submit them to the Office of the Director-at-Large. The estimates will be evaluated at the Summer meeting of the WDA and the assessment for the Special Fund will be established at that time.

The motion was made and seconded to accept the Treasurer's Report. MOTION CARRIED.

Lee reported that the Executive Committee recommends that the ESCOP/NASULGC Water Quality Assessment of \$8450 be apportioned to members of the WDA using the same formula which is used to calculate each state's assessment for the Director-at-Large and WDA Special Fund accounts; that the current Water Quality Assessment be paid immediately from the Director-at-Large Account; and the billing for the Water Quality Assessment will come as a line item assessment in August. MOTION CARRIED.

The Executive Committee recommends that increases in the off-the-top funding for the Interregional Projects (IR-001, IR-002, IR-004, IR-005, IR-007) be approved at the requested level, or at the level of Hatch Funds increase, whichever is lower. MOTION CARRIED.

The Executive Committee recommends that the following Western Regional Projects be funded at the following levels:

<u>W-006</u>	<u>Plant Introduction (WA)</u>	<u>\$307,867</u>
<u>W-084</u>	<u>Biological Control (CA)</u>	<u>30,000</u>
<u>W-106</u>	<u>Regional Research Coordination</u>	<u>45,000</u>

MOTION CARRIED.

9.0 Reports from Federal Agency Liaison Representatives

9.1 Agricultural Research Service

The Agricultural Research Service report was distributed by van Schilfgaarde and is included as Appendix C, p. 26.

Construction for the expansion of the National Seed Storage Laboratory at Ft. Collins, CO is scheduled to begin during the summer.

9.2 Cooperative State Research Service

Carlson distributed the Cooperative State Research Service report which is included as Appendix D, pp. 27-54.

Per a conference call with J. P. Jordan, the following items were reported:

- (1) The House budget hearing has been postponed to late April;
- (2) CSRS has published the President's budget proposal as a four page brochure;
- (3) There have been disappointing cuts in McIntire Stennis funding for four years;
- (4) An NRI publication dated February 1991 shows the 1992 program plan. The numbers inside are somewhat modified from the March 1990 figures. The date 1992 on the publication identifies it with the FY1992 budget. The modifications in numbers reflect a new approach. NRI is to have a number of workshops to bring in commodity group leaders, consumer group leaders, and environmental group leaders to have dialogue about the NRI program plan. These workshops are planned to be held yearly.
- (5) The ARS has identified approximately eight power brokers in commodity and environmental groups. The SAES needs to attend their annual national meetings. CSRS has staff to attend only a few of the meetings and the directors were requested to share the responsibility and commit to attend the other meetings so that the SAES is well served.
- (6) The Competitive Research Facilities program is not tied closely to the NRI. From OMB's point of view, a program of the NRI's magnitude and scope must have some commitments to additional facilities and equipment. As a result, the facilities program is indexed to the NRI at 20 percent of the NRI program.
- (7) The following personnel have new assignments with CSRS: Collien Hefferan, Bill Wagner, George Casper, Chauncy Ching. John Naegele will occupy an endowed chair at the University of New Hampshire and will continue with CSRS at 20 percent time commitment. E. M. Wilson will deal with the Regional Research Office assignments in the interim. CSRS institutional reviews will be administered by Bud Rumberg.
- (8) A strategic plan will be developed by CSRS to dovetail with the ESCOP/CSRS overall strategic program plan.
- (9) CSRS is trying to build on the efforts of the ESCOP Communications Subcommittee. A task force has been appointed to bring a report to the ESCOP meeting. The focus is to build a network system that takes advantage of the fact that there are over 1000 professional communicators in the SAES, so that the system can derive overall benefits from these communicators.
- (10) CSRS is requesting input to be certain that they can respond to any questions by Congress in terms of indirect cost recovery. Each director is asked to evaluate how his institution deals with indirect costs.

9.3 Forest Service

Lassen presented the Forest Service Report, included as Appendix E, pp. 55-57.

Lassen indicated that the Forest Service is not primarily a research organization. The Forest Service funding comes through the U.S. Department of Interior, not the U.S. Department of Agriculture.

10.0 Regional Research Issues

10.1 RIC Report

The RIC Report was presented by Zuiches. The report with related WDA actions is included as Appendix F, pp. 58-66.

10.2 Committee of Nine

Ware reported that the Committee of Nine had met with CSRS Administrator J. P. Jordan in January 1991. The purpose was to discuss the Research Digest and to discuss the qualifications and needs for a replacement for J. Naegele.

The Research Digest has not gotten off the ground due to lack of funding. CSRS has initiated a system in which Pat Lewis, of Rutgers, will serve as editor of the Research Digest. The Agriculture Communications Group, of North Carolina State, will serve as publishers. It is hoped that the Research Digest will develop into an SAES publication comparable to the ARS Agricultural Research publication.

The Committee of Nine is encouraging CSRS to elevate the GS level of the replacement for J. Naegele from a GS15 to a GS16, which would become a Senior Administrative Service Officer. The purpose is to attract someone who has served as an SAES Director or Associate Director. In the interim, Dr. E. M. Wilson is serving as Acting Associate Administrator of the Regional Research Office.

The National Planning and Coordination Project was also discussed with CSRS.

10.3 National Research Support Projects

10.3.1 NRSP- Research Planning and Coordination

Boyd reported that the NRSP - Research Planning and Coordination had been rejected by RIC and the WDA.

10.3.2 NRSP- Germplasm

Boyd reported that the NRSP - Germplasm was an attempt to incorporate IR-001 and IR-002 and the regional germplasm projects. The Committee of Nine took no action in December 1990 on the NRSP because the responses from all the regional associations had not yet been received. A completed proposal is to be presented to the Committee of Nine at the May 1991 meeting. The NRSP is to be an umbrella for IR-001, IR-002, and the four regional germplasm projects.

Ware indicated that the bulk of the discussion had to do with trying to meld potatoes (IR-001) and deciduous fruit (IR-002) into the NRSP.

Boyd reported that the National Research Council Report on Managing the National Germplasm System made the recommendation that the action SAES takes should tie in with ARS activities.

Boyd indicated that he intends to go to the Committee of Nine with the recommendation that the SAES work with ARS in the decision development, rather than proceed to set up an NRSP.

10.3.3 NRSP- Microbial and Cellular Organism Data Base

Koong reported that each experiment station had received a letter from D. Crossan (DE) requesting interest in establishment of an NRSP - Microbial and Cellular Organism Data Base. The activity started as an ad hoc working group appointed by ESCOP. ESCOP endorsed the activity and CSRS provided in-house start-up funding. A data base has been set up which identifies the germplasm available. The CSRS funding was for only two years and the Committee of Nine has suggested that an NRSP could be established and use off-the-top funding.

Volk questioned whether the proposed NRSP interfaces with culture collections which lie in laboratories at various universities or the American Type Culture Collection of Rockville, MD, which has a repository and database for microbial and cellular germplasm.

The directors are requested to query their faculty to ascertain interest in the NRSP and send the comments to Boyd for presentation to the Committee of Nine.

10.3.4 NRSP- Research Management (IR-6 replacement)

McHugh reported that the IR-006 project will terminate 9/30/91. The research portion of the project will be developed into a proposal that will be submitted to the North Central Regional Association.

There is need for some work on impact assessment and strategic information and analysis related to resource allocation. A prospectus and outline have been assembled. The regional associations have been requested to appoint an individual to work with the group. The group does not want to put forth a proposal that will not be supportive of ESCOP and its budget requests.

The purpose that the group now sees for an NRSP is not to generate a unique set of research budget proposals and priorities, but to provide strategic information and analytical support to the ongoing system of research prioritization, budgeting and policy. Associated database development will have the objective of supporting special evaluations and impact assessments and not of providing for routine reporting of research expenditures and output. It would be impact assessment of the major research projects and programs of the system, identification of the nature and distribution of research benefits and associated questions regarding alternative funding sources of this sort of research, and projections of research benefits and criteria for prioritization for future research initiatives and programs. The major focus would be on national and regional level research initiatives, but could provide support services to decision makers at the state level, primarily via the development of data and procedures.

Lee indicated that he had been requested to appoint a representative from the Western Directors to serve on a planning committee to help shape the replacement

for the IR-006 project. The Executive Committee, in their discussion, appointed Kaltenbach to serve on the committee.

10.4 Regional Concerns - Guidelines for W. C/9 Members

Boyd reported that concerns had been expressed about C/9 operations. If any of the Directors have any comments, they are invited to contact the C/9 members, Ware and Boyd.

11.0 Reports from Budget Groups/National Initiative

11.1 FY1992 Budget Group

McHugh distributed the report on the FY1992 Budget Group, included as Appendix G, pp. 67-68, which are the research program figures from the Division of Agriculture.

11.2 FY1993 Budget Group

Rasmussen distributed the report on the FY1993 Budget Group, included as Appendix H, pp. 69-72.

11.3 National Initiative

Boyd distributed information on the National Initiative which is included as Appendix I, pp. 73-75. He expressed concern that information may not be distributed to constituent groups to show how the National Initiative is trying to serve their interests.

12.0 Alternative Pest Control Quarantine and Containment Facility

Lyons presented information on the University of California Alternative Pest Control Quarantine Facility which is summarized in Appendix J, pp. 76-97.

13.0 Budget Support Related Issues

13.1 Water Initiative Activities/Evaluation

Volk submitted the report on Water Quality Research, included as Appendix K, pp. 98-102.

13.2 Users Advisory Board

Boyd distributed a membership list of the Users Advisory Board and a Senate calendar, included as Appendix L, pp. 103-105. Information on the Users Advisory Board is also included in the DAL Report, Agenda Item 19.0.

Boyd indicated that the UAB has reported the following:

- (1) The UAB believes that every effort should be made to fully fund the NRI, for which \$500 million was authorized in the 1990 Farm Bill. Two areas of new research, processes and new products, should receive greater emphasis in the NRI.
- (2) They support the efforts to curtail the use of research funds for indirect administrative costs and believe it is incumbent upon the research community to

assist in finding ways to target the greatest amount of dollars possible for the research effort.

- (3) They are supportive of the competitive facilities grants initiative. They have asked to give special consideration to the 1890s' effort to support the Centers of Excellence that was recommended in the UAB FY91 budget appraisal.
- (4) The UAB believes the Hatch Act base program is critical for maximizing the potential of the National Research Initiative.
- (5) The UAB is supportive of increasing McIntire Stennis funding to a higher level.
- (6) With one exception, the UAB supports the President's proposal for special research grants. They recommend adding \$2 million for research in biodiesel.
- (7) The UAB supports zero percent funding for rangeland research grants.

14.0 Reports from Regional and National Committees/Groups

14.1 Joint Council

Kaltenbach distributed the Joint Council Report, included as Appendix M, p. 106.

14.2 NARC/WARC (Accomplishments/Initiatives)

Information on topics for the accomplishments reports and the ESCOP research initiatives was mailed to Directors prior to the meeting. A copy of the letter from McHugh regarding the subjects is included as Appendix N, p. 107-109.

McHugh reported that information on research accomplishments is to be submitted by the SAES system to the Joint Council. Rather than develop an accomplishment report around an individual project, an idea or statement of accomplishment around a programmatic area should be developed. Suggested categories are: effective management of pests; pesticide clearances; compatibility of agriculture, natural resources, and the environment; development of new and improved varieties; water quality; market concentration and product differentiation; human nutrition and health; community and family stability; integrated resource management; and animal systems and animal reproduction. What is needed for submission is a descriptive title, a one or two sentence description, and the names and addresses of scientists would could work in developing a statement.

The following topics for accomplishments reports were established:

- (1) Water Conservation and Quality
- (2) Integrated Systems for Crop Protection
- (3) Ecology and Economics of Natural Resources
- (4) Food Quality, Safety, and Human Health
- (5) Animal Health and Well Being
- (6) Socioeconomic Implications of Agriculture
- (7) Improving Community and Family Economics

- (8) Alternative Uses for Agricultural Products
- (9) Improved Technologies for Animal and Plant Production.

Accomplishments nominations are needed by Friday, May 31, 1991.

14.3 ESCOP Interim

Boyd reported that, at the ESCOP Interim meeting, there was discussion of

- (1) The Farm Bill, with particular reference to the mandated reviews;
- (2) Indirect cost cap;
- (3) ESCOP Task Force on Public Communication - Helmick reported that the task force had been created by the ESCOP Chair. The Task Force is an attempt to use scientific expertise that exists within the SAES in terms of the public attitude on risk assessments, and food safety issues. The charge to the Task Force is to identify issues, identify the publics that need to be addressed in terms of some of the challenges facing agriculture. The need is to present agricultural research as a solution, rather than to adopt a defensive stance in regard to agricultural production. Pat Lewis (Rutgers) and Dave King (Purdue) are Co-Chairs of the Task Force.
- (4) Water quality research evaluations;
- (5) Contract agreements with the National Livestock and Meat Board;
- (6) Internet;
- (7) CARAFE. There are about 120 members in CARAFE.
- (8) Water Quality and Environmental Policy - the 1991 plan of work was presented by Nipp;
- (9) Accomplishments reports - to be discussed at regional meetings;
- (10) Working draft of new six year plan for ARS, including discussion of the plant genome system.
- (11) Food safety publication, in draft form, was shown to congressional staff for critique.

14.4 ESCOP Special Initiatives Group

Lee reported that there had not been a Special Initiatives meeting since the last WDA meeting.

14.5 ESCOP Research Planning Group

No report was presented.

14.6 ESCOP Leadership Development Group

Dutson reported that the first ESCOP Leadership Development course will be conducted in September 1991. All directors have had an opportunity to send applicants to the course. Registration is currently at 60-70 people.

A request has been sent to all directors requesting information on what the committee should take up next. An additional course is planned for 1992, and an evaluation will be undertaken during the process.

Areas that are not addressed in the course are: department head training, and actual interim training for new directors.

14.7 NASULGC Staffing Update

Boyd reported that ESCOP requested that a committee be appointed, headed by a president of a land-grant university, to study the staffing of NASULGC.

14.8 Animal Care/Treatment Issues

Kaltenbach distributed a summary of the legislative activities regarding animal care/treatment issues, included as Appendix O, pp. 110-111.

15.0 Integrated Pest Management Issues

15.1 National IPM Coordinating Committee

Schlegel distributed the report of the ESCOP Pest Management Strategies Subcommittee (formerly the National IPM Coordinating Committee), which is included as Appendix P, pp. 112-113.

15.2 Western IPM Management Plans

Schlegel reported that the review process for awards of Western IPM grants will take place in April. There are 26 reviewers (13 AES and 13 ES) appointed by each state, eight of whom will be used as reviewers of IPM proposals.

16.0 Russian Wheat Aphid

Lee distributed the "Progress Report on the Russian Wheat Aphid to the National Association of State Departments of Agriculture", included as Appendix Q, pp. 114-139. The report lists part of the WRCC-66 activities.

The Great Plains Agricultural Council has an effort underway which should be coordinated with WRCC-66, especially in requests to CSRS for funding.

17.0 Farm Bill Issues

Boyd distributed copies of the "Food, Agriculture, Conservation, and Trade Act of 1990" which contained a list of all titles and text for the Title XVI-Research. The titles for Title XVI-Research are included as Appendix R, pp. 140-142.

18.0 Internet Report

Boyd reported that he had distributed an Internet Directory to all directors. The next release of the directory will be available by the end of April. It was suggested that the information in the introduction was too advanced for most users. There have been a number of problems with

Internet. Many of them are local where there are system idiosyncracies. One of the sales points on the Internet was that there would be local support. To the contrary, there is evidence that, either there is not local support, or they do not put help at a high priority. One of the problems is that there is no automatic acknowledgement when a message is read.

Responses from a survey of Internet users indicate that most read Internet daily, half are accessing Internet via modem, half access via hardwire, and only one has a message arrival signal.

CSRS is moving forward with access to Internet. CSRS has requested seven mailboxes at this time. Some of them will be in the Aerospace Building, as well as in the Administration Building. Access from the Aerospace Building will be by modem.

19.0 DAL Report

Boyd presented the DAL Report, included as Appendix S, pp. 143-145.

20.0 Low Input Sustainable Agriculture

Schlegel presented the report on Low Input Sustainable Agriculture, included as Appendix T, pp. 146-149.

21.0 Draft Policy on Pre-Release Multiplication and Distribution of Advanced Potato Clones

A draft policy on pre-release multiplication and distribution of advanced potato clones was distributed by Rasmussen and is included as Appendix U, pp. 150-155.

22.0 Future Meetings

22.1 Summer Meeting in Santa Fe, NM

The joint meeting of CAHA, Extension, CARET, WDA, and Resident Instruction will be held July 22, 1991 from 8:00am to 12:00 noon. The WDA will meet with CARET and CAHA the afternoon of July 22. The WDA meeting will be concluded by 12:00 noon on Thursday, July 25. Tuesday and Wednesday morning, July 23-24, are scheduled for individual group meetings. Wednesday afternoon, July 24, is for joint meetings, as needed. Thursday morning, July 25, is for individual meetings.

Formal discussion topics with Extension and Resident Instruction should be developed so that they can be distributed in advance so that individuals can be prepared to lead particular discussion areas. Two or three initiatives from each of the groups participating in the joint meeting could be items for discussion about how efforts could be integrated.

22.2 November NASULGC Meeting in Washington, DC

The NASULGC meeting will be held Nov. 10-12, 1991 at the Grand Hyatt Hotel, Washington, DC. The WDA Executive Committee will meet from 7:00-9:00am on November 10, and the WDA will meet for a four-hour period at a yet to be designated time.

22.3 Proposals for 1992 Meetings

23.3.1 The 1992 Spring Meeting will be held during the week of 3/16/92 or 3/23/92 in Salt Lake City, UT.

23.3.2 The 1992 Summer Meeting will be a joint meeting with RI, CAHA, CARET, Extension, and the WDA. It is tentatively scheduled for either 7/12-17/92 or 7/19-24/92 in Monterey, CA.

23.0 State Reports - Major Issues to Share

ALASKA Drew reported that Alaska has had an interesting year. There is a new governor, who previously served as governor during the Nixon era. He was chosen by Nixon to serve as Secretary of the Interior, and served for two years in that position. The interesting part of his election is that he has been a life-long Republican. In Alaska there is a party which is known as the Independence Party. The Independence Party is headed by a person who has a law degree, but has never practiced law. Arlis Stergeluski won the Republican primary, and Tony Knowles won the Democratic nomination. Only six weeks prior to the election, Mr. Hickel became a member of the Independence Party and ran on that ticket along with Jack Coghill, one of the writers of the Alaska constitution, and were elected. One of the Independence Party platform items was to secede from the United States.

The impact on the budget is not yet know. The legislature is trying to put out budgets, both from the House and the Senate. If they can pass them early enough, there is a chance that they can override vetoes, instead of having to recall the legislature to overturn vetoes.

The governor did make a budget for the University of Alaska in which he granted five percent salary increases and then deleted five percent from the operating funds for the University.

The previous three governors could be characterized as being environmentally and preservationist oriented. Governor Hickel has historically been very pro-development.

The two greatest issues in Alaska now are: the wetlands issue and the mental health trustlands issue. The wetlands issue is a remarkable one because of the low evapotranspiration rates over most of the state. Estimates have been that some 90 percent of all the land, with the exception of mountain tops, would be classified as wetland according to the classification scheme which is used by the Fish and Wildlife Service. There are hydrophilic plants which grow on sites which would be normally dry. They are there because of the unique low evapotranspiration rates or because of the presence of the permafrost table near the surface, which puts moisture near the service during certain times of the year. All of the North Slope of Alaska is wetlands because the permafrost there is continuous. That is where all of the oil resources are. The permitting processes set up for wetlands are going to determine what kind of petroleum development can be done. Any kind of construction is subject to wetlands policy. President Bush has indicated that there can be no net loss. If a wetland is drained, a wetland must be created out of a dryland somewhere else. Alaska has not created any dry land except where the cities are. If construction is to be done outside of a city, then an area in a city would have to be flooded.

The mental health land is a worse issue, legally. With statehood came federal grants of land to be used to provide an endowment for funds for mental health care. Those lands were put in a trust, similar to the land-grant university system. Through an array of legislation and other shenanigans, mental health trust lands were either traded for other lands or sold. Now there are chunks of downtown Anchorage, farms, or other major developments which do not have clear titles. The issue is what kind of reimbursement can be made by the legislature to the mental health trust to make up for the sale or trade of the mental trust lands.

The University of Alaska is in the process of completing a search for an Extension Director. The Extension Director in Alaska reports directly to the Vice Chancellor for Academic Affairs and not to the Dean of the School of Agriculture.

The governor is particularly interested in forestry. He feels that forestry has a place in Alaska, particularly in the interior and south central part of the state. At the moment, there is an outbreak of spruce bark beetles which has impacted almost two million acres of land within the state. The Kenai Peninsula, which is a favorite recreation area for Anchorage, has a great deal of damage to the trees. The trees could be harvested, but many of them are located in areas where there is no transportation infrastructure. The governor has established a major program in forest health which may help the University with new positions in forest entomology and pathology.

Much of the work that the Experiment Station does that benefits the state is in the area of resource management. An article was published in "Bioscience" which dealt with element cycling in the forests, which is the result of twenty years of work that has been done with NSF, McIntire Stennis and Forest Service support in Fairbanks. Its follow on work is being accomplished under the NSF/LTER program. It sets the stage for nutrient cycling in the interior forests of Alaska. A second publication will be in the April issue of "Agroborealis" magazine. It is a report of twenty years of work on arctic tundra rehabilitation at Prudhoe Bay, particularly with respect to wet site grasses. British Petroleum has ordered several thousand copies of it, and plan to hand it out to all visitors to Prudhoe Bay this summer.

ARIZONA Kaltenbach reported that the political scene was still in a turmoil. The new governor is trying to figure how to destroy the former governor's budget and the legislative budget and do his own. Current figures are between a flat budget and a three percent cut.

A new agriculture laboratory is under construction which should be completed in approximately fifteen months. The Santa Rita Range title is still under dispute. The Experiment Station is responsible for maintaining and operating the range, which is one of the oldest range research stations. It was deeded to the BLM but has been operated by the Forest Service Research unit for many years. In the development of the Colorado River Canal project there was a massive exchange between state and federal land. As a result, the legislature traded other land for the Santa Rita Range.

CALIFORNIA Schlegel reported that there had been a series of natural disasters in California: killing freeze, drought, and the peace initiative. The result is a poor economy and a significant budget deficit. Because of rain and snowfall in March the government shutdown of all water delivery to farmers can be relaxed.

Last year, non teaching positions were cut by five percent. For the current year, another \$294 million budget cut is scheduled for the University.

COLORADO McHugh reported that the University will receive appropriation for the second phase of the Northern Agricultural Campus. The facility will have research on irrigation and food processing.

President Yates created a new position of Assistant Academic Vice President and a search is underway to fill the position. The searches for Directors of Extension and the Experiment Station will soon begin.

The University has been stringent in not allowing transfer of funds from the education and general budget to other lines. Therefore, the Experiment Station could have a salary deficit this year.

GUAM Lee reported that the governor had been reelected. Funding is good for the University of Guam. The University has a capital improvement project totaling \$53 million over a six year

period. The College of Agriculture has just completed adding 36,000 square feet. There was a 15.5 percent salary increase last year and 10.3 percent salary increase this year.

Last year Typhoon Gus hit Guam on December 21st. The typhoon was moving at eighteen miles per hour and fifteen inches of water fell in one day. The College building had a great deal of water damage. In all, \$600,000 damage was done to Experiment Station facilities.

Guam is growing very fast. All new commercial ventures, such as hotels and golf courses, require an environmental feasibility study. Last year Guam had 800,000 tourists on an island with a population of 145,000. The airport is being expanded.

IDAHO Lee reported that Garth Sasser had been appointed as a part-time Assistant Director of the Experiment Station. The Animal and Vet Science faculty have been combined into a single department, Department of Animal and Veterinary Sciences and a search is underway for a department chair. The food science faculty that were originally in the Department of Bacteriology and Biochemistry have been combined with the Department of Toxicology into a new Department of Food Science and Toxicology.

The analytical services program has been reorganized, capability has been increased, and the Idaho Analytical Laboratory Services was established. New analytical equipment costing \$1 million does analysis for pesticides, and water analysis. The facility will have twelve staff members.

The State Department of Agriculture has been given the mandate to develop another pesticide laboratory on the University of Idaho campus. The university will staff the facility and the state will own the building. It will be part of a statewide system for analytical services.

A new state-of-the-art potato storage research facility is under construction. The laboratory facilities at the Parma Station have been expanded.

The legislature has restored capital outlay from the previous year. There will be a four percent salary increase. The base budget will be increased by 2.5 percent.

MONTANA Mathre reported that Montana State University has been in a state of transition. A new president has been named, Mike Malone. He now has the job to fill ten vacant positions very quickly. These positions are: Vice President for Research; Vice President for Academic Affairs; Vice President for Student Affairs; Associate Academic Vice President for Outreach; Director of Extension; Dean of the College of Agriculture; Associate Director of the Agricultural Experiment Station; Associate Director of Resident Instruction; Chairs of the departments of Animal Science and Agricultural Economics.

Faculty are scheduled for between 10 and 15 percent salary increases.

NEW MEXICO Cunningham reported that Bruce King is again governor of New Mexico. He was governor twice before. That is significant for New Mexico State University because he is a rancher, and he understands agriculture. It has already had an effect in that he has appointed two new members of the five-member Board of Regents. Both of the people appointed have agricultural background. Combined with the one person on the Board who also has an agricultural background, it is now three people out of five who understand agriculture and agriculture problems.

One of the things that has happened in New Mexico over the past several years is that salary increases for higher education faculty have been appropriated by the legislature. They have been increasing those by raising tuition. The Board of Regents at New Mexico State University required

that those salary and fringe benefit increases that were driven by tuition increases would only go for teaching faculty. That meant that none of that money could be used for Experiment Station or Extension salary increases. The Experiment Station and Extension had to either take a smaller salary increase or make it up out of lost positions. Over a period of five years there were about 20 FTE lost. This year the legislature appropriated no money at all for higher education salary increases so it was all driven off of tuition increases. The Board of Regents has decided that the Experiment Station and Extension officially have access to those funds. Unfortunately, the Experiment Station and Extension will not receive quite as much as other faculty, but the precedent has been broken.

In the overall budget the University got a two percent increase overall, with no salary increases. The Experiment Station got a six percent increase and Extension got a 4.5 percent increase. This is because, in the 1990 legislature, the house passed a memorial that set up a task force to look at the funding situation in the Experiment Station and Extension Service. Their report stated that things were going wrong and something needed to be done about it. The report was used to influence the legislature to restore funds to replace some of the FTE losses of the past five years. Another memorial set up a new task force to recommend that the Commission on Higher Education establish a formula for flexible stable funding of the Experiment Station and Extension Service. This also includes a plan for a permanent equipment renewal and replacement fund.

NEVADA Pardini reported that the legislature was still in session. All new building construction for the University is at Las Vegas. The Fleischmann building at Reno is being renovated and molecular biologists are in place on the third floor. A proposal for renovation of the first floor is under consideration.

A new way to fund Experiment Station projects is in its second year. Instead of funding departments, the Experiment Station is funding principal investigators. Research priorities have been established and peer review teams have been developed for each of the priorities.

Field laboratory administration has been removed from the departments and returned to the Experiment Station. A new field laboratory is being established. The Wiegand Foundation owns a ranch which has public lands associated with it. The Wiegand Foundation has established the Experiment Station and the College of Agriculture as one of their five beneficiaries. Water quality, riparian zone, sheep, and wildlife research will be pursued.

The College of Agriculture is being reorganized into four departments: Biochemistry and Molecular Biology; Agricultural Economics; Environmental and Resource Sciences; and a School of Veterinary Medicine which will have Animal Sciences affiliated with it.

OREGON Helmick reported that Oregon has a new governor, Barbara Roberts. The state has a budget measure which caps the property tax and expects the state representatives to replenish the school districts for the property taxes lost. There is a ten percent cut in state budget, including higher education. The Experiment Station is funded as part of state-wide services which leaves them with a full ten percent cut, whereas the academic program will benefit from some tuition increase relief. Restoration funds are available. The College of Education has been eliminated. Faculty salary increases have been promised for FY91-92. There were mid-year salary increases for faculty. Construction is underway on Ag Sciences II. There is a 70,000 square foot facility, Family Studies Center, that will be completed and opened in September 1991.

UTAH Rasmussen reported that the stigma of cold fusion still hangs over the state. Some things are positive. The building program at Utah State University is going quite well. There is a \$5 million animal diagnostics building that will be started this year which is a cooperative arrangement

between the Department of Agriculture and the Experiment Station. It will be in a bonding program. A new Agricultural Systems Technology Building is approximately one-third completed. A first installment on a \$7 million Biotechnology building is underway. The Ag Sat uplink is being installed on campus. Enrollment is increasing faster than faculty and space can be provided.

Matthews will be retiring in November as Dean of the College of Agriculture and the search will be started shortly for his replacement. The Vice President for Extension has announced that he plans to retire in a year and a half. The President has announced plans to retire in two years.

There were no budget cuts and there was a five percent increase for salaries, of which some was for fringes, so there was overall 3.15 percent increase for faculty and staff.

The governor has set up an economic council on agriculture and positive things may come from it. The University will have its third land-grant days which will focus on sustainable agriculture and the changing world.

WYOMING Gale reported that the staff of the Wyoming Agricultural Experiment Station have a good morale. Heil has been working with commodity groups throughout the state. Heil has participated with the Experiment Station Advisory Committee, which required meeting with all of the advisory committees of five research and extension centers.

The legislature has approved an eight percent increase for the FY93-94 biennium. The legislature also restored funding for an equipment request.

The College of Agriculture is putting effort into obtaining private development funding to provide \$500,000 to supplement \$5 million from the legislature for a teaching arena. Through a Phone-a-thon, \$23,000 was pledged by College of Agriculture alumni.

Faculty and staff will receive a nine percent salary increase. Of the nine percent, 3.25 percent will go to benefits.

24.0 Resolutions

The motion was made seconded and UNANIMOUSLY CARRIED to approve the following resolutions:

RESOLUTION #1

WHEREAS Dr. L. J. "Kelvin" Koong has been a member and active participant in the Western Association of Agricultural Experiment Station Directors since 1982, and

WHEREAS Dr. Koong has accepted a new assignment at Oregon State University, and

WHEREAS Dr. Koong has served as Associate Director at the Agricultural Experiment Stations in Nevada and Oregon, and

WHEREAS Dr. Koong has been active on the Research Implementation Committee in the Western states and on the Committee of Nine nationally, and

WHEREAS Dr. Koong has contributed substantially to the credo of the Western Directors through his focus on program details, his analytic capabilities, and his good humor; now therefore be it

RESOLVED, that the Western Association of Agricultural Experiment Station Directors assembled at the 1991 Spring Meeting in Tucson, Arizona, express their appreciation to Dr. L. J. "Kelvin" Koong for his many significant contributions to and support of the Western Association of Agricultural Experiment Station Directors and wish him every future success; and be it further

RESOLVED, that the original of this resolution be sent to Dr. Koong and that a copy be made part of the minutes of the April 3-5, 1991 meeting.

RESOLUTION #2

WHEREAS Dean Eugene G. Sander and his associates at the University of Arizona have made arrangements for the 1991 spring meeting of the Western Association of Agricultural Experiment Station Directors at Tucson, Arizona, and

WHEREAS Director C. Colin Kaltenbach, Associate Director George W. Ware, and Associate Director Merle H. Jensen provided outstanding support with facilities, arrangements, and logistics, and

WHEREAS the wives of Drs. Kaltenbach and Ware have gone the extra mile to accommodate the duties of their husbands, the Western Directors wish to thank Mrs. Doris Ware for organizing an excellent tour for spouses around the Tucson area, and to Mrs. Ruth Kaltenbach for opening her home to participants and spouses for a fine Southwestern feed; now therefore be it

RESOLVED, that the Western Association of Agricultural Experiment Station Directors express their gratitude to Drs. Eugene G. Sander, C. Colin Kaltenbach, George W. Ware, and their spouses, for their hospitality and efforts, and be it further

RESOLVED, that the original of this resolution be sent to Dean Sander and that a copy be made a part of the minutes of the April 3-5, 1991 meeting.

25.0 Other Business

25.1 Lee reported that two committees had been appointed for the year: (1) Resolutions Committee - Briggs (NM) and Drew (AK); (2) Neophyte Committee - Dutson (OR/Chair), Gale (WY), Heimsch (ID); DAL Search Committee - Dutson (OR/Chair), Drew (AK), Kaltenbach (AZ), Schlegel (CA-S), McHugh (CO).

The DAL Search Committee is to review the DAL job description (as modified by the DAL) at the 1991 summer meeting, develop a new description, and announce the position so that it might be filled by spring-summer of 1992.

26.0 Adjournment

The motion was made and seconded to adjourn the meeting. **MOTION CARRIED.**

APPENDIX A

WESTERN ASSOCIATION OF AGRICULTURAL EXPERIMENT STATION DIRECTORS

Viscount Suite Hotel, Tucson, Arizona

April 3-5, 1991

AGENDA

WEDNESDAY, APRIL 3, 1991Morning Session

8:30	1.0	Call to order	G. A. Lee
8:35	2.0	Welcome to Arizona	C. C. Kaltenbach
8:50	3.0	Introductions and announcements	G. A. Lee
9:00	4.0	Adoption of agenda	G. A. Lee
9:05	5.0	Approval of minutes of 11/11/90 meeting	G. A. Lee
9:10	6.0	Chair's report/interim actions	G. A. Lee
9:30	7.0	Executive Committee report	G. A. Lee
9:45	8.0	Treasurer's report	D. Mathre

10:00 BREAK

	9.0	Reports from Federal Agency Liaison Representatives	
10:30	9.1	Agricultural Research Service	J. van Schilfgaarde
10:45	9.2	Cooperative State Research Service	W. D. Carlson
11:00	9.3	Forest Service	L. E. Lassen
	10.0	Regional Research Issues	
11:15	10.1	RIC report	J. J. Zuiches
11:45	10.2	Committee of Nine	G. W. Ware

12:00 LUNCH

Afternoon Session

	10.3	National Research Support Projects	
1:30	10.3.1	NRSP- Research Planning and Coordination	G. W. Ware/L. L. Boyd
1:40	10.3.2	NRSP- Germplasm	L. L. Boyd
1:45	10.3.3	NRSP- Microbial and Cellular Organism Data Base	T. R. Dutson/L. J. Koong
1:55	10.3.4	NRSP- Research Management (IR-6 replacement)	H. F. McHugh/L. L. Boyd
2:00	10.4	Regional Concerns - Guidelines for W. C/9 Members	L. L. Boyd
	11.0	Reports from Budget Groups/National Initiative	
2:15	11.1	FY1992 Budget Group	H. F. McHugh/L. L. Boyd
2:30	11.2	FY1993 Budget Group	H. P. Rasmussen/L. L. Boyd
2:45	11.3	National Initiative	L. L. Boyd

3:00 BREAK

3:30	12.0	Alternative Pest Control Quarantine and Containment Facility	J. Lyons
	13.0	Budget Support Related Issues	
3:45	13.1	Water Initiative Activities/Evaluation	V. V. Volk
4:00	13.2	Users Advisory Board	L. L. Boyd
	14.0	Reports from Regional and National Committees/Groups	
4:15	14.1	Joint Council	C. C. Kaltenbach

4:30 ADJOURNMENT FOR THE DAY

THURSDAY, APRIL 4, 1991Morning Session

8:30	14.2	NARC/WARC (Accomplishments/Initiatives)	H. F. McHugh
9:00	14.3	ESCOP Interim	D. E. Schlegel/L. L. Boyd
9:15	14.4	ESCOP Special Initiatives Group	D. E. Schlegel
9:30	14.5	ESCOP Research Planning Group	H. F. McHugh
9:45	14.6	ESCOP Leadership Development Group	S. Helmick/T. Dutson
10:00		BREAK	
10:30	14.7	NASULGC Staffing Update	L. L. Boyd
10:45	14.8	Animal Care/Treatment Issues	C. C. Kaltenbach
	15.0	Integrated Pest Management Issues	
11:00	15.1	National IPM Coordinating Committee	D. E. Schlegel
11:15	15.2	Western IPM Management Plans	D. E. Schlegel
11:30	16.0	Russian Wheat Aphid	G. A. Lee
11:45	17.0	Farm Bill Issues	W. D. Carlson/L. L. Boyd
12:00		LUNCH	

Afternoon Session

1:30	18.0	Internet Report	L. L. Boyd
1:45	19.0	DAL Report	L. L. Boyd
2:00	20.0	Low Input Sustainable Agriculture	D. E. Schlegel
2:15	21.0	Draft Policy on Pre-Release Multiplication and Distribution of Advanced Potato Clones	H. P. Rasmussen
2:45	22.0	Future Meetings	
	22.1	Summer Meeting in Santa Fe, NM	G. Cunningham
	22.2	November NASULGC Meeting in Washington, DC	G. A. Lee
	22.3	Proposals for 1992 meetings	All
3:00		BREAK	
3:30	23.0	State Reports - Major Issues to share	All
4:15	24.0	Resolutions	
4:30	25.0	Other Business	
4:45	26.0	ADJOURNMENT	

FRIDAY, APRIL 5, 1991

7:30-5:00 Maricopa Center Tour

**RUSSIAN WHEAT APHID ACCOUNT
CLOSING FINANCIAL REPORT**

ASSESSMENTS

19-Mar-91

ITEM	DR. ESTOP TRAVEL		4/28/89	
	ASSESSMENT 5/12/88	ESTOP PAID	ASSESSMENT	PAID
ARIZONA	694.00	694.00	1,000.00	1,000.00
CALIFORNIA	694.00	694.00	1,000.00	1,000.00
COLORADO	694.00	694.00	1,000.00	1,000.00
IDAHO	694.00	694.00	1,000.00	1,000.00
KANSAS	694.00	694.00	1,000.00	1,000.00
MONTANA	694.00	694.00	1,000.00	1,000.00
NEBRASKA	694.00	694.00	1,000.00	1,000.00
NEW MEXICO	694.00	694.00	1,000.00	1,000.00
OKLAHOMA	0.00	0.00	1,000.00	1,000.00
OREGON	694.00	694.00	1,000.00	1,000.00
SOUTH DAKOTA	694.00	694.00	1,000.00	1,000.00
TEXAS	694.00	694.00	1,000.00	1,000.00
UTAH	694.00	694.00	1,000.00	1,000.00
WASHINGTON	694.00	694.00	1,000.00	1,000.00
WYOMING	694.00	694.00	1,000.00	1,000.00
TOTAL	9,716.00	9,716.00	15,000.00	15,000.00

EXPENSES

Date	Transactions	Estop Expense	Assessment Expense
09-MAY-88	BRIT. MUSEUM-KEEPER OF ENTO.	9,710.00	
10-JUN-88	FED EX-TO BRITISH MUSEUM	25.00	
01-JAN-90	U OF CALIF.-D. GONZALEZ		13,000.00
01-JAN-90	TEXAS A&M - F. GILSTRAP		2,000.00
BALANCE		(19.00)	0.00

**WESTERN DIRECTORS' AT LARGE ACCOUNT
FINANCIAL REPORT
FY1991**

ASSESSMENTS

19-Mar-91

Item	Assessment	Payment	Balance
July 1, 1990 Balance			53,049.89
AM.SAMOA	600.00	600.00	53,649.89
MICRONESIA	600.00	600.00	54,249.89
NORTHERN MARIANAS	600.00		54,249.89
ALASKA	6,802.82	6,802.82	61,052.71
ARIZONA	12,140.59	12,140.59	73,193.30
CALIFORNIA	18,847.78	18,847.78	92,041.08
COLORADO	9,418.98	9,418.98	101,460.06
GUAM	6,623.85	6,623.85	108,083.91
HAWAII	8,895.91	8,895.91	116,979.82
IDAHO	10,747.80		116,979.82
MONTANA	11,370.25	11,370.25	128,350.07
NEVADA	8,740.29	8,740.29	137,090.36
NEW MEXICO	9,059.32	9,059.32	146,149.68
OREGON	13,790.16	13,790.16	159,939.84
UTAH	11,557.01	11,557.01	171,496.85
WASHINGTON	13,299.91	13,299.91	184,796.76
WYOMING	10,195.34	10,195.34	194,992.10
 SUB TOTAL	 153,290.01	 141,942.21	
 COLORADO RENT	 4,200.00		
 Total	 157,490.01	 141,942.21	 194,992.10

INCOME AND EXPENSES

Date	Transaction	Income	Expense	Balance
14-AUG-90	Transfer funds to Colorado		32,000.00	162,992.10
05-DEC-90	Transfer funds to Colorado		33,000.00	129,992.10
03-JAN-91	Transfer funds to Colorado		32,500.00	97,492.10
03-JAN-91	July Interest	549.38		98,041.48
03-JAN-91	August Interest	543.93		98,585.41
03-JAN-91	September Interest	566.15		99,151.56
03-JAN-91	October Interest	523.73		99,675.29
04-JAN-91	November Interest	528.31		100,203.60
25-JAN-91	December Interest	535.67		100,739.27
13-FEB-91	January Interest	713.38		101,452.65
 Balance				<u>101,452.65</u>

WESTERN DIRECTORS' SPECIAL ACCOUNT
FINANCIAL REPORT
 FY 1991

ASSESSMENTS

19-Mar-91

Item	Assessment	Payment	Balance
July 1, 1990 Balance			5,719.72
ALASKA	1,092.85	1,092.85	6,812.57
ARIZONA	1,950.36	1,950.36	8,762.93
CALIFORNIA	3,027.85	3,027.85	11,790.78
COLORADO	2,187.86	2,187.86	13,978.64
GUAM	1,064.11	1,064.11	15,042.75
HAWAII	1,429.11	1,429.11	16,471.86
IDAHO	1,726.61		16,471.86
MONTANA	1,826.60	1,826.60	18,298.46
NEVADA	1,404.11	1,404.11	19,702.57
NEW MEXICO	1,455.36	1,455.36	21,157.93
OREGON	2,215.36	2,215.36	23,373.29
UTAH	1,856.61	1,856.61	25,229.90
WASHINGTON	2,125.36	2,125.36	27,355.26
WYOMING	1,637.85	1,637.85	28,993.11
Total	25,000.00	23,273.39	28,993.11

INCOME AND EXPENSES

Date	Transaction	Income	Expense	Balance
07-AUG-90	Zuiches Travel-ESCOP-D.C.		1,154.07	27,839.04
04-SEP-90	Schlegel Travel-ESCOP-Hawaii(Mar90)		1,472.69	26,366.35
02-OCT-90	Koong Travel-ESCOP-Oakland		894.50	25,471.85
24-OCT-90	Rasmussen Travel-ESCOP-D.C.		1,129.04	24,342.81
11-NOV-90	Lee, G. Travel-ESCOP-Oakland		1,009.80	23,333.01
02-JAN-91	July Interest	92.95		23,425.96
02-JAN-91	August Interest	92.03		23,517.99
02-JAN-91	September Interest	95.79		23,613.78
02-JAN-91	October Interest	88.61		23,702.39
04-JAN-91	November Interest	89.38		23,791.77
25-JAN-91	December Interest	90.63		23,882.40
13-JAN-91	January Interest	116.99		23,999.39
Balance				<u>23,999.39</u>

ARS - 1 APRIL 1991

NORTHERN PLAINS AREA:

Substantial budget increases were obtained for MARC at Clay Center, Nebraska and, as a part of the Global Change and Water Quality Initiatives, for Fort Collins, Colorado. Smaller increases were welcome in several other programs.

In Colorado, we have reorganized a number of natural resource research units and molded them into the Natural Resources Research Center, with James Welsh as Director. This Center is made up of five (5) units, as follows:

Soil, Plant & Nutrient Research, R. Follett, RL
Water Management Research, D. Heermann, RL
Great Plains Systems Research, J. Welsh, Acting RL
Rangelands Resources Research, G. Schuman, RL, Cheyenne, WY
Central Plains Resources Management Research, A. Halvorson,
RL, Akron, CO

We have folded the work at Cheyenne and at Akron into the Center. The expectation is that the new structure will foster more effective cooperation and help orient the research work more explicitly to the ranchers' need as seen by the user community. The change also involves the transfer of 2 SY's from Fort Collins to Akron, Colorado.

Dr. Rod Heitschmidt is the new RL in Miles City, Montana. While not in the Western Region, we also want to report that Dr. Virgil Smail has joined ARS as Director of the Grain Marketing Research Lab in Manhattan, Kansas.

PACIFIC WEST AREA:

Increases were received in the FY91 budget at several locations in the Pacific West Area, including Hawaii for fruit fly eradication, Pullman for scrapie research, Phoenix for global climate and water quality research, Fresno, Tucson, and Riverside for water quality research, Aberdeen, Hawaii, Davis, and Riverside for plant germplasm, Corvallis for Eastern Filberts, WRRRC for food safety, and WHNRC for human nutrition.

Dr. Bill Chace retired as Area Director in November. Dr. Robert Reginato, formerly Associate Area Director, was selected as the new Area Director in January 1991. Dr. Roy Cunningham, formerly a lead scientist in the fruit fly eradication program, has been selected as the Laboratory Director of the Tropical Fruit and Vegetable Laboratory in Hawaii.

Dr. Antoinette Betschart has been selected as the Center Director for the Western Regional Research Center. Dr. Betschart brings her previous experience as a Research Leader to this position. She is an accomplished Food Scientist who joined ARS in 1971.

COOPERATIVE STATE RESEARCH SERVICE
REPORT TO THE
WESTERN EXPERIMENT STATION DIRECTORS
April 3-5, 1991
Tucson, Arizona

1. FY 1992 Budget. The President's Budget for Fiscal Year 1992 was sent to Congress on February 4. The program total for CSRS is \$384,151,000. The budget includes \$125,000,000 for the National Agricultural Research Initiative on Food, Agriculture, and the Environment (NRI) under the Competitive Research Grants program, with a commitment for annual increases of \$50 million, based on continued favorable Congressional action. Specific areas of research include \$53 million plant systems including \$18 million for the plant genome mapping program with the Agricultural Research Service as the lead agency; \$30 million animal systems; \$13 million nutrition, food quality and health; \$23 million natural resources and the environment which includes \$9.4 million for global change and \$4.6 million for water quality; \$2 million for markets, trade and policy; and \$4 million for processes antecedent to adding value and developing new products.

There is also \$168,298,000 for the Hatch Act; \$12,975,000 for McIntire-Stennis Cooperative Forestry program; \$27,321,000 for the Evans-Allen program; \$26,697,000 for Special Research Grants, including \$10 million for water quality and \$5 million for global change; \$4,450,000 for the Sustainable Agriculture program; \$918,000 for Supplemental and Alternative Crops; \$4,000,000 for Higher Education Graduate Fellowships Grants; \$1,500,000 for Higher Education Institution Challenge Grants; and \$11,000,000 for the 1890 Institutions Capacity Building Grants program.

For the CSRS Buildings and Facilities account, the 1992 Budget proposes \$25,000,000 or a competitively awarded facilities program to be authorized under the Research Facilities Act. This facilities program is recommended for continued funding in future years at a level equal to 20 percent of the NRI's proposed funding level.

All of the Science and Education Agencies testified before the Senate appropriations subcommittee on March 4. We are scheduled to join ARS before the House appropriations subcommittee on April 30.

2. 1990 Farm Bill. A summary of provisions related to research and education and the status of their implementation has been prepared and is under separate cover.

3. The National Research Initiative (NRI). The FY 1991 program was formally announced in the Federal Register on November 27, 1990. Copies of the request for proposals have been widely distributed. The deadlines for proposals began January 14 and run through April 8.

Special attention is being given to selection of review panel members to insure an objective evaluation of the different types of proposals called for in the NRI.

The Program Plan for the NRI has been updated to reflect the consensus building and planning activities that have gone on over the past many months. The new plan is a part of our presentation to the Congress on behalf of our FY 1992 budget request.

4. Water Quality. The Water Quality Presidential Initiative research program in CSRS is comprised of two major efforts: (1) the National competitive grants program and (2) the Midwest Initiative with five Management System Evaluation Areas. The Midwest Initiative is cooperative with SAES, ARS, ES, SCS, USGS, and EPA. In FY 1991, 254 proposals have been received in the national program, competing for \$5 million and will be reviewed in February. The selection process has been completed and winners will be notified by early April. The Midwest Initiative projects will be funded at the level of \$3 million. The National Research Initiative also has a water quality research grants program. Proposals have been requested in: Soils and Microorganisms; Plant/Water Contaminant Interaction; and Wetlands, Riparian and Forest Ecosystems.

5. Global Change. Congress passed the Global Change Research Act of 1990 (Public Law 101-606) on November 16, 1990. The purpose of the Act is "To require the establishment of a United States Global Change Research Program aimed at understanding and responding to global change, including the cumulative effects of human activities and natural processes on the environment, to promote discussions toward international protocols in global change research, and for other purposes." This puts into law what has been going on for the last few years on an administration initiative basis. Copies of the FY 1991 Research Plan were mailed to all SAES and other cooperating units, and include a copy of the USDA Global Change Strategic Plan. These documents provide information on the broad Federal programs for this year and the intent of USDA over the next several years.

6. IR-4. IR-4 (pesticide clearance) has developed a strategic plan to meet the needs for reregistration of pesticides and its current work load. To implement this plan, IR-4 proposes a yearly budget of \$12 million for seven years. FY 91 funding from CSRS was \$3 million. The White House held a conference on minor crops and pest control and also appointed a task force whose report was supportive of the IR-4 program. In December 1990, CSRS sponsored an on-site review of IR-4 chaired by Keith Huston. The review team had representation from FDA, EPA, ARS, SAES, pesticide industry and producer organizations. The team concluded that IR-4 has been quite successful, but limited by budgetary constraints. A number of recommendations were made to strengthen the IR-4 program.

7. Integrated Pest Management (IPM). Fiscal Year 1991 Special Research Grant funds in the amount of \$3,792,000 are available from the Cooperative State Research Service for support of research projects on Integrated Pest Management.

Drs. E. E. Ortman (IN AES) for the North Central Region, R.A. Rohde for the Northeastern Region, R. J. Kuhr for the Southern Region, and D. E. Schlegel

for the Western Region are handling the grants management and peer review process for their respective regions. This grant process is essentially complete for the Southern Region at the present time and grant awards are being made with start dates in February 1991. We expect to receive recommended proposals for funding for the North Central Region on March 15, 1991, Northeastern Region on March 30, 1991, and for the Western Region on April 30, 1991. We appreciate the timely manner the regions are handling the grant process.

8. National Agricultural Pesticide Impact Assessment Program (NAPIAP). CSRS provided leadership for a comprehensive assessment of all registered fungicides in the U.S., including benefits, fungicide resistance, and environmental and health factors. In addition, leadership was provided for the propargite assessments, and we participated in a number of other insecticide assessments as well as compiled background information on the triazine and phenoxy herbicides. Increased support of \$100,000 was made available to each region to support the PIAP research activities within each region. Currently efforts are underway to more closely coordinate NAPIAP and IR-4 activities in the area of reregistration. Technical advisory groups of both programs have been investigating means of identifying data gaps that can be addressed by NAPIAP. Charles Smith, USDA/ARS, who chaired the NAPIAP technical advisory group retired February 1, 1991.

9. Animal Germplasm/Genome. An Executive Committee established jointly by ESCOP, CSRS and ARS has spent the past year developing a strategy for the national coordination of farm animal germplasm/genome research activities. The Animal Germplasm and Animal Genome Subcommittees have identified research needs and priorities, and are recommending organizational structures and resource needs for national programs under the guidance of USDA. They recommend that ARS serve as the lead agency for a National Animal Germplasm Program and that CSRS serve as the lead agency for a National Animal Genome Research Program. A final report providing their complete recommendations is expected in the near future.

10. Food Safety. Fiscal Year 1991 research proposals were solicited in food safety under the National Research Initiative for Agriculture, Food and Environment; proposal deadline is April 8. CSRS scientists, working in cooperation with the Food and Nutrition Board of the National Academy of Sciences, are planning a jointly sponsored symposium/workshop in 1991 on the topic of Naturally Occurring Toxicants in Traditional and Biotechnology-Derived Foods; the workshop objective is to identify research and education needs. Two recent meetings were held to develop better mechanisms for coordinating food safety research and education between the USDA and the SAES.

11. Directory of Professional Workers. The 1990-91 Directory of Professional Workers in State Agricultural Experiment Stations and other Cooperating State Institutions has been printed. Copies are being distributed to cooperators. Thanks to all for assisting in the preparation of this important publication.

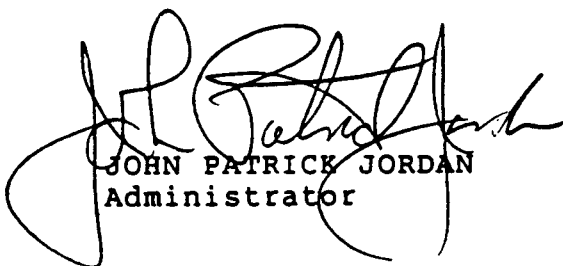
12. Electronic Communication: The CSRS contract with DIALCOM, Inc. for electronic mail services will terminate September 30, 1991. As stated

previously, CSRS plans to utilize the National Science Foundation Network (NSFNET) for electronic mail and related data file transfer services. The Extension Service is already in the process of transferring all electronic communications to NSFNET and has agreed to allow CSRS to use their local NSFNET node. CSRS will begin an orderly transition to NSFNET as soon as the Extension Service equipment is ready for additional users. We plan to have CSRS staff fully operational on NSFNET by September 1, 1991. In the meantime, we have temporary access to NSFNET through an ARS node in Beltsville, Maryland. A number of SAES units already have access to NSFNET and ESCOP has established an ad hoc subcommittee to address electronic communications among SAES, CSRS, Extension and other Federal agencies. We will advise you as soon as we are ready to begin utilizing NSFNET through the Extension node.

13. CSRS Update: John Naegele has assumed the Hubbard Brothers Endowed Chair in biology at the University of New Hampshire. His many contributions to the system including regional research, strategic planning and communications have been greatly appreciated. The reassignment of his responsibilities has been discussed extensively both within and outside of CSRS and will be brought to closure in the very near future; he will continue certain assignments on a part-time basis. New staff who reported recently include Dr. Colien Hefferan, home economist, and Dr. Maurice Horton, soil scientist. For the NRI Competitive Grants Program, advertisements were out for an ecologist and a nutritionist. The closing dates for applications on both positions were in February.

14. Secretary Madigan: President Bush swore in Secretary Ed Madigan on March 12 as the new Secretary of Agriculture. In a Statement issued by former Secretary Yeutter, he says "Ed has been a long-time friend, and someone who knows all aspects of agriculture very well." He was born in Lincoln, Illinois and is a graduate of Lincoln College. He has been a member of Congress since 1973. He is currently ranking member of the House Committee on Agriculture and is a member of the Energy and Commerce Committee.

Respectfully submitted,



JOHN PATRICK JORDAN
Administrator

THE FOOD, AGRICULTURE, CONSERVATION,
AND TRADE ACT OF 1990 (FACT)

J.P. Jordan

The Congress has finished its better than one year effort aimed at re-writing the major farm legislation governing Agriculture. Of course this includes Title XIV of the Food and Agriculture Act of 1977 (Farm Bill) which addressed agricultural research and education.

This Act, Public Law 101-624, was signed into law on November 28, 1990. Major initiatives in the law include: Sustainable Agriculture, New Purposes for Agricultural Research, the National Research Initiative, New Products Research and Commercialization, and Facilities Review.

Implementation of some of the major provisions of the law is proceeding.

ACTION REQUESTED

Support and knowledge of the System's position on the various activities should the Farm Bill be opened up again in the current session of Congress.

INCLUDED DOCUMENTS

1. **Summary of Title XVI - 1990 Farm Bill.**
2. **Farm Bill Implementation Summary
Pages 1-8.**
3. **Section 2515 "Dole Amendment."
Page 9.**
4. **List of 12 High Priority Studies and Reports
identified pursuant to the "Dole Amendment."
Pages 10-12.**
5. **Language concerning new offices and organizations
inserted in the FY 91 Appropriations Act for
Rural Development, Agriculture, and Related
Agencies.
Page 13.**

THE 1990 FARM BILL
SUMMARY OF TITLE XVI
RESEARCH

The Research Title in The Food, Agriculture, Conservation, and Trade Act of 1990 is divided into eight subtitles:

- Subtitle A -- Extensions and Changes to Existing Programs
- Subtitle B -- Sustainable Ag Research and Education
- Subtitle C -- National Genetics Resources Program
- Subtitle D -- National Ag Weather Information System
- Subtitle E -- Food Safety Research
- Subtitle F -- Plant and Animal Pest and Disease
- Subtitle G -- Alternative Agricultural Research and Commercialization
- Subtitle H -- Miscellaneous Research Provisions

MAJOR INITIATIVES IN THIS FARM BILL

Sustainable Agriculture: Authorizes more than a ten-fold funding increase (\$400 million over five years) for sustainable ag to help farmers find methods to use less chemicals.

New Priorities for Agricultural Research: Requires the USDA to consider the environment, nutrition, water quality, and competitiveness when awarding research grants for the first time in history.

The National Initiative: Increases authorization (\$1.5 billion over five years) in competitive grants after a two decade period of level funding for research.

New Products Research and Commercialization: Establishes the Alternative Ag Research and Commercialization Center to develop new nonfood, nonfeed products from ag commodities.

Facilities Review: Mandates a comprehensive evaluation of ag research facilities to review closure, consolidation, and reinvestment of existing facilities.

** The full text of the Research Title and the accompanying report is printed in the October 22, 1990 Congressional Record, Part II.*

SUBTITLE A--EXTENSIONS AND CHANGES TO EXISTING PROGRAMS

1. Basic Program Authorizations

Agricultural Research Service (ARS) and related programs
\$850,000,000 for each FY 1991-1995

Cooperative State Research Service (CSRS)
\$310,000,000 for each FY 1991-1995

Extension Service (ES)
\$420,000,000 for FY 1991
\$430,000,000 for FY 1992
\$440,000,000 for FY 1993
\$450,000,000 for FY 1994
\$460,000,000 for FY 1995

The Smith-Lever Act is amended to require the Secretary to ensure that each college or university seeking to receive funds has in place appropriate requirements to minimize conflicts of interest among employees whose salaries are funded with such funds.

2. Current Program Extensions

The following research programs are extended until 1995: supplemental and alternative crops; rangeland; dairy goat; and critical materials.

Several research programs are also extended with amendments increasing or altering program authority. These programs include initiatives in: veterinary medicine; food and ag sciences education fellowships; production and marketing of alcohols and industrial hydrocarbons from ag commodities and forest products; 1890 land-grant colleges facilities construction and Centennial Centers; international ag science, education, and development authorities; and aquaculture. The National Ag Library is formally established.

3. Priority Setting

Purposes of the Ag Research and Extension System

A new statement of the purposes of the ag research and extension system is set forth: "Subject to the varying conditions and needs of States, Federally funded ag research and extension programs *shall* be directed to accomplish the following:

- continue to satisfy human food and fiber needs;
- enhance the long-term viability and competitiveness of the food production and ag system of the United States within the global economy;
- expand economic opportunities in rural America and enhance

- the quality of life for farmers, rural citizens, and society as a whole;
- improve the productivity of the American ag system and develop new ag crops and new uses for ag commodities;
 - develop information and systems to enhance the environment and the natural resource base upon which a sustainable ag economy depends; *or*
 - enhance human health by:
 - * fostering the availability and affordability of a safe, wholesome, and nutritious food supply that meets the needs and preferences of the consumer;
 - * assisting farmers and other rural residents in the detection and prevention of health and safety concerns."

The Secretary is directed to establish guidelines to ensure that the purposes expressed in this section are reflected in the priority setting processes for research and extension programs such that projects consistent with these purposes are emphasized and each of these purposes is advanced by the research and extension program in its entirety. The statement of purposes is not, however, intended to be used to prohibit any research or line of inquiry.

Advisory Boards

The Joint Council on Food and Ag Sciences, the National Ag Research and Extension Users Advisory Board, and the Animal Health Science Research Advisory Board are extended until 1995 with some amendment to their structure and responsibilities.

A new Ag Science and Technology Review Board is established. The purpose of the Board is to provide technical assessment of ag science issues and to consider the impact of technologies on ag and the social and economic wellbeing of communities.

4. The National Competitive Research Initiative

\$500,000,000 Initiative

The competitive grants program within CSRS is greatly expanded both in terms of funding authorization and the scope of projects eligible to receive grants.

Grants will be awarded in six high priority research areas: plant systems; animal systems; nutrition, food, quality, and health; natural resources and the environment; engineering, products, and processes including new uses and new products; and markets, trade, and policy. When appropriate, grants should emphasize sustainable ag. Awards are to be made to, among others: research teams from different areas of ag research and scientific disciplines; investigators who are beginning their research careers and do not have extensive publication records; and faculty from small and mid-sized institutions

who have not previously been successful in obtaining competitive grants under this section.

The Secretary is required to seek the advice of the Technology Assessment Board established in this title on policies, priorities, and operation of the competitive grants program.

The authorization for appropriations is set at \$150,000,000 for FY 1991; \$275,000,000 for FY 1992; \$350,000,000 for FY 1993; \$400,000,000 for FY 1994; and \$500,000,000 for FY 1995. Certain percentages are set aside for multidisciplinary teams that are proposing research on long-term applied research problems, with technology transfer a major component of all such grant proposals. A cap of 14% is placed on administrative costs for grants.

Special Grants

The grant recipient eligibility for the Special Grants program is broadened to include: State agricultural experiment stations; all colleges and universities; other research institutions and organizations; Federal agencies; private organizations or corporations; and individuals. A requirement that 90% of projects funded under special grants be for regional or national problems is also established.

SUBTITLE B--SUSTAINABLE AG RESEARCH AND EDUCATION

The purpose of this subtitle is to encourage research designed to increase our knowledge concerning ag production systems that:

- maintain and enhance the quality and productivity of the soil;
- conserve soil, water, energy, and natural resources, and improve fish and wildlife habitat conditions;
- prevent contamination of surface and groundwater;
- protect the health and safety of farmers, farmworkers, and consumers;
- maintain or increase the number of economically viable self-employment opportunities in ag; and
- promote the wellbeing of animals.

Chapter 1 -- Best Utilization of Biological Applications (BUBA)

This Chapter expands the current USDA LISA program established in the 1985 Farm Bill. The Secretary is directed to conduct research and extension programs that: reduce use of toxic materials in ag production; improve low-input farm management; and promote crop, livestock, and enterprize diversification. The program requires that farmers be involved in the development, implementation and evaluation of all projects receiving assistance. A Federal-State matching grant program is also established to encourage States to carry out sustainable ag programs and activities. The sum of \$40,000,000 annually is authorized to be appropriated through CSRS for this

chapter.

Chapter 2 -- Integrated Management Systems

In Chapter Two, the Secretary is directed to establish a program to enhance research and dissemination of information related to farming operations, practices, and systems that optimize crop and livestock production that are environmentally sound. Producers will be encouraged by the Secretary to adopt and develop individual, site-specific integrated crop management practices and resource management practices. Authorization is set at \$20,000,000 to be appropriated annually through the ES each FY 1991-1995.

Chapter 3 -- Sustainable Ag Technology Development and Transfer Programs

In Chapter Three, the Secretary is directed to develop technical guides, handbooks, and other educational material that describe farm production systems that foster sustainable ag production systems. Detailed information on selection of crops and varieties, rotation practices, tillage systems, nutrient management systems, soil building practices, pest, weed, and disease management, soil, water, and energy conservation, livestock management, and other information as well as practical instructions to aid producers in adapting such systems shall be provided. Such sums as necessary are authorized to be appropriated.

The Secretary is directed to provide education and training for Extension Agents and for other professionals involved in the education and transfer of technical information concerning sustainable ag. Regional training centers will be designated at existing institutions to provide intensive training for ag specialists. Competitive grants will be awarded to entities to conduct workshops to familiarize all other extension agents with basic knowledge on sustainable ag. All ag ES agents are to be provided with one of the two types of training in sustainable ag no later than 1995. Authorization is set at \$20,000,000 for Extension Service training for each FY 1991-1995.

SUBTITLE C--NATIONAL GENETICS RESOURCES PROGRAM

A new National Genetic Resources Program is established to provide for the collection, preservation, and dissemination of genetic material of importance to ag production. The program will be administered by the Secretary through ARS. A director shall be appointed and an advisory council to help administer the program.

Among other things, the program shall: make available upon request, without charge and without regard to the country from which such request originates, the genetic material which the program assembles; expand the types of genetic resources included in the program to develop a comprehensive genetic resources program which includes plants, animal, aquatic, insect, microbiological, and other types of genetic resources of importance to food and

agriculture, as resources permit; and provide an evaluation of the potential effect of various national laws and treaties on genetic resources. Such funds as are necessary are authorized for each FY 1991-1995.

SUBTITLE D--NATIONAL AG WEATHER INFORMATION SYSTEM

The National Ag Weather Information System is established to, among other things, facilitate the collection, organization, and dissemination of advisory weather and climate information relevant to ag producers and to provide for research and education on ag weather and climate aimed at improving the quality and quantity of information available to ag producers.

A USDA Ag Weather Office is established to plan and administer the National Ag Weather Information System and the activities of the State ag weather information systems. A permanent national advisory board on ag weather is established to advise the Director of the office. Authorization is set at \$5,000,000 for each FY 1991-1995.

SUBTITLE E--RESEARCH REGARDING THE PRODUCTION, PREPARATION, PROCESSING, HANDLING, AND STORAGE OF AG PRODUCTS

A new research program is established on the production, preparation, processing, handling, and storage of ag products. The Secretary is directed to conduct a research program that will:

- establish a statistical framework to measure the potential risk associated with microbial and chemical agents in or affecting ag products that seriously undermine product wholesomeness and fitness;
- identify any microbial or chemical agent under the statistical framework; and
- identify the means to avoid microbial and chemical agents in or affecting ag products or to control reduce microbiological and chemical agents.

The Secretary is also directed to establish an advisory committee to set research priorities for, and evaluate, proposed research projects on the production preparation, processing, handling and storage of ag products. Such sums as are necessary are authorized to be appropriated for each FY 1991-1995.

SUBTITLE F--PLANT AND ANIMAL PEST AND DISEASE CONTROL PROGRAM

The Secretary is directed to undertake Integrated Pest Management (IPM) research including research with Federal or State agencies and with private individuals or organizations to be conducted through the ES. A data base is established on available materials and methods of pest and disease

control listed by commodity involved and pest or disease being controlled, specifying currently available materials or methods of chemical, biological, cultural or other means of control and the extent of pest or disease resistance to controls. The USDA and State cooperative institutions are also authorized to conduct research on the control and eradication of exotic pests. Such sums as are necessary are authorized to carry out this subtitle.

SUBTITLE G--ALTERNATIVE AG RESEARCH AND COMMERCIALIZATION

The Secretary is directed to establish the Alternative Ag Research and Commercialization Center (AARCC) to be operated as an independent entity within USDA. The purpose of AARCC is to provide research and commercialization assistance in the development of new nonfood, nonfeed products derived from ag commodities in order to provide new markets for farmers, create jobs, enhance rural economic development, and diversify markets.

The Secretary shall appoint a Board to operate AARCC and the Board shall hire a Director. The Secretary is required to select research products to develop and produce new industrial products based on the recommendations of the Board. The projects shall be peer reviewed. Criteria for selection includes:

- the prospect of developing technologies that could make it possible to use or modify existing ag commodities to provide an economically viable quantity of new nonfood, nonfeed products;
- the potential market size of the new nonfood, nonfeed product, the likely time period needed to bring the product into the stream of commerce of general use, and the likely availability of the ag commodity used to produce the product;
- the potential for job creation in an economically distressed rural area;
- the anticipated State or local participation;
- the anticipated financial participation of private entities;
- the likely impact on reducing Federal crop subsidies and other Federal ag assistance program costs;
- the unavailability of adequate funding from other sources;
- the likely positive impact on resource conservation and the environment;
- the likely positive effect of helping family-sized farmers and rural communities near the affected ag and forested areas.

A minimum of two and not more than six Regional Centers may be established to assist AARCC. Regional Centers must be located at institutions which are involved in the development of new industrial uses for ag commodities, or in rural economic development.

A revolving fund is established to cover research and commercialization activities. All appropriated dollars as well as payments, fees, royalties, and

donations or other contributions are deposited into the Fund. From these sums, AARCC is authorized to provide low-interest loans, loan guarantees, interest subsidies, and matching grants to applicants.

Funds committed for any project shall in no case exceed two-thirds of the total cost of the project. A set-aside of not less than two-thirds of the funds each year shall be awarded for projects where the applicant has committed substantial funding and support and has entered into agreement with a U.S. company that also commits to provide funds for at least 20 percent of the total cost of the project. The Secretary is directed to ensure that a portion of the funds shall be used for the development and commercialization of new industrial products from nontraditional crops. Authorization is set at \$10,000,000 for FY 1990, \$20,000,000 for FY 1991; \$30,000,000 for FY 1992; \$50,000,000 for FY 1993, and \$75,000,000 for FY 1994-2000.

SUBTITLE H- MISCELLANEOUS RESEARCH PROVISIONS:

The Secretary is required to withhold 1% of the overall dollars spent on biotechnology research to fund projects on risk assessment relating to biotechnology in order to aid researchers and regulators in examining such issues.

A Commission is established to evaluate all ag research facilities. The Commission shall recommend to the Secretary and the Congress all facilities requiring closure, consolidation, and reinvestment. The Commission shall also recommend a rational decisionmaking process for future facility construction.

Several other miscellaneous research programs are established. Other programs:

- livestock product safety and inspection
- plant genome mapping
- agricultural telecommunications
- national centers ag product quality research
- a turkey research center
- reservation extension agents
- a special grant to study constraints on ag trade
- a pilot project to coordinate food and nutrition education programs
- an assistance technology program for farmers with disabilities
- specialized research programs

Specialized research programs will focus on:

- lean content of animal carcasses
- ethanol
- aflatoxin in the food and feed chains
- developing enhanced production methods and commercial uses of mesquite
- enhanced genetic selection and processing techniques of prickly

pears

- immunoassay used to detect residues and diagnose animal and plant diseases
- grants for development of ag production and marketing systems that will service niche markets in nearby metropolitan areas
- methods for detection, treatment, prevention, and control of scrapie
- deer ticks and other pests that transmit Lyme disease
- development of new commercial products derived from natural plant materials for industrial, medical, and ag applications

FARM BILL PROGRAMS
IMPLEMENTATION PLANS

<u>PROGRAM</u>	<u>AUTHORIZATION OF APPROPRIATIONS</u>	<u>IMPLEMENTATION PLAN</u>
Section 1608. Grants and fellowships for Food and Agricultural Higher Education	\$60M per FY	Funds appropriated in FY 91: Fellowships \$3.5M Chall. Grts \$1.5M Stngth. Grts \$2M proposed for FY 92.
Section 1609. Grants for Research on the Production and Marketing of Alcohols and Industrial Hydrocarbons from Agricultural Commodities and Forest Products	\$20M per FY	FY 91 Special Grant for Jojoba Oil and non-food agricultural products. S&E negotiated an MOU with DOE. FY 91 NRI has \$514K for Alcohol Fuels.
Section 1610. Food Science and Nutrition Research Center	"Such sums. . ."	Appropriation of \$800,000 in FY 91 Special Grant for Pennington Center at LSU. CSRS to administer in consultation with ARS.
Section 1611. Study of Animal Care Delivery System	None	Implementation on hold pending availability of appropriations.

<u>PROGRAM</u>	<u>AUTHORIZATION OF APPROPRIATIONS</u>	<u>IMPLEMENTATION PLAN</u>
Section 1612. Grant Programs for 1890 Land-Grant Colleges, including Tuskegee University --Resident Instruction --Upgrade Facilities --National Research and Training Centennial Centers	\$11M \$8M \$2M	CSRS Capacity Building Grants Program contains \$8.2M for research and resident instruction. Implementation on hold pending availability of appropriations. Implementation on hold pending availability of appropriations.
Section 1613. International Agricultural Science, Education, and Development and International Trade Development Centers	"Such sums"	FY 91 appropriation for International Trade Development Centers is 3.152M.
Section 1614. Aquaculture Research Facilities --Illinois State --VPI&SU	\$500,000 } If Secy \$500,000 } wants to do.	\$3.75M currently appropriated for existing Aqua- culture Centers. Further imple- mentation on hold pending availa- bility of appro- priations.
Section 1615. National Competitive Research Initiative	\$150M-FY91 \$275M-FY92 \$350M-FY93 \$400M-FY94 \$500M-FY95	\$73M appropriated in FY 91 and \$200M requested in FY 92.

<u>PROGRAM</u>	<u>AUTHORIZATION OF APPROPRIATIONS</u>	<u>IMPLEMENTATION PLAN</u>
<p>Subtitle B. Sustainable Agriculture Research and Education</p> <p>--Best Utilization of Biological Applications</p> <p>--Integrated Management Systems</p> <p>--Sustainable Agriculture Technology Development and Transfer Program</p>	<p>\$40M per FY thru CSRS</p> <p>\$20M per FY thru ES.</p> <p>"Such sums"</p>	<p>Existing LISA Program funds available in FY 91 are \$6.7M and funds requested in FY 92.</p> <p>Extension Service</p> <p>Extension Service</p>
<p>Subtitle C. National Genetics Resources Program (Plant, Animal, and Microbial)</p>	<p>"Such sums"</p>	<p>ARS is preparing documents for Secretarial clearance to appoint a director. Further implemen- tation plans are being developed to address the issue in future fiscal years.</p>
<p>Subtitle D. National Agricultural Weather Information System</p>	<p>\$5M per FY</p>	<p>To be determined. Responsibility for Agricultural Weather has been transferred to the AS for Science and Education.</p>
<p>Subtitle E. Research Regarding the Production, Preparation, Processing, Handling, and Storage of Agricultural Products</p>	<p>"Such sums"</p>	<p>FY 91 Special Grant for Animal Science Food Safety Consortium for \$1.845M. Other Food Safety Research is currently being done in both CSRS and ARS. Further implementation on hold pending availability of appropriations.</p>

<u>PROGRAM</u>	<u>AUTHORIZATION OF APPROPRIATIONS</u>	<u>IMPLEMENTATION PLAN</u>
Subtitle F. Plant and Animal Pest and Disease Control Program --IPM Program --IPM Implementation	"Such sums"	\$4M included in FY 91 Special Grants. Extension Service
Subtitle G. Alternative Agricultural Research and Commercialization	1. Revolving Fund 2. FY 91 \$10M FY 92 \$20M FY 93 \$30M FY 94 \$50M FY 95- 2000 \$75M	\$1.2M included in FY 91 for Supplemental and Alternative Crops. Further implementation is pending future appropriations.
Section 1668. Biotechnology Risk Assessment Research	"Such sums" with a one percent set-aside.	Pending. Currently under review.
Section 1670. Livestock Product Safety and Inspection Program	"Such sums"	This research is included in CSRS and ARS base programs and not identified as a separate line item.
Section 1671. Plant Genome Mapping Program	"Such sums"	ARS currently has more than \$3.5M appropriation. \$11M included as a part of the NRI in FY 91 and requested in FY 92. CSRS/ARS to administer.

<u>PROGRAM</u>	<u>AUTHORIZATION OF APPROPRIATIONS</u>	<u>IMPLEMENTATION PLAN</u>
Section 1672. Specialized Research Programs --Animal Lean Content Research	None	FY 91 Special Grant to Iowa for \$200K. ARS currently has \$5.7M in this research area.
--Ethanol Research	None	FY 91 Special Grant to ARK for \$100K. Funds included in NRI. S&E has negotiated an MOU w/ DOE. Peoria lab already renamed. ARS has \$563,000 in Alternative Fuels Research.
--Aflatoxin Research	None	FY 91 Special Grant to ILL for \$131K additional funds in RRF and Hatch & ARS has \$5.8M.
--Mesquite Research	\$100,000 per FY 91 thru 95.	Pending appropriations.
--Prickly Pear Research	\$100,000 per FY 91 thru 95.	Pending appropriations.
--Immunoassay Research	None	Included in CSRS and ARS base programs not identified separately.
--Niche Market Development	None	Pending appropriations.
--Scrapie Research	None	ARS currently has \$700K program.
--Deer Tick Ecology and Related Research	\$250,000	ARS currently has \$200K program.
--New Commercial Products from Natural Plant Materials	None	FY 91 Special Grant for Supplemental and Alternative Crops \$1.168M. Included in ARS base programs but not identified separately.

<u>PROGRAM</u>	<u>AUTHORIZATION OF APPROPRIATIONS</u>	<u>IMPLEMENTATION PLAN</u>
Section 1673. Agricultural Tele-communications Program	\$12M per FY	HEP Challenge Grant funding has been awarded in support of development of programming for AG-SAT.
Section 1674. Commission on Agricultural Research Facilities	"Such sums"	Implementation on hold pending availability of appropriations.
Section 1675. National Centers for Agricultural Product Quality Research	"Such sums"	Implementation on hold pending availability of appropriations.
Section 1678. Special Grant to Study Constraints on Agricultural Trade -- Report Required within 18 months of enactment	None	Implementation on hold pending availability of appropriations.

**OTHER FARM BILL TITLES WITH
IMPLICATIONS FOR CSRS**

ISSUE AREAS	SECTION	OTHER AGENCIES	LEAD AGENCY	KEY DATES
TITLE XII State and Private Forestry	1219 Forestry Advisory Council	ES, FS, local govt., State Foresters, academe, industry, & professional societies.	FS	Action Plan within one year of enactment; One year later a review of the plan is due.
SUBTITLE B - Research and Education	1231 Expresses the sense of the Congress relative to the McIntire-Stennis Research Program			

ISSUE AREAS	SECTION	OTHER AGENCIES	LEAD AGENCY	KEY DATES
	1232 Competitive Grants Program	Cooperative Forestry Council will provide recommenda- tions	CSRS	
CHAPTER 2 -- Specialized Research	1241(d) Forestry Research Needs Assessment	Secretary to respond to NRC report.	FS	5/28/91
	1243 Semi- Arid Agro- forestry Research Center	Secretary shall involve SAES and Land Grant colleges	FS	Unknown
TITLE XIV Conservation	1445 Assistance For Control of the Spread of Weeds and Pests	ES, SCS and State pest and weed control boards and SAES	SCS	
	1456 Composting Research and Extension Program	ES, ARS and CSRS	ES & ??	
SUBTITLE F-- Admini- stration of Environ- mental Programs	1471 Establish- ment of Agricultural Council on Environmental Quality	FS, SCS, ARS, CSRS, ES	Asst. Secy. for NR&E	1/31/92 Annual Report
	1483 State Water Quality Coordination Program	ARS, ASCS, APHIS, CSRS W/SAES, ERS, ES W/CES, FS, NAL, NASS, SCS.	Design- ated by SECY Cites the FAC's	
	1483(g) State and Regional Research Priorities	ARS, SAES, CSRS		

ISSUE AREAS	SECTION	OTHER AGENCIES	LEAD AGENCY	KEY DATES
	1485(b) Research Data Base-	ERS, ES, ESRS, NASS, SCS, USGS, EPA	NAL	Report to Con- gress within 270 days
	1497 Inter- Regional Research Project Number 4	EPA, Other USDA agencies	CSRS	Annual Report to Con- gress
	1499 Water Policy with Respect to Agrichemicals	ARS, ASCS, APHIS, CSRS W/SAES, ERS, ES W/CES, FS, NAL, NASS, SCS	OEQ	

(E) 50 vegetable seeds; and

(F) maple syrup.

(2) **ADMINISTRATIVE.**—The Secretary shall annually prepare a report containing results of the surveys described in paragraph (1) in such States as determined by the Secretary. Such reports shall be submitted to and officially approved by the Secretary of Agriculture before being issued or published.

(c) **TREE INVENTORIES.**—The Secretary shall survey producers for information for reports regarding fruit and nut tree inventories. Such surveys and reports shall be conducted, printed, and distributed on a regular basis every 3 to 5 years as determined by the Secretary. Reports shall be submitted to and officially approved by the Secretary before being issued or published.

(d) **CONFORMING AMENDMENTS.**—The proviso under the heading "Bureau of Crop Estimates" in the Act of March 4, 1917 (ch. 179; 39 Stat. 1157) and the first proviso under the heading of the "Bureau of Statistics" in the Act of March 4, 1909 (ch. 301; 35 Stat. 1053) (7 U.S.C. 411a) are repealed.

(e) **AUTHORIZATION.**—There are authorized to be appropriated such sums as may be necessary to carry out this section.

SEC. 2515. SCARCE FEDERAL RESOURCES.

Notwithstanding any other provision of this Act, to conserve scarce Federal resources, the Secretary of Agriculture may after concurrence with the Chairman and Ranking Member of the Committee on Agriculture, Nutrition, and Forestry of the Senate and the Chairman and Ranking Member of the Committee on Agriculture of the House of Representatives, rank by priority the studies or reports authorized by this Act and determine which of those studies or reports shall be completed. The Secretary shall complete at least 12 such studies or reports.

SEC. 2516. RECORDKEEPING IMPROVEMENT.

(a) **SHORT TITLE.**—This section may be cited as the "Agricultural Program Reporting and Recordkeeping Improvement Act of 1990".

(b) **GOAL.**—To the extent practicable, it shall be the goal of this section to bring about, within 3 years following the date of enactment of this Act, a substantial reduction in the volume of documentation, and in the amount of time devoted and the number of visits to Department of Agriculture offices, that are necessary to complete paperwork required of the typical producer participating in programs administered by the Secretary of Agriculture.

(c) **REPORTED.**—Not later than 240 days after the date of enactment of this Act, the Secretary of Agriculture (hereafter referred to in this section as the "Secretary") shall prepare and submit to the Committee on Agriculture of the House of Representatives and the Committee on Agriculture, Nutrition, and Forestry of the Senate a report containing specific proposals for reducing and simplifying the recordkeeping and other paperwork required of agricultural producers and cooperatives (hereinafter referred to in this section as "producers") who apply for participation in, or in complying with the requirements of—

(1) agricultural price and income support programs administered by the Secretary, including programs under the Agricultural Act of 1949 (7 U.S.C. 1421, et seq.);

**FARM BILL STUDIES AND REPORTS
RANKED PRIORITY #1**

STUDY NAME (AGENCY)	SECTION #	COMMENTS
Milk Inventory Management Program Report (ASCS)	Section 101	DUE: 8/01/91
Minnesota-Wisconsin Price Series Compilation of Data and Report Reform (AMS)	Section 103	DUE: Hearings must be announced not later than 10/01/91 (Data compilation must be complete before hearings.) Report is due after final decision on hearings proposals.
Response to National Research Council Report (FS)	Section 1241(d)	DUE: 5/28/91
Evaluation of Title XII Programs and Comprehensive Report (ERS/SCS)	Section 1444	DUE: 6/30/93
Plan for Awarding Plant Genome Mapping Grants (CSRS/ARS)	Section 1671(d)	DUE: 2/26/91
Review and Report on State Compliance with Regulations and Standards for Automated Data Processing (FNS)	Section 1763	DUE: 10/01/93
School Lunch Bonus Commodity and Trends Study and Report (FNS)	Section 1779(a); (c) (1) & (c) (3)	DUE: 10/01/91 (Interim Report) 10/01/93 (Final Report)
Estimate of Benefits and Costs Associated with Improved Grain Quality and a Related Finding (FGIS)	Section 2003 and 2005	DUE: As soon as practicable after enactment

OPERATIONAL REPORTS

STUDY NAME (AGENCY)	SECTION #	COMMENTS
Report on Commissions, Fees, or Other Compensation paid to Agents, Brokers or Other Representatives of Importers or Importing Countries (FAS)	Section 1512 [Sec. 407(b)(3)]	DUE: Annually
Export Assistance Report (FAS)	Section 1531 [Sec. 603]	DUE: Quarterly
National Research Initiative Reports (CSRS)	Section 1615	DUE: 1/01 Annually
Reports on Sustainable Agriculture Programs (CSRS/ES/ARS)	Section 1622(B)	DUE: 4/01/91 and Annually thereafter

MAKING APPROPRIATIONS FOR THE RURAL DEVELOPMENT, AGRICULTURE, AND RELATED AGENCIES PROGRAMS FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 1991, AND FOR OTHER PURPOSES

OCTOBER 20, 1990.—Ordered to be printed

Mr. WHITTEN, from the committee of conference,
submitted the following

CONFERENCE REPORT

[To accompany H.R. 5268]

The Committee of Conference on the disagreeing votes of the two Houses on the amendments of the Senate to the bill (H.R. 5268) making appropriations for the rural development, agriculture, and related agencies programs for the fiscal year ending September 30, 1991, and for other purposes, having met, after full and free conference, have agreed to recommend and do recommend to their respective Houses as follows:

That the Senate recede from its amendments numbered 23, 31, 51, 52, 53, 67, 69, 73, 78, 80, 81, and 82.

That the House recede from its disagreement to the amendments of the Senate numbered 9, 10, 21, 30, 33, 36, 40, 41, 59, 60, 63, 64, 65, and 66, and agree to the same.

Amendment numbered 1:

That the House recede from its disagreement to the amendment of the Senate numbered 1, and agree to the same with an amendment, as follows:

In lieu of the sum proposed by said amendment insert: *\$621,585,000*; and the Senate agree to the same.

Amendment numbered 3:

That the House recede from its disagreement to the amendment of the Senate numbered 3, and agree to the same with an amendment, as follows:

In lieu of the sum proposed by said amendment insert: *\$41,016,000*; and the Senate agree to the same.

Amendment numbered 4:

That the House recede from its disagreement to the amendment of the Senate numbered 4, and agree to the same with an amendment, as follows:

In lieu of the sum proposed by said amendment insert: *\$162,293,000*; and the Senate agree to the same.

TITLE VI—GENERAL PROVISIONS

TARGETED EXPORT ASSISTANCE PROGRAM

Amendment No. 76: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate with an amendment as follows:

Restore the matter stricken by said amendment, amended as follows: In lieu of the sum named, insert: *\$175,000,000*

The managers on the part of the Senate will move to concur in the amendment of the House to the amendment of the Senate.

The conference agreement restores House language on the targeted export assistance program amended to limit the program to \$175,000,000.

EXPORT ENHANCEMENT PROGRAM

Amendment No. 77: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate with an amendment as follows:

Restore the matter stricken by said amendment, amended as follows: In lieu of the second sum named, insert: *\$425,000,000*.

The managers on the part of the Senate will move to concur in the amendment of the House to the amendment of the Senate.

The conference agreement restores House language on the export enhancement program amended to limit the program to \$425,000,000.

Amendment No. 78: Restores House section number.

Amendment No. 79: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate with an amendment as follows:

In lieu of the section number stricken and inserted by said amendment, insert: *636. The Secretary shall use the authority available under section 32 and the Charter of the Commodity Credit Corporation to sell surplus agricultural commodities in world trade at competitive prices, as authorized by law, to regain and retain the United States' fair share of world markets.*

The managers on the part of the Senate will move to concur in the amendment of the House to the amendment of the Senate.

The conference agreement restores the House section number and states the Secretary's authority under law to sell surplus commodities in world trade at competitive prices.

Amendments No. 80 through 82: Restore House section numbers.

Amendment No. 83: Reported in technical disagreement. The managers on the part of the House will offer a motion to recede and concur in the amendment of the Senate with an amendment as follows:

In lieu of the section number stricken and inserted by said amendment, insert: *640. None of the funds in this Act may be used to establish any new office, organization or center for which funds have not been provided in advance in Appropriations Acts, except the Department may carry out planning activities.*

WESTERN AGRICULTURAL EXPERIMENT STATION DIRECTOR'S ASSOCIATION MEETING

Tucson, Arizona

April 1-5, 1991

U.S. FOREST SERVICE REPORT

FY 1992 President's Budget:

	<u>FY 1991</u>	<u>President's FY 1992</u>	<u>Change</u>
National Forest System	\$1,295,861,000	\$1,377,393,000	+ 6.3%
State and Private Forestry	182,416,000	215,582,000	+18.2%
RESEARCH	167,629,000	163,230,000	- 2.6%

The budget estimate for Forest Service research is down for FY 1992. The decrease is tied to our lack of success in convincing USDA of the need to maintain a vigorous forestry research program.

Recent budgeting strategy has been to package research programs as National Problems; i.e., "Global Change", "New Perspectives", etc., instead of budget line items; i.e., "Forest Management Research", "Forest Insect and Disease Research." See attached chart for the change from FY 1991 appropriations to FY 1992 President's Budget by National Problem.

Intermountain Research Station - Ogden, Utah:

Deputy Station Director Duane Lloyd will retire in May.

At the Intermountain Fire Sciences Laboratory in Missoula, our research program on fire suppression (aerial drop retardants, etc.) was closed due to lack of funding. At the same time, the other fire research units (behavior, effects, and chemistry) saw substantial budget increases related to the Global Change program.

The Intermountain and Rocky Mountain Stations have a joint Global Change research program with a Program Manager, Doug Fox, operating out of Fort Collins, Colorado. The Pacific Northwest and Pacific Southwest Stations have a similar arrangement.

The other major research emphasis area is "New Perspectives." The Station intends to work closely with the National Forest Systems Regions and the Universities of Idaho, Montana, and Utah State in developing both action and research components of the program.

Rocky Mountain Forest and Range Experiment Station - Fort Collins, Colorado:

Tom Hoekstra has been named Assistant Station Director for Research Programs, and Marcia Patton-Mallory, Assistant Station Director for Planning and Applications.

Pacific Northwest Research Station - Portland, Oregon:

PNW Station has changed the way it is organized to do research. Instead of having 27 individual research work units, the Station now has five Programs for Research, and six Research, Development and Application (RD&A) Programs. Research Programs provide a stable environment within which to conduct fundamental and long-term science. RD&A Programs encompass the full range of issues and products that the Station will address. All Programs are managed by Program Managers who, along with the Station Director and Deputies, form the Management Team for the Station. Programs respond to 13 Station Goals that are operationalized through the new organization and directed by a recently completed Station Strategic Plan. Copies of the Plan are available from PNW Station Headquarters in Portland, Oregon.

Consortium for the Social Values of Natural Resources organized--the consortium was formed by Oregon State University, the University of Washington, and the PNW Station to provide a multi-organizational and cross-disciplinary approach to the conduct, facilitation, and coordination of research, development, education and dialogue about social aspects of natural resources.

Copper River Delta Institute (CRDI) formed--the CRDI was initiated by the PNW Station and the Alaska Region of the Forest Service as ways to support and focus research, development, interpretation, and education efforts on the Copper River Delta ecosystems of Alaska. The coordinating effort includes private land owners, public land-managing agencies, native corporations, and special interest groups. The research program includes studies related to plant ecology, geology, animal behavior, wildlife, resource management, shore birds, hydrology and dynamics of estuarine systems as they relate to the Copper River Delta Ecosystem.

Blue Mountain Natural Resource Institute (BMNRI) organized--the BMNRI was organized to restore and maintain functioning of inland Northwest forest and range land ecosystem health and to improve understanding of the interactions among insects, disease, fire, and multiple-resource demands. The Institute is a partnership organization of the Pacific Northwest Research Station, Regions 6 and 3 National Forests, 12 county governments of eastern Oregon and Washington, Coordinated Tribes of the Umatilla, private landowners, Washington State University, Oregon State University, Eastern Oregon State College, National Audubon Society, Oregon Economic Development Council, local civic organizations, and private industry.

Pacific Southwest Research Station - Berkeley, California:

Former Station Director Ron Stewart was reassigned as Regional Forester-Region 5. Barbara Weber is Acting Station Director.

The Station has developed a long-term (30 day) weather forecasting system that is site specific and includes wind as well as precipitation and temperature. The system is used for fire weather forecasts, but it could be used in agricultural situations as well.

A Center for Conservation of Genetic Diversity has been established at the Institute of Forest Genetics in Placerville, California. This center provides research to respond to the need for information on and conservation of biodiversity of plant and animal species within forested environments.

FY 1992 President's Budget

National Problem Levels

	FY 91	FY 92	
	Approp	Pres. Budget	Percent Change
	-----	-----	
Tropical Forestry	3,756	6,322	+68
Forest Health Monitoring	1,417	1,522	+7
Recycling	782	813	+4
New Perspectives	12,701	8,131	-36
Global Change	22,677	25,420	+12
TE&S Species	7,092	5,963	-16
Water Quality	5,071	4,962	-2
Enhancing Rural America	13,594	11,890	-13
Foundation	100,539	98,207	-2
Total Budget	167,629	163,230	-3

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APPENDIX F
RESEARCH IMPLEMENTATION COMMITTEE
REPORT

RIC met Tuesday, April 2, 1991 at the Viscount Suite Hotel in Tucson, Arizona. Members present were: J. J. Zuiches (Chair), V. V. Volk, H. P. Rasmussen, R. S. Pardini, H. Binger (substituting for W. D. Carlson), L. E. Lassen, and J. van Schilfgaarde. Also participating were: L. L. Boyd and G. W. Ware.

1.0 THE FOLLOWING REGIONAL RESEARCH PROJECTS AND COORDINATING COMMITTEES ARE CURRENTLY SCHEDULED TO TERMINATE ON OR BEFORE SEPTEMBER 30, 1991

IR-001	Introduction, Preservation, Classification, Distribution and Evaluation of Solanum Species
IR-002	The Interregional Program for Collecting, Maintaining and Distributing Virus-Free Tree Fruit Clones
IR-005	Research Information Using the Current Research Information System (CRIS)
IR-006	National and Regional Research Planning, Evaluation, Analysis, and Coordination
* W-006	Plant Germplasm Introduction, Increase, Evaluation, Documentation, Maintenance and Distribution (see Agenda Item 3.1)
W-084	Biological Control in Pest Management Systems of Plants
* W-112	Reproductive Performance in Domestic Ruminants (see Agenda Item 3.2)
W-132	Genotype-Environment Interactions Related to End-Use Properties of Small Grains
W-133	Benefits and Costs in Natural Resource Planning
W-143	Nutrient Bioavailability--A Key to Human Nutrition
* W-157	Development of New and Improved Crops for Water Conservation in Arid Lands (see Agenda Item 7.2)
* W-160	The Physico-Chemical Basis for Managing Salt-Affected Soils (see Agenda Item 4.1)
W-173	Stress Factors of Farm Animals and Their Effects on Performance
W-174	Predicting the Nutritive Value of Alfalfa Hay in the Western Region
W-175	Consumer Health Influenced by Clothing and Household Fabrics
* W-176	Housing and Locational Decisions of the Maturing Population: Opportunities for the Western Region (see Agenda Item 2.1)
W-177	Domestic and International Marketing Strategies for U.S. Beef
* W-178	Water Management and Conservation in Western Irrigated Agriculture (see Agenda Item 2.2)
W-179	Marketing Alfalfa in the Western Region: Structural Analyses, Strategies and Issues
* W-x	Improving Data Quality and Methodology in Rural Social Sciences (see Agenda Item 4.2)
WRCC-24	Diseases and Pests of Grape Crops
WRCC-37	Maximizing the Effectiveness of Bees as Pollinators of Agricultural Crops
WRCC-40	Western Rangeland Research
WRCC-47	Climatic Data and Analyses for Applications in Agriculture and Natural Resources
WRCC-60	Resistance and Resistance Management to Pesticides in Pests and Beneficial Organisms
WRCC-62	Systems Based, Expert-Support Systems for Production Agriculture
WRCC-63	Rural Credit Systems in the West
WRCC-65	Adaptive Control of Surface Irrigation Systems
* WRCC-67	Sustainable Agriculture
WRCC-68	International Marketing
WRCC-70	Economic Impacts of the U.S.-Canada Trade Agreement
* WRCC-78	Genetic Variability in Cyst and Root-knot Nematodes of the Western Region
* WRCC-79	Grazing Animal Behavior and Nutritional Status of Domestic Ruminants
WRCC-x	Youth at Risk: Cultural Diversity and Its Influence
* WRCC-xx	Cool Season Food Legume Improvement (see Agenda Item 7.3)

* Requests were received and reviewed by RIC. Further action by the technical committee, RIC, WDA and/or the Committee of Nine is pending.

2.0 REQUESTS FOR PROJECT EXTENSIONS

2.1 W-176 Housing and Locational Decisions of the Maturing Population: Opportunities for the Western Region

A request for extension of W-176 to September 30, 1992 was received from Administrative Advisor K. Green (OR).

RIC recommends extension of W-176 "Housing and Locational Decisions of the Maturing Population: Opportunities for the Western Region" to 9/30/92.

(Action of WDA: One-year extension approved)

2.2 W-178 Water Management and Conservation in Western Irrigated Agriculture

A request for extension of W-178 to September 30, 1992 was received from Administrative Advisor G. Cunningham (NM).

RIC recommends extension of W-178 "Water Management and Conservation in Western Irrigated Agriculture" to 9/30/92.

(Action of WDA: One-year extension approved)

3.0 REQUESTS FOR PROJECT REVISIONS

3.1 W-006 Plant Genetic Resource Conservation and Utilization

A project outline with the above title was received from Administrative Advisor M. H. Niehaus (CO) on behalf of W-006.

RIC recommends approval of W-006 "Plant Genetic Resource Conservation and Utilization" for five years, from 10/1/91 to 9/30/96. Before the outline is submitted to the Committee of Nine, minor editorial changes are recommended.

(Action of WDA: Approved)

3.2 W-112 Reproductive Performance in Domestic Ruminants

A project outline with the above title was received from Administrative Advisor C. C. Kaltenbach (AZ) on behalf of W-112.

RIC recommends deferral to the summer meeting of the WDA to allow the committee to make substantive changes in the outline, addressing the RIC and reviewers' comments.

(Action of WDA: Deferral approved)

4.0 REQUESTS FOR ESTABLISHMENT OF NEW PROJECTS

4.1 W- Chemistry and Engineering to Minimize Irrigated Agriculture's Effects on Water Quality

A project outline with the above title was received from Administrative Advisor J. van Schilfgaarde (ARS-CO) on behalf of W-160 and WRCC-54.

RIC recommends approval of W- "Chemistry and Engineering to Minimize Irrigated Agriculture's Effects on Water Quality" for five years, from 10/1/91 to 9/30/96. Before the outline is submitted to the Committee of Nine, minor editorial changes are recommended.

(Action of WDA: Approved)

4.2 W- Improvement of Rural and Agricultural Sample Survey Methods

A project outline with the above title was received from Administrative Advisor J. J. Zuiches (WA) on behalf of W-x Improving Data Quality and Methodology in Rural Social Sciences.

RIC recommends approval of W- "Improvement of Rural and Agricultural Sample Survey Methods" for five years, from 10/1/91 to 9/30/96. Before the outline is submitted to the Committee of Nine, minor editorial changes are recommended.

(Action of WDA: Approved)

4.3 NRSP- National Planning and Coordination Project

A project outline with the above title was received from William H. Brown (Committee of Nine Chair).

RIC recommends rejection of NRSP- "National Planning and Coordination Project." RIC feels that the proposed activities can be done with present resources.

(Action of WDA: Rejection approved)

5.0 REQUESTS FOR ESTABLISHMENT OF AD HOC TECHNICAL COMMITTEES

None

6.0 REQUESTS FOR WRCC RENEWALS OR EXTENSIONS

6.1 WRCC-01 Beef Cattle Breeding Research in Western Region

A petition for three-year renewal of WRCC-01 was received from Administrative Advisor B. M. Jones (NV).

RIC recommends approval of renewal of WRCC-01 "Beef Cattle Breeding Research in Western Region" for three years, from 10/1/91 to 9/30/94.

(Action of WDA: Approved)

6.2 WRCC-27 Potato Variety Development

A petition for three-year renewal of WRCC-27 was received from Administrative Advisor H. P. Rasmussen (UT).

RIC recommends approval of renewal of WRCC-27 "Potato Variety Development" for three years, from 10/1/91 to 9/30/94.

(Action of WDA: Approved)

6.3 WRCC-66 Biology and Control of the Russian Wheat Aphid

A petition for three-year renewal of WRCC-66 was received from Administrative Advisor G. A. Lee (ID).

RIC recommends approval of renewal of WRCC-66 "Biology and Control of the Russian Wheat Aphid" for three years, from 10/1/91 to 9/30/94.

(Action of WDA: Approved)

6.4 WRCC-67 Evaluating Biological and Institutional Potentials, Inducements and Constraints in the Process of Transition to Sustainable Agriculture

A petition for three-year renewal of WRCC-67 was received from Administrative Advisor D. E. Schlegel (CA-S).

RIC recommends deferral of WRCC-67 "Evaluating Biological and Institutional Potentials, Inducements and Constraints in the Process of Transition to Sustainable Agriculture" to the summer meeting of the WDA to allow the committee to make substantive changes in the petition to conform to the recommended format as set forth in The Supplementary Manual of Procedures.

(Action of WDA: Deferral approved)

6.5 WRCC-69 Coordination of IPM Research Programs for the Semiarid Regions of the Western United States

A request for one-year extension of WRCC-69 was received from Administrative Advisor D. E. Schlegel (CA-S).

RIC recommends approval of extension of WRCC-69 "Coordination of IPM Research Programs for the Semiarid Regions of the Western United States" for one year, from 10/1/91 to 9/30/92.

(Action of WDA: Extension approved)

7.0 REQUESTS FOR ESTABLISHMENT OF NEW OR AD HOC WRCC'S

7.1 WRCC-78 Genetic Variability in Cyst and Root-knot Nematodes of the Western Region

A petition for establishment of WRCC-78 was received from Administrative Advisor S. D. Van Gundy (CA-R). This WRCC was established, pending receipt and approval of a formal petition, as an interim action by WDA Chair D. E. Schlegel after the revision of W-134 was rejected by the WDA at the June 1990 meeting.

RIC recommends deferral of WRCC-78 "Genetic Variability in Cyst and Root-knot Nematodes of the Western Region" to the summer meeting of the WDA to allow the committee to rewrite the objectives addressing the concerns of the RIC reviewer.

(Action of WDA: Deferral approved)

7.2 WRCC-79 Grazing Animal Behavior and Nutritional Status of Domestic Ruminants

A petition for establishment of WRCC-79 was received from Administrative Advisor C. C. Kaltenbach (AZ). This WRCC was established in October 1990, pending receipt and approval of a formal petition, as an interim action by WDA Chair D. E. Schlegel after the revision of W-151 was rejected by the Committee of Nine at their September 1990 meeting.

RIC recommends deferral of WRCC-79 "Grazing Animal Behavior and Nutritional Status of Domestic Ruminants" to the summer meeting of the WDA to allow the committee to rewrite the objectives as those required for a WRCC.

(Action of WDA: Deferral approved)

7.3 WRCC- Alternative Crops for the Western Region

A petition for establishment of a WRCC bearing the above title was received from Administrative Advisor M. H. Niehaus (CO) on behalf of W-157 "Development of New and Improved Crops for Water Conservation in Arid Lands."

RIC recommends approval of WRCC-80 "Alternative Crops for the Western Region" for three years, from 10/1/91 to 9/30/94.

(Action of WDA: Approved)

7.4 WRCC-xx Cool Season Food Legume Improvement

A petition for establishment of a WRCC bearing the above title was received from Directors G. A. Lee (ID) and J. J. Zuiches (WA). An ad hoc WRCC was approved in January 1991 as an interim action by WDA Chair G. A. Lee, pending receipt and approval of a formal petition.

RIC recommends deferral of WRCC-xx "Cool Season Food Legume Improvement" to the summer meeting of the WDA to allow the committee to submit the petition in the appropriate format.

(Action of WDA: Deferral approved)

8.0 FOLLOW-UP OF AD HOC TECHNICAL AND COORDINATING COMMITTEES

- 8.1 W-x Improving Data Quality and Methodology in Rural Social Sciences. See Agenda Item 4.2.
- 8.2 WRCC-x Youth at Risk: Cultural Diversity and Its Influence. The ac hoc WRCC was established in January 1991 as an interim action by WDA Chair G. A. Lee. The committee has not held a formal meeting.
- 8.3 WRCC-xx Cool Season Food Legume Improvement. See Agenda Item 7.4.

9.0 ADMINISTRATIVE ADVISOR ASSIGNMENTS

The following Administrative Advisor assignments are tentative, pending acceptance by the named candidates:

- 9.1 W-110 "Interactions Among Bark Beetles, Pathogens, and Conifers in North American Forests." G. Mason (FS-CA) and N. C. Toscano (CA-R), Co-AAs, to replace W. W. Allen (CA-B).
- 9.2 W-133 "Benefits and Costs in Natural Resource Planning." H. Vaux (CA-R) to replace J. M. Hughes (CO) and serve as Co-AA with E. Bell (FS-CA).
- 9.3 W-143 "Nutrient Bioavailability--A Key to Human Nutrition." J. Kinsella (CA-D) to replace M. J. Woodburn (OR).
- 9.4 W-167 "Work, Stress and Families." S. Helmick (OR) to replace S. G. Laughlin (CA-B).
- 9.5 W-173 "Stress Factors of Farm Animals and Their Effects on Performance." C. C. Kaltenbach (AZ) to replace L. J. Koong (OR).
- 9.6 W-174 "Predicting the Nutritive Value of Alfalfa Hay in the Western Region." R. S. Pardini (NV) to replace L. J. Koong (OR).
- 9.7 W-180 "Identification, Behavioral Ecology, Genetics and Management of African Honey Bees." G. H. Erickson (ARS-AZ) and G. W. Ware (AZ), Co-AAs, to replace W. W. Allen (CA-B).
- 9.8 WRCC-37 "Maximizing the Effectiveness of Bees as Pollinators of Agricultural Crops." G. H. Erickson (ARS-AZ) and G. W. Ware (AZ), Co-AAs, to replace W. W. Allen (CA-B).
- 9.9 WRCC-57 "Community Participation, Work, and Retirement Among the Elderly." S. Helmick (OR) to replace M. J. Woodburn (OR).
- 9.10 WRCC-60 "Resistance and Resistance Management to Pesticides in Pests and Beneficial Organisms." E. Bernays (AZ) and M. Jensen (AZ), Co-AAs, to replace S. Hoyt (WA).

- 9.11 WRCC-78 "Quantifying the Nematode Pest Management Decision Process." H. Ferris (CA-D) to replace S. D. Van Gundy (CA-R).
- 9.12 WRCC-79 "Grazing Animal Behavior and Nutritional Status of Domestic Ruminants." L. J. Koong (OR) and T. R. Dutson (OR), Co-AAAs, to replace C. C. Kaltenbach (AZ).

A replacement for the following WRCC is yet to be named:

- 9.13 WRCC-43 "Management of Codling Moth and Related Moths in the Orchard Ecosystem." Replacement needed for W. W. Allen (CA-B).

10.0 OTHER BUSINESS

10.1 The following items were discussed during the RIC meeting:

- (1) Official copies of regional projects approved by the Committee of Nine will be distributed by the DAL office to all Western SAES Directors to allow them to consider adding participants.
- (2) RIC requests that Administrative Advisors distribute meeting authorizations to all Western Agricultural Experiment Stations.
- (3) WRCC- petition objectives should address coordinating activities, rather than research activities. W- project objectives should not be career objectives and should be accomplished in a five-year period.
- (4) RIC is planning a one-day meeting, in either Denver or Salt Lake City, in the week prior to the July 21-26, 1991 Joint Summer meeting to consider proposals and petitions. The May 15, 1991 deadline for RIC agenda items is firm.
- (5) During the summer meeting, second and fourth year reviews of qualifying projects and coordinating committees are conducted. For the reviews, the following documents are needed: AA evaluations, minutes, and annual reports for the regional projects; AA evaluations and minutes for the coordinating committees.

Administrative Advisor Assignments							
Administrative Advisor	Projects			Western Research Coordinating Committees			
	Western Regional		IR				
Arnold, R. G. (OR)	W-122						
.. Ax, R. (AZ)					WRCC-39+		
.. Barron, J. (WA)					WRCC-63+		
• Bell, E. (FS-CA)	W-133+						
.. Bernays, E. (AZ)					WRCC-60+		
Boyd, L. L. (DAL)				IR-007+			
Briggs, D. M. (NM)	W-171	W-179		IR-005+	WRCC-72+		
.. Brink, K. M. (CO)					WRCC-11+		
.. Card, C. (AZ)	W-102+						
Cunningham, G. (NM)	W-178						
Dutson, T. R. (OR)	W-166	W-177			WRCC-17+	WRCC-58+	WRCC-79+
• Erickson, G. H. (ARS-AZ)	W-180+				WRCC-37+		
.. Ferris, H. (CA-D)					WRCC-24+	WRCC-78+	
Gale, A. (WY)					WRCC-21	WRCC-40+	
.. Goetz, H. (CO)					WRCC-55+		
Green, K. (OR)	W-176						
.. Harwood, R. (WA)					WRCC-63+		
Heil, R. D. (WY)	W-155						
Helmsch, R. (ID)	W-168				WRCC-xx		
Helmick, S. (OR)	W-167				WRCC-57		
.. James, L. (WA)					WRCC-65+		
Jensen, M. (AZ)					WRCC-60+		
Jones, B. M. (NV)					WRCC-01		
Kaltenbach, C. C. (AZ)	W-102+	W-112	W-173		WRCC-39+	WRCC-74+	
Kefford, N. P. (HI)	W-082						
Kinsella, J. (CA-D)	W-143				WRCC-51+		
Koller, L. D. (OR)					WRCC-46		
.. Koong, L. J. (OR)					WRCC-79+		
.. Ladd, S. (OR)					WRCC-61+		
.. Laycock, W. A. (WY)					WRCC-40+		
Lee, G. A. (ID)	W-106	W-147	W-170		WRCC-66+	WRCC-77	
Lund, L. J. (CA-R)					WRCC-30		
Lyons, J. M. (CA-D)	W-164+						
.. Martin, M. V. (OR)					WRCC-68+	WRCC-70+	
• Mason, G. (FS-CA)	W-110+						
Mathre, D. E. (MT)					WRCC-29		
McHugh, H. F. (CO)	W-160+	W-175	W-182	IR-006+	WRCC-11+	WRCC-55+	
Mitchell, G. A. (AK)	W-126						
.. Nelson, M. R. (AZ)					WRCC-20+		
Niehaus, M. H. (CO)	W-006	W-157			WRCC-80		
.. O'Keefe, L. E. (ID)					WRCC-66+		
Pardini, R. (NV)	W-174	W-181					
Rasmussen, H. P. (UT)	W-150	W-154+			WRCC-27		
• Reginato, R. J. (ARS-CA)	W-154+				WRCC-62+		
					WRCC-59+		

Administrative Advisor Assignments								
Administrative Advisor	Projects			Western Research Coordinating Committees				
	Western Regional		IR					
Schlegel, D. E. (CA-B)					WRCC-62+	WRCC-67	WRCC-69+	
•• Schulz, J. (AZ)					WRCC-74+			
Seiber, J. N. (CA-D)	W-130				WRCC-24+	WRCC-51+	WRCC-78+	
•• Smith, O. E. (OR)					WRCC-69+			
•• Studer, H. (CA-D)					WRCC-51+			
•• Thompson, J. (WA)					WRCC-23+			
Toscano, N. C. (CA-R)	W-084	W-110+			WRCC-42	WRCC-71+		
• van Schilfgaarde, J. (ARS-CO)	W-160+	W-164+						
•• Vaux, H. (CA-R)	W-133+				WRCC-71+			
Volk, V. V. (OR)	W-128	W-132		IR-001+	WRCC-61+	WRCC-68+	WRCC-70+	
Ware, G. W. (AZ)	W-045	W-169	W-180+	IR-004+	WRCC-20+	WRCC-37+	WRCC-47+	WRCC-59+
•• Weiser, C. J. (OR)					WRCC-17+	WRCC-58+		
•• Wieranga, P. J. (AZ)					WRCC-47+			
Zuiches, J. J. (WA)	W-118	W-Data Quality		IR-002+	WRCC-23+	WRCC-65+	WRCC-76	

-
- USDA research administrators
 - Other research administrators
 - + Designates Co-Administrative Advisor in a project with Co-Advisors

FY92 BUDGET COMMITTEE

The FY92 Budget Committee of ESCOP communicated by telephone prior to the meeting of the Division of Agriculture's FY92 Budget Committee. The group pushed for: formula funds, funding for all six topics within NRI, restoration of dollars for animal health, enhanced funds for pesticide clearance, and funds to develop a competitive program for facilities. The final agreement resulting from deliberations at the Division level are given below.

	FY91 APPRO- PRIATIONS	FY92 EXECUTIVE REQUEST	FY92 NASULGC RECOMMEN- DATIONS
BASE PROGRAMS			
Hatch Act	162,293	168,298	174,465
McIntire-Stennis Act	17,820	12,975	21,000
Evans-Allen	26,346	27,321	28,322
Animal Health	<u>5,551</u>	<u>0</u>	<u>5,967</u>
Total Base Programs, Research	212,010	208,594	229,754
RESEARCH GRANTS			
<i>Competitive Grants (Sec. 2b - NRI)</i>			
Natural Resources & Environment	14,000	23,000	50,000
Nutrition, Food Quality & Health	4,000	13,000	25,000
Plant Systems	35,000	53,000	56,000
Animal Systems	20,000	30,000	38,000
Engineering Processes & Value-Added Products	0	4,000	20,000
Markets, Trade & Rural Revital.	<u>0</u>	<u>2,000</u>	<u>11,000</u>
Total Competitive Grants	73,000	125,000	200,000
<i>Special Grants</i>			
National Programs			
Animal Health	b	b	6,000
Aquaculture Research General	656	0	656
Biofuels	-	-	10,000
Pest Control Strategies			
Integrated Pest Management	4,000	5,000	7,500
Pesticide Clearance	3,000	3,000	6,000
Pesticide Impact Assessment	2,968	3,000	3,265
Minor Use Animal Drugs	450	429	450
Biological Impact Assessment	300	300	330
Rural Development Centers	500	0	550
Tropical & Subtropical Agric.	3,320	0	3,629
Water Quality & Management	8,000	10,000	15,000
Global Change Monitoring	<u>b</u>	<u>5,000</u>	<u>5,000</u>
SUBTOTAL SPECIAL GRANTS	23,194	26,729	58,380
SUBTOTAL REGIONAL SPECIAL GRANTS	14,667	0	14,667
SUBTOTAL SPECIAL PROBLEM GRANTS	24,115	0	24,115
Total Special Grants	61,976	26,729	97,162
GRAND TOTAL RESEARCH GRANTS	134,976	151,729	297,162

^bIncorporated within the National Research Initiative (NRI).

Other Research Programs

Rangeland	475	0	475
Aquaculture Centers	3,750	0	4,073
Supplemental & Alternative Crops	1,168	918	1,168
Internat'l. Trade Develop. Cntrs	3,152	0	3,152
Critical Materials	800	0	0
Sustainable Agriculture	<u>6,725</u>	<u>4,450</u>	<u>6,725</u>
Total Other Research Programs	16,070	5,368	15,593
Federal Administration, Direct	17,933	12,992	12,992
1890 Capacity Building Grants	<u>(8,250)</u>	<u>(11,000)</u>	<u>(11,000)</u>
Net Federal Administration	9,683	1,992	1,992
Agricultural Research Facilities Grants Program	<u>--</u>	<u>25,000</u>	<u>25,000</u>
GRANT TOTAL RESEARCH	372,739	392,683	569,501

F93. OP.WK1 March 29, 1991 FY93 ESCOP Budget Development Group Worksheet
 Table 1. Federal Funding of State Agricultural Experiment Stations and Affiliate Groups
 Through CSRS/USDA (Thousands of Dollars)

Funds/Grants/Authorizations	FY1991 Approp	% Inc ovr90app	FY1992 Exec	% Inc ovr91app	NASULGC92 Response	% Inc ovr91app	ESCOP93 Initial	% Inc ovr92r	Commentary/Explanation
BASE RESEARCH PROGRAMS									
Hatch Act	162,293	4.7%	168,298	3.7%	174,465	7.5%	188,422	8.0%	
McIntire-Stennis Act	17,820	3.1%	12,975	-27.2%	21,000	17.8%	25,000	19.0%	
Evans-Allen Program	26,346	5.3%	27,321	3.7%	28,322	7.5%	30,588	8.0%	
Animal Health (Sec 1433)	5,551	2.7%	0	-100%	5,967	7.5%	6,444	8.0%	
Subtotal	212,010	4.6%	208,594	-1.6%	229,754	8.4%	250,454	9.0%	
RESEARCH GRANTS (89-106)b									
Special Grants (Sec c)	61,976	11.0%	26,697	-56.9%	97,162	56.8%	115,932	19.3%	
Competitive Grants (Sec b)	73,000	71.7%	125,000	71.2%	200,000	174.0%	300,000	50.0%	
Subtotal	134,976	37.2%	151,697	12.4%	297,162	120.2%	415,932	40.0%	
OTHER AUTHORIZATIONS									
Rangeland (95-113)	475	1.3%	0	-100%	475	0.0%	513	8.0%	
Critical Materials (98-284)	800	-84.9%	0	-100%	0	-100%	0	0.0%	
Aquaculture Centers (95-113)	3,750	1.3%	0	-100%	4,073	8.6%	4,073	0.0%	
Agricultural Productivity/c (98-198)	6,725	53.0%	4,450	-33.8%	6,725	0.0%	7,263	8.0%	
Alternative Crops (95-113)	1,168	263.9%	918	-21.4%	1,168	-100%	1,168	0.0%	
International Trade Develop- ment Centers (95-113)	3,152	1.3%	0	-100%	3,152	0.0%	3,152	0.0%	
1890 Institutions Centers of Excellence - 1990 Farm Bill							2,000	Inf	
1890 Facilities Grants	16,070	-7.1%	5,368	-66.6%	15,593	-3.0%	26,169	67.8%	
Subtotal									
FEDERAL ADMINISTRATION									
Direct Federal Administration	1,363	16.3%	1,992	46.1%	1,992	46.1%	2,151	8.0%	
1890 Capacity Building Grants/c	[8,250]	51.9%	[11,000]	33.33%	[11,000]	46.7%	to HED	0.0%	
Competitive Facilities Grants	8,320	19.2%	0	-100%	25,000	0.0%	25,000	0.0%	
Other	9,683	18.8%	26,992	178.8%	26,992	178.8%			
Subtotal									
TOTAL	372,739	14.1%	392,651	5.3%	569,501	52.8%	692,555	21.6%	
Total Less Competitive Grants	299,739	5.5%	242,651	-19.0%	344,501	14.9%	367,555	6.7%	
Percent change	14.14%		5.34%		52.79%		21.61%		
Excluding Competitive Grants	5.53%		-19.05%		14.93%		6.69%		
	ovr90app		ovr91app		ovr91app		ovr92NASULGCr		032991

Table 2. Special Grants (PL 89-106, Sec NASULGC response to the Executive Budget proposal-2/19/91

Funds/Grants/Authorizations	FY1991 Approp	% Inc over90	FY1992 Exec	% Inc over91	ASULGC9 Response	% Inc over91	ESCOP93 Initial	% Inc	Commentary/Explanation
CONTINUING NATIONAL RESEARCH PROGRAMS/a									
Animal Health (sec 1414)	0		0		6,000		6,480	8.0%	.....
Aquaculture Research(General)	656		0	-100.0%	656		2,000	204.9%	.....
Global Change	0		5,000	inf	5,000		8,000	60.0%	.....
Biofuels					10,000		10,800	8.0%	.....
Pest Control Strategies	[10,418]		[11,397]	9.4%	17,215		25,000	45.2%	.....
Integrated Pest Management	4,000		5,000	25.0%	[7500]		[12,000]	60.0%	.....
Pesticide Impact Assessment	2,968		2,968	0.0%	[3265]		[3,500]	7.2%	.....
Pesticide and Drug Clearance									.....
Minor Use Animal Drugs	450		429	-4.7%	[450]		[500]	11.1%	.....
Pesticide Clearance	3,000		3,000	0.0%	[6000]		[9,000]	50.0%	.....
Nat Biological Impact Assessment	300		300	0.0%	330		356	8.0%	.....
Rural Development Centers	500		0	-100.0%	550		594	8.0%	.....
Tropical and Subtropical	3,320		0	-100.0%	3,629		3,919	8.0%	.....
Water Quality/d	8,000		10,000	25.0%	15,000		20,000	33.3%	.....
Subtotal-National/Regional	23,194		26,697	15.1%	58,380		77,150	32.2%	.....
Other Regional/National/e	14,667		0	-100.0%	14,667		14,667	0.0%	.....
State Special Problems Research	24,115		0	-100.0%	24,115		24,115	0.0%	.....
TOTAL	61,976		26,697	-56.9%	97,162		115,932	19.3%	.....
Percent change	ovr90app		ovr91app		ovr91app		ovrNASULGCt		032991
			-56.92%		56.77%		19.32%	

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March 29, 1991

ESCOP FY93 Budget Development Group Worksheet

Table 3. Competitive Research Grants (PL 89-106, Sec b), Thousands of Dollars/a

Funds/Grants/Authorizations	FY1991 Approp	% Inc 91/90	FY1992 Exec	% Inc ovr91	NASULGC92 Response	% Inc ovr91	ESCOP93 Initial	% Inc ovr91	Commentary ESCOP Response
National Research Initiative	14,000	n.a.	23,000	64.3%	50,000	257.1%	70,000	40.0%	
Natural Resources & the Environment	4,000	n.a.	13,000	225.0%	25,000	525.0%	40,000	60.0%	
Nutrition, Food Quality & Health	35,000	n.a.	53,000	51.4%	56,000	60.0%	75,000	33.9%	
Plant systems	20,000	n.a.	30,000	50.0%	38,000	90.0%	60,000	57.9%	
Animal Systems	0	n.a.	4,000	Inf	20,000	Inf	35,000	75.0%	
New Products & Processes	0	n.a.	2,000	Inf	11,000	Inf	20,000	81.8%	
Markets, Trade & Rural Revitalization									
TOTAL	73,000		125,000	71.2%	200,000	174.0%	300,000	50.0%	
Percent change	ovr90GRH	71.68%	ovr91app	71.23%	ovr91app	173.97%	ovr91app	50.00%	ovrNASULGCr
									032991

FUNDING INCREASE REQUEST FOR 1993

CSRS Rangeland Research Grants Program

JUSTIFICATION

Range and pasture lands are found in every state and cover 55% of the land surface area of the U.S. and about 80% of the western states. This represents an area of more than 1 billion acres. These lands encompass native grassland, shrubland, desert, tundra, mountain, coastal marsh, wet meadow, and some forest ecosystems. These diverse lands provide a variety of products including: forage for wildlife and domestic livestock, water for irrigation and our cities, mineral and energy resources, and recreation for a growing population. In addition, these areas are critical in maintaining the biological diversity of a wide array of both plants and animals.

By their very nature, range and pasture lands are typically fragile lands subject to erosion and desertification if not properly managed. These lands serve a diverse group of constituents that have various, even conflicting, ideas about how these important resources should be managed. Frequently, research information is lacking or non-existent concerning the wise management of these lands for sustainable use. Consequently, increased funding for additional range and pasture research is required.

EXPECTED BENEFITS

Increases in the basic knowledge of fundamental processes involving the relationships of various plants and animals to the soil, water, and other ecosystem components of these lands will fill critical knowledge gaps. A thorough understanding of these important relationships will aid in the optimum management of range and pasture lands. This knowledge will allow sustainable use of these lands and will prevent erosion and degradation of these valuable resources.

RECOMMENDATION

The CSRS Rangeland Research Grants Program has been successful in funding critical research required for the wise management and use of our rangelands. This relatively small Program (less than \$0.5 million) has funded a wide variety of high priority rangeland research projects conducted by scientists at various colleges and universities, State agricultural experiment stations, and Federal research laboratories. The most promising proposals are selected competitively for funding by peer panels of leading scientists.

Typically about 10% of the submitted proposals are funded. As a result, many high priority proposals cannot be funded, and progress in filling critical knowledge gaps is impeded. To alleviate this severe impediment, funding for the CSRS Rangeland Research Grants Program should be increased to \$3 million in 1993.



NATIONAL INITIATIVE

for Research on Agriculture, Food and Environment

1992

A proposed federal research program supported by



Coalition for Advancement of Research on Agriculture, Food and Environment



CARAFE

The Coalition for Advancement of Research on Agriculture, Food and Environment links institutional and industrial advocates for the National Initiative. More than 130 organizations are members of the rapidly growing coalition. Numerous umbrella organizations represent broad constituencies of individual industry, society or institutional membership.

Membership involves the following groups:

- Conservation and environmental groups.
- Farm and commodity organizations.
- Agribusiness associations and members.
- Consumer organizations.
- Food processing, manufacturing and retailing associations and members.
- Professional and scientific societies.
- National Association of State Universities and Land-Grant Colleges.
- Other organizations representing higher education at the national level.
- State-level grass roots constituencies

For further information, contact:

Dr. Neville P. Clarke
CARAFE Coordinator
The Texas A&M University System
System Building, Room 308
College Station, TX 77843-2129
409/845-2855



Accepted Benefits

National initiative addresses the quality of health and well being of every U.S. citizen. Accepted benefits from the national research initiative include a sounder environment, a safer supply and a continuing affordable supply of cultural products.

Specific Results

- Research funded through the new national initiative will provide:
- Answers to consumer concerns about food safety, quality and adequacy.
- New knowledge on resource conservation and a gri-environmental optimization, including water quality and global climate change.
- Systems technology to integrate goals of sustainability, profitability and food safety/quality.
- Increased international competitiveness by reducing production costs, enhancing quality and increasing net farm income.
- New domestic and international markets by developing alternative uses and adding value to raw products.
- A proactive posture relative to risks and crises in the food and agricultural system.
- A 30 percent or more annual rate of return on the new investment.
- Top-quality scientists and students attracted to agriculture, food and environmental issues.

funding for FY 1992 at \$200 million. This will accelerate the growth of the initiative particularly in (1) new products and adding value and (2) markets, trade and policy. These are areas deemed to be of overriding importance by Users Workshops. This would also substantially boost the level of funding for research on other areas of recognized urgency in the food and forestry industries and among environmentalists and consumer groups such as natural resources and environment and nutrition, food quality and health.

Fully funded, the NRI would shift the percentage of funds awarded competitively by the USDA from less than three to about 30 percent, bringing improved balance between this and other mechanisms for funding.

The following table shows proposed funding for the NRI for the six major areas of effort. The USDA proposal for the fully funded initiative, the existing FY 1991 program and the President's proposal for FY 1992 are shown in the first three columns. The CARAFE (and NASULGC) proposal for FY 1992 is shown in the last column on the right.

The program draws on the general framework of the NAS report and on consensus-based planning by both the users and performers of research. Scientists in all academic institutions, federal agencies and not-for-profit organizations are eligible to compete. The intent is to bring excellent science to bear on the problems of the food, agriculture and forestry industries from the broadest possible sources.

The NAS report "Forestry Research: Mandate for Change," calls for broad enhancement of funding for this industry and its related environmental and economic issues. The competitive grants component of the Forestry Initiative is contained in the plan for the National Research Initiative under several of the six areas.

The program structure will continue to be based on strategic planning and annual revision with input from User and Scientist Workshops.

Proposed Funding

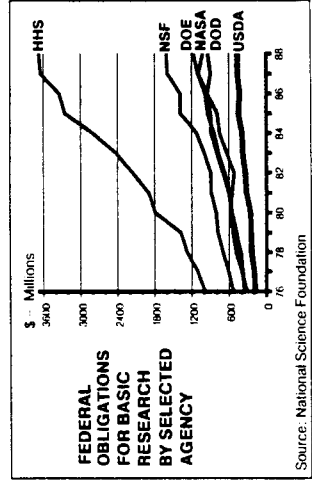
The Coalition for Advancement of Research on Agriculture, Food and Environment (CARAFE), a network of advocates for the NRI, proposes

Program Area	Program Plan	Current FY91	President's FY92	CARAFE FY92
Natural resources and environment	\$ 125	\$ 14	\$ 23	\$ 50
Nutrition, food quality, and health	85	4	13	25
Processes and new products	55	--	4	20
Markets, trade, and policy	30	--	2	11
Plant systems	125	35	53	56
Animal systems	100	20	30	38
TOTAL	500	73	125	200

the urgency of need that generates a compelling "here and now" call for action.

Issues of crisis proportions are evident at the intersection of agriculture and the environment, with the safety and wholesomeness of food and with the need for food and fiber (including forestry) industries to regain and enhance their international competitiveness. The prime way to address these issues is through an infusion of new technology that can only come from new investments in research and development. To achieve this, we must sustain and accelerate the growth of this initiative; we must achieve the new funding level of \$500 million per year as soon as possible.

Funding for food, agriculture and forestry research has stagnated for almost twenty years and fallen far short of needs and investments by the federal government in other areas of science as shown in graph below. At the same time, a broader set of urgent needs extending past the limits of traditional agricultural research must be addressed in the areas of environment, food and general human well being. Clearly, we cannot meet needs by redirecting inadequate funds from existing to new programs; the initiative must be based on new funding and should be accompanied by appropriate growth in existing related base programs in research and extension.



Source: National Science Foundation

National Initiative

The National Initiative for Research on Agriculture, Food and Environment (NRI) is a Presidential Initiative started in FY 1991. It calls for major new funding for USDA sponsored research as recommended in separate reports on agriculture and forestry by the National Academy of Sciences (NAS).

The 1990 Farm Bill authorizes new funding of the initiative at \$500 million per year; and the Office of Management and Budget supports the growth of the initiative to full funding. The USDA Program Plan describes the fully funded initiative and its phased growth in FY 1992 and thereafter.

The USDA has proposed funding all six of the broad areas of need proposed by the NAS in FY 1992, as shown in the Proposed Funding table at the right. Four types of grants will be awarded: individual investigator, multi-disciplinary team grants, mission linked research and strengthening grants. Seventy percent of the program will be for targeted fundamental research and 30 percent for more applied research and institution building. Grants will be awarded on the basis of relevance and merit.

The NAS recommendations, supported by national commodity and farm organizations, scientific societies and academic institutions, call for continuation and growth of current programs in agriculture and forestry research and extension. In the otherwise generally "net-sums environment" of the 1990 Budget Resolution, it is highly significant that the President's budget proposal calls for growth of the NRI from \$73 to \$125 million in FY 1992 and eventual growth to \$500 million. This shows growing recognition of

National Initiative for Research on Agriculture, Food and Environment, FY 1992

The National Initiative for Research on Agriculture, Food and Environment (NRI) is a Presidential Initiative, proposed by the National Academy of Sciences and authorized by the Congress as a \$500 million increase in competitive grant funding. It was initiated in FY 1991, and funding will be increased over several years.

The Initiative Provides

- Answers to concerns about food safety and quality.
- New knowledge on resource conservation, agri-environmental optimization, including water quality and global change.
- Systems technology to integrate goals of sustainability, profitability and food safety/quality.
- Increased international competitiveness by reducing production costs, enhancing quality and increased net farm income.
- New markets by developing alternative uses and adding value to raw products.
- A proactive posture relative to risks and crises in the food and agricultural system.
- Thirty percent or more annual rate of return on the new investment.
- Top quality scientists and students committed to agriculture, food and environmental issues.

U.S. Food, Agriculture and Forestry System



Status of the Initiative

- Presidential Initiative.
- Recommended by House and Senate Budget Committees.
- Authorized at \$500 million per year (1990 Farm Bill).
- FY 91 appropriations of \$73 million.
- Future year commitment by USDA and OMB.
- Active advocacy for FY 1992 continuation.

CARAFE

Coalition for Advancement of Research on Agriculture, Food and Environment

- Conservation and environmental groups.
- Farm and commodity organizations.
- Agribusiness associations and members.
- Consumer organizations.
- Food processing, manufacturing and retailing associations and members.
- Professional and scientific societies.
- National Association of State Universities and Land Grant Colleges.
- Other organizations representing higher education.
- National Association of State Departments of Agriculture.
- State-level grass roots constituencies.
- The Council for Research, Extension and Teaching.

Proposed Funding for FY 1992 (\$/year x million)

Program Area	Program Plan	FY 1991 Actual	President's FY 1992 Budget	NASULGC/CARAFE-92
Natural resources and environment	\$140	\$14	\$23	\$50
Nutrition, food quality and health	62	4	13	25
New products and value added	45	-	4	20
Markets, trade, and rural revitalization	30	-	2	11
Plant systems	128	35	53	56
Animal systems	95	20	30	38
TOTAL	500	73	125	200

**ALTERNATIVE PEST CONTROL
CONTAINMENT AND QUARANTINE
FACILITIES FOR CALIFORNIA:
ASSESSMENT OF NEEDS**

DIVISION OF AGRICULTURE AND NATURAL RESOURCES
UNIVERSITY OF CALIFORNIA

MAY 1, 1991

**ALTERNATIVE PEST CONTROL CONTAINMENT AND QUARANTINE
FACILITIES FOR CALIFORNIA:
ASSESSMENT OF NEEDS**

Executive Summary

May 1, 1991

For the past decade or so scientists throughout the country have been shifting their focus with increasing intensity toward biological and integrated approaches to pest problems. This trend is placing ever increasing demands for quarantine facilities and service to meet the needs of biological control introductions. Availability of modern quarantine and containment facilities in California and the Western Region are grossly inadequate to meet either the short- or long-term research needs for developing the necessary alternative pest management strategies.

The report presented here identifies high priority research needs in California and the nation that urgently require specialized quarantine and containment facilities in order to safely and efficiently develop the alternative pest management systems of the future. These include research on biological control agents, engineered/recombinant germplasm and exotic germplasm. The report also provides a facilities needs assessment for the Western Region and concludes that existing quarantine and containment facilities are inadequate to meet the research challenges facing us today.

This assessment recognizes the need for, and proposes, a \$23.2 million construction program to provide an additional 47,320 a.s.f. in new facilities. This new construction would include a 12,000 a.s.f. wing on the existing quarantine and containment facility at UC Riverside and a new facility of 35,320 a.s.f. at UC Davis. In addition, a \$4.1 million remodeling/refurbishing program of existing facilities is proposed for UC Berkeley and UC Riverside.

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ALTERNATIVE PEST CONTROL CONTAINMENT AND QUARANTINE FACILITIES FOR CALIFORNIA: ASSESSMENT OF NEEDS

May 1, 1991

PREFACE

The development and implementation of less chemical-dependent pest management systems are essential to ensuring the productivity and economic competitiveness of California and American agriculture into the 21st century.

Recent events in California have greatly accelerated the need to develop acceptable pest management alternatives to the heavy use of synthetic organic pesticides in agriculture, forestry, and the urban landscape. In response to this concern, pest management practices in the food and fiber production system in California are in a transition to practices which integrate many control strategies into a more ecologically sound approach to managing pests. This transition is brought about by a number of factors: the economic necessity to producers of reducing the costs of purchased inputs to remain competitive; concerns about the effects of excessive use of many pesticides on the environment, on the health of farm workers, and on the development of pest resistance. In addition the public perception that pesticides constitute an involuntary and unacceptable threat to food safety has led to legislative and public initiatives in several states calling for alternative approaches to the use of synthetic organic pesticides in urban pest control situations, in the control of human infectious diseases such as the tick-borne Lyme disease, mosquito-borne St. Louis encephalitis and mosquito-borne heartworm of dogs, as well as in crop and animal production systems.

A study of available pest management alternatives published by the Division of Agriculture and Natural Resources in July 1990 (Appendix I), showed that there are not economically-viable and environmentally-compatible alternatives for many of the "threatened" pesticides now in use. That study concluded that only through a significant and rapid increase in research funding and expansion or upgrading of existing facilities could we hope to meet future pest management needs.

There is an urgent, critical national need to expand and accelerate research to control pests and to develop viable alternative pest management technologies and systems. The national and international scientific communities are unanimous in their assertion that advancement in the basic areas of biological research and the transfer of that technology to the public at large, i.e., the urban community as well as the agricultural production sector, provide our greatest hope for significant reduction or elimination of pesticides from food and fiber. Scientists eager to exploit these new biological approaches to develop alternative pest management systems require specialized containment and quarantine facilities to perform research and biological impact assessment on a variety of organisms. Local, state, federal and international regulatory restrictions designed to prevent the introduction and movement of exotic

pests and genetically altered organisms provide a necessity for these facilities. (Note: Approval of the importation, or transportation within California, of biological materials to any quarantine/containment facility for research or other use can only be accomplished under permit and approval by both the California Department of Food and Agriculture and the U.S. Department of Agriculture, APHIS). The needs assessment presented here describes the programmatic needs to meet the challenge of rapidly developing alternative pest control technology focused on crop production, and proposes a program for development of new Biosafety Level 3 quarantine and containment facilities to provide the short- and long-term facility needs for the research agenda outlined.

I. INSTITUTIONAL PLANNING EFFORT

The Alternative Pest Control Containment and Quarantine Facilities described here represent the result of an evolutionary process over the last ten to twelve years which focused on the goal of reducing dependency on synthetic-organic pesticides through development of economically and environmentally acceptable pest control programs.

In 1978, the Vice President for Agriculture and Natural Resources (DANR) appointed a committee to recommend the development and implementation of a statewide integrated pest management program for California. Recommendations of that committee were instituted through special funding from the state Legislature that established the UC Statewide Integrated Pest Management Program on July 1, 1979 (see Appendix II, Statewide IPM Project: 10 Years of Progress). In addition to focusing on integrated approaches, one goal of the IPM project was to increase the utilization of natural pest controls, and through the IPM grants program funds were provided to researchers in biological control to enhance that objective.

At the campus level, the Dean of the College of Agricultural and Environmental Sciences at UC Davis established a faculty committee in 1986 to provide recommendations on a Plant Containment Facility to broadly serve the plant sciences in developing biological methods of pest control on that campus. In 1987, the Nematode Isolation and Quarantine Facility was completed on the UC Riverside campus as part of their planning to broaden the total campus effort in biological approaches. Expansion and upgrade of the Entomology Quarantine Facilities which were built in 1930 was part of their overall plan. The UC Berkeley campus proposed a consolidation of their research activities in biological control and in 1990 proposed development of a Laboratory for Biological Control that would facilitate activities in the several pest management disciplines addressing these technologies. The proposal for upgrading their containment and quarantine facilities were part of that planning process.

At the statewide level, the Associate Vice President for Programs, DANR, established a "Task Force on Biological Control" to provide recommendations on a strategy for enhancing biological control activities. As part of their report the Task Force

recommended the development of a "Biological Control Implementation Facility" to serve DANR. This facility, to be operated in collaboration with USDA-ARS and CDFA, was to be an "all-purpose, state-of-the-art" facility which could house quarantine, introduction, rearing, research and service work related to insects and pathogens. This proposed facility further supported the 1986 recommendation for a new facility on the Davis campus.

On April 1, 1991, the Vice President, DANR, established the Center for Pest Management Research and Extension to provide an administrative structure capable of effectively planning, coordinating and evaluating pest management research and extension education activities within the University (see Appendix III which describes DANR Organization Charts and the position of the Center in that organization). The first priority for the newly formed Center was to bring together the three campuses involved in developing these new biological approaches to coordinate the development of a facilities plan to meet the research needs. Providing the needed research facilities, especially containment and quarantine facilities is a very high priority for the division.

The actual proposal presented here was developed through a joint California Department of Food and Agriculture/University of California committee convened to study and report on pest control research quarantine and containment facility needs for California. The committee included broad representation from the USDA-ARS, USDA-APHIS, California State University System, County Agricultural Commissioners, and agricultural organizations (see Appendix IV). This proposal is a product of the joint interests represented by each of these entities.

II. RESEARCH TO BE CONDUCTED IN THE FACILITIES

A. BIOLOGICAL CONTROL. The natural enemies of pest weeds, arthropods, nematodes and plant pathogens include predatory and parasitic insects, predatory mites, pathogenic microbes, and non-pest competitors. In classical biological control exotic natural enemies, e.g., parasitoids and predators, must be studied under quarantine upon arrival in California. In these closed containment facilities, shipments of introduced (presumed beneficial) species can be screened for unwanted organisms, viruses, bacteria and other contaminants. In addition they must be studied for at least one generation to confirm various biological parameters consistent with their suitability for field release.

1. Importation of predatory and parasitic insects and predatory mites. These organisms are natural enemies of weeds, arthropods and nematodes. Quarantine is an essential element in the sequence of events leading up to their acceptance and subsequent release in the field. Research is conducted on their developmental biology, reproduction, feeding preferences and viability under a variety of controlled conditions. This information is essential because the field release has to be based on compatibility with the known life-cycle and biology of the target pest. Additionally, to be effective as

control agents studies on rearing the parasites and predators in contained facilities as well as the methodology for scaling-up to produce large enough populations must be conducted to develop populations suitable for field release.

2. Importation of beneficial nematodes and other soilborne organisms. Certain nematode species are very effective parasites and/or predators of arthropod pests and weeds. As with other parasites and predators, their developmental biology, reproduction, feeding preferences and competitiveness under a variety of laboratory conditions needs to be researched prior to any field release. Methods for mass rearing under controlled conditions and delivery systems need to be developed before they can be released as effective biological control agents.

3. Importation of other beneficial and/or pathogenic microbes, fungi, bacteria and viruses. Microbial agents can offer potential biological control for many pests. Endemic pathogens in this category are currently being used and researched as biological control agents for arthropods, nematodes and weeds but little attempt has been made to introduce exotic organisms due to lack of any adequate containment facilities to conduct the necessary biological experiments on specificity and host ranges. The risks of this type of research varies with the organism involved. A viral disease agent of a weed species may represent considerable potential threat to non-target plants including important agricultural crops.

B. CONTAINMENT OF ENGINEERED/RECOMBINANT GERMPLASM. California's investment in molecular biology is substantial. To capitalize on this investment and ensure the transfer of these new technologies into commercial use there is great need for facilities for the containment of genetically engineered organisms. The procedures involved in these studies at the molecular level require the use of recombinant DNA approaches including gene identification, characterization, cloning, modification, regulation and transfer. These studies generate altered organisms whose ecological capabilities will be unknown or incompletely characterized by any conventional criteria. Pre-assessment of environmental health and safety effects is necessary before developments in biotechnology are released for field trials and for general use. Production of transgenic plants will require a significant amount of greenhouse and/or growth chamber space. Pollen containment is an important factor in these experiments. From a pest perspective, parasites, predators and pathogens are suitable targets for genetic manipulation to improve their competitive abilities and adaptation to specific environments. Knowledge of the molecular biology of microorganisms can be extended to feasibility studies on the use of these organisms for pesticide and waste management. Prior to the testing of any of these organisms in the field, the products of these basic research studies will have to be tested in a series of controlled environments including laboratories, growth chambers and restricted entry/exit greenhouses. The risks involved in these studies is comparable to that for the study of exotic pest organisms and will require advances in quarantine technology.

C. EXOTIC GERMPLASM. Containment facilities are required for the quarantine involved with the importation, examination and biochemical and molecular analysis of exotic plant, animal and microbial germplasm. Exotic organisms which are beneficial in ways other than biological control must also be studied in containment, so as to determine whether or not they should be introduced into the environment. Examples of such organisms would include grapevines, beetles to degrade cattle dung on rangeland, soil nematodes and microorganisms important in processes of decomposition and degradation of toxic wastes, bees for pollination of crops, insects useful in the production of fiber and microbes important in food technology and fermentation.

D. EXOTIC PESTS. There is a clear and urgent need for exotic pest research. The California Department of Food and Agriculture currently contracts for such research. However, while there is a well established need, the Department's policy is that exotic pest research is best performed outside of California in those areas where the pest is permanently established and having climates similar to those in California. There have been few exceptions to the Department's policy prohibiting the import of an exotic organism for research. In those instances containment facilities have been required. This would continue to be true in the future, but there is no intent to use any existing or proposed containment research facility for exotic pest research. In any case, 1990 California legislation (AB 2756, Costa) requires a study of the desirability and feasibility of establishing an exotic pest research containment facility in California. The product of compliance with this mandate will be a comprehensive report which will complement what is contained in this section.

III. FACILITY NEEDS ASSESSMENT

New "state-of-the-art" Biosafety Level 3 quarantine and containment facilities are urgently needed in California to satisfy escalating regulatory requirements and to support our agricultural research program addressing alternatives to pesticides through application of biotechnology. Only two limited-use facilities - one at UC Riverside designed for containment of nematodes and the other soil borne pests, and the other located at the USDA-ARS Western Regional Research Center in Albany designed for biological control of weeds - are currently available to University of California researchers within California for study and screening of potential natural enemies of pest species, genetic engineering of organisms that are more effective antagonists of pests, as well as to ensure the safety of these organisms and genetically engineered plants before releases are made into the environment. Those few containment and quarantine facilities available at the regional or national level are at capacity and inadequate to fulfill current and future research needs. A brief summary of such facilities in the Western Region are shown in Appendix V.

Why California?

The University of California pioneered what is now referred to as classical biological control through organized programs centered in Divisions of Biological Control within the Entomological Sciences at Riverside and Berkeley. These programs originated in the 1920's and have achieved notable success in such techniques as release of imported parasite and predator species, encouraging establishment of viable populations of natural pest enemies in forests, range lands, highway landscaping and agroecosystems, and defining economic thresholds by efficient survey methods. The programs have included research, training and extension education and technology components. More currently, research related to biological control (including the use of microbial agents) and particularly in aspects of biotechnology, has developed outside the Divisions of Biological Control, and has included work by entomologists, microbiologists, plant pathologists, nematologists, molecular biologists, and toxicologists. The Davis campus has added biological control expertises within several departments, including entomology, plant pathology, nematology and weed science. An inventory of existing UC expertise in biological control and related fields is presented in Appendix VI, along with a brief description of pertinent areas of research. This inventory includes some 36 scientists in entomology/biocontrol, 14 in plant pathology, 6 in nematology, 2 in microbiology, 3 in weed science, 3 in other related departments and 10 Cooperative Extension advisors. Additional faculty resources within departments in areas such as ecology, toxicology and population biology underpin concepts basic to biological approaches to pest management.

Similarly, the USDA-ARS has considerable expertise in their Biological Control Laboratory and Plant Gene Expression Center located at Albany in close proximity to the University's Berkeley and Davis campuses. Their biological control efforts focus on pest management programs for weed control. The Plant Gene Expression Center is a joint venture with the USDA, the University of California at Berkeley and the California Agricultural Experiment Station. Besides focusing on research on how plants are controlled by genes, they have programs particularly addressing the molecular basis of plant resistance to specific pathogens.

California also has a number of private companies with large investments in biotechnology research and facilities which focus on development of transgenic plants and microbial pesticides. The California Industrial Biotech Association lists many private sector companies with agriculture-linked research programs. Among them are Calgene, Mycogen Corporation, Sandoz Crop Protection Corporation, and DNA Plant Technologies. Combined with the research expertise in the public institutions in California provides one of the highest concentrations of plant and biological pest management genetic engineering research in the United States.

USDA-APHIS is designated as the lead USDA agency for all biocontrol programs and with their quarantine facilities in Mission, Texas, Niles, Michigan and Bozeman, Montana plays a key role in the implementation and technology transfer aspects of the biological approaches to pest management programs.

The California Department of Food and Agriculture (CDFA) maintains on-going collaboration with the research programs at the University of California, the California State University system, and the USDA-ARS. CDFA concentrates on mass rearing and release of parasites and predators, as well as production and release of sterile insects for their eradication programs targeting introduced exotic pest organisms. CDFA also plays a key role in the process of issuing permits for importation of all organisms used in research and implementation programs. They are also responsible for registering biological control agents (biopesticides) regulated under FIFRA for use in California.

While much of the fundamental or basic aspects of this research can be carried out in existing laboratories on the various university campuses and USDA facilities, there is a fundamental constraint to implementation and transfer of these technologies to the field without access by the researchers to containment facilities where the necessary safety and performance of the candidate organism can be evaluated. The current facilities are marginal at best, and beyond capacity to meet current needs, let alone expand to meet additional needs dictated by the future. Without development of the facilities described in this proposal, much of the major investment in research potential currently poised to accelerate development of the new biological approaches to solving pest management programs will be wasted or greatly slowed in fulfillment of the programmatic needs and potential benefits described in previous sections.

IV. PROPOSED NEW FACILITIES

The inventory of existing containment and quarantine facilities presented in Appendix V demonstrates that each state has very limited facilities, and as these are taxed to their maximum limits currently, there is great need for the development and expansion of quarantine facilities within California to meet the short- and longer-term needs for ecologically sound pest management programs. What is proposed here is the culmination of nearly a decade in planning and presents a combination of new facilities and renovation of existing facilities to meet these needs described above.

Section A describes the development of new Biosafety Level 3 research space which comprises the proposal to the USDA Competitive Facility for cost-sharing between federal and state funding. Two new facilities are being proposed: one in the southern part of California at UC Riverside to focus on subtropical crops and ecosystems compatible with their climate; and one in the northern area at UC Davis to focus on temperate crops and ecosystems of that climate.

Section B describes the needed renovation of Level 1 and Level 2 facilities which will be submitted to the state for funding. Description of the Biosafety Levels are found in Appendix VII.

A. DEVELOPMENT OF NEW BIOSAFETY LEVEL 3 FACILITIES

1. **Riverside Campus.** Because of the increased need for importation of introductions from foreign exploration, and the fact that existing facilities are currently operating at full capacity, there is need to add a new wing to the facility and to add greenhouse facilities for processing and rearing parasites and predators.

Insect Quarantine Facility:

- **New wing (10,000 a.s.f.):** UCR proposes that a new wing be added to the present Insect Quarantine facility to approximately double its current assignable space of 11,000 a.s.f. The new wing would be a two-story building of 10,000 a.s.f. with Biosafety Level 3 quarantine capabilities, laboratory/rearing rooms, full wet research laboratories and offices. The primary quarantine operation will permit the safe handling of all materials not yet cleared for release in the environment, processing of shipments received through foreign exploration, and reproductive biology and special rearing techniques. These quarantine operations also include research on and the implementation of rearing techniques for mass release of effective natural enemies that have been cleared for release into the environment. Research on attractants and semiochemicals and on the basic behavior and habitats of parasites and predators will also be carried out in this new wing.

- **Greenhouses:** There is critical need for two new primary greenhouse facilities connected to the new quarantine facilities with at least 1,000 a.s.f. of space each. These greenhouse quarantine facilities are necessary for processing and rearing parasites and predators of the more mobile host species such as whiteflies, thrips and beneficials that are best reared on natural host plants.

Biotechnology Greenhouses: The Biotechnology Greenhouses were constructed in 1989 to conduct research on genetically engineered plants and are in excellent condition but a modest improvement in the addition of paper filters to the air intake system for further prevention of pest infestation and a back-up generator large enough to serve the entire facility is needed to protect the system in the event of a power failure. Emergency windows and exhaust fans fitted with screen of at least 30 mesh to further exclude insects would raise the facility to biosafety level 2. The addition of an exterior hallway connecting the greenhouse sections or individual vestibules to provide the mandatory double-door access, as well as hand-washing facilities and a collection tank large enough to hold 24 hours worth of leachate (which could then be decontaminated prior to disposal) would bring the facility to level 3.

Nematode Isolation and Quarantine Facility: This facility built in 1987 requires additional upgrading and improvements in the unfinished greenhouse sections to bring them up to quarantine containment specifications for plant pathogens and for recombinant DNA technology. This would include development of suitable storage for treatment of effluent waste water which might contain pesticides.

Estimated Costs:¹

New Wing (Insectary)	\$ 4,400,000
New Greenhouses [2,000 a.s.f @ \$500 a.s.f.]	1,000,000
Biotechnology Greenhouse Upgrade to BL3	95,500
Nematode Isolation and Quarantine Facility	
- Upgrade to BL3	<u>100,000</u>
Total a.s.f. costs	5,595,500
Equipment @ 10% of a.s.f. costs	<u>559,550</u>
Sub-total	\$ 6,155,050

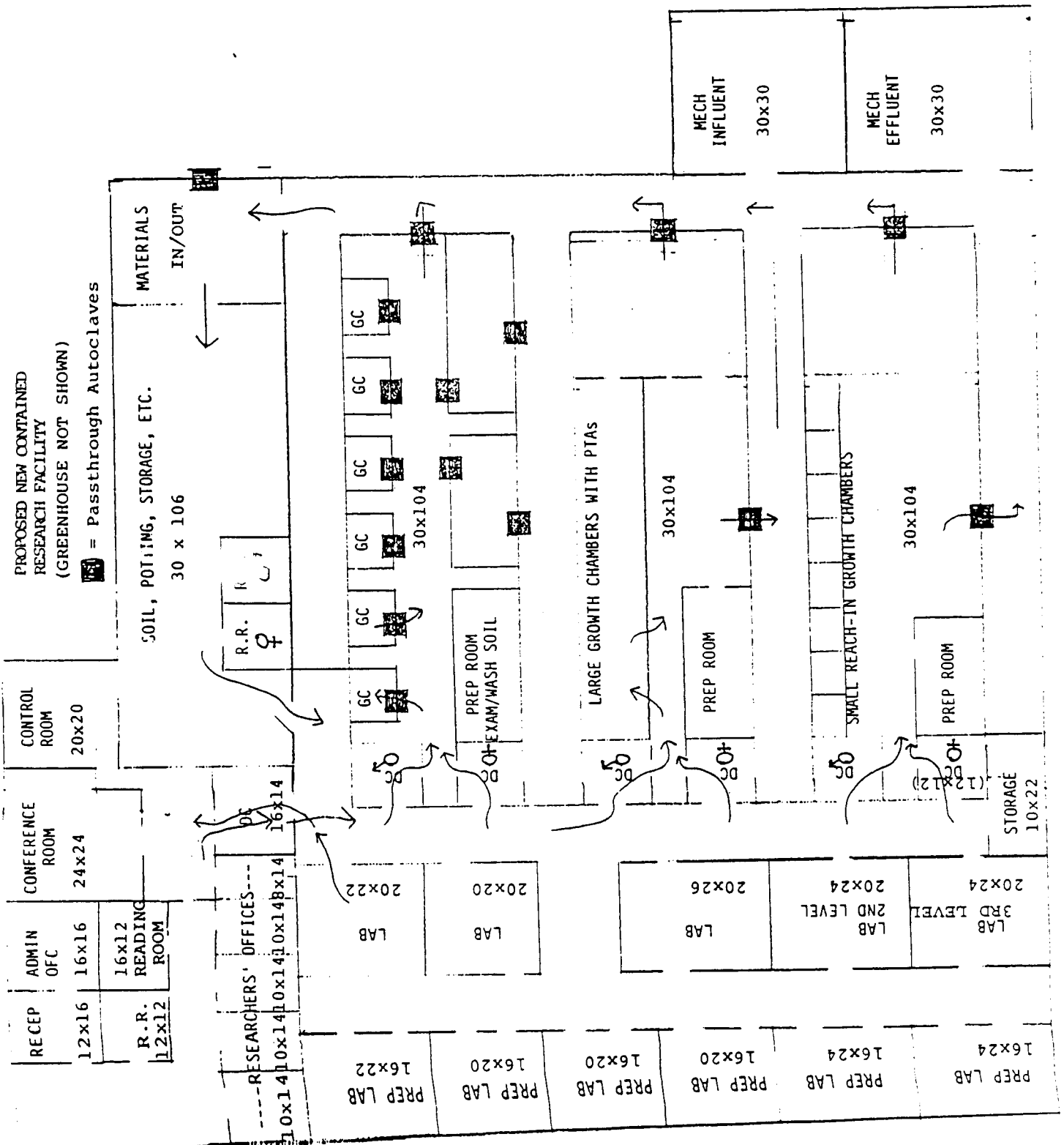
2. Davis Campus. It is proposed here that a new contained research facility of approximately 39,000 square feet be developed at the University of California, Davis. The location places this facility in proximity to: the sea and airports of the San Francisco Bay area; USDA-ARS laboratories in Albany and Fresno; University of California Berkeley; campuses of the California State University System; USDA-APHIS Regional office in Sacramento, and the California Department of Food and Agriculture's identification and diagnostic laboratories. The proposed facilities would be available and attractive to any of the scientists from the agencies listed here as well as others in the Western Region.

Project Description: The scope of research outlined in Section I requires that these contained research facilities must be engineered not only to prevent escape of organisms into the environment, but also to exclude organisms from entering, necessarily involving filtering of intake air, filtering or sterilization of intake water, sterilization of soil and containers, and use of sterile disposable clothing by personnel entering and working in the facility. Specific rooms need to be designed for recombinant DNA experiments and will be built to conform to recombinant DNA Guidelines. Sterile areas needed will include growth rooms, each with separately filtered air and decontamination features. Portable controlled environment units can be located in these growth rooms. The design of such a facility will emphasize flexibility and adaptability as technology advances and research problem areas change. For example, controlled environment chamber units can be removed and replaced without the entire facility becoming obsolete. Controlled environment chambers will be constructed in such a way as to allow decontamination between experiments. Contained greenhouses only accessible from within the contained area will be constructed on the roof of building. Wet laboratories and tissue culture facilities will need to be within contained space. Such facilities will include decontamination rooms where individuals entering will be required to shower and change into the appropriate sterile coveralls. Outside the containment area, facilities will include offices and meeting rooms for use for administration and local and visiting scientists.

Figure 1 provides a generalized floor plan of the needed facility (it is recognized that modifications most likely will be needed as working plans and regulatory requirements are further combined). This plan indicates the design and recognizes the need for different biosafety levels of containment. A single public access is screened by the receptionist and this preliminary restrictive area provides offices for administrative staff, research personnel, and a conference area. It also provides access to the soil and potting preparation area. The secondary level of containment is reached through a decontamination room, which may involve changing of clothing and the use of disposable coveralls designed to prevent ingress and egress of contained germplasm. Within this secondary level of containment are preparation rooms, laboratories, and access to storage and cold rooms. The third level of containment is represented by containment rooms 1, 2, and 3 accessed from the secondary level of containment through individual decontamination areas again requiring clean-up and donning of sterile clothing. Within these areas are portable controlled environment chambers, or growth rooms each with a pass-through autoclave in the wall so that material removed from these chambers is sterilized before entering the general area of the containment room. The utilities, machinery, and heating and cooling systems for the controlled environment chambers are in service alleys outside the containment room and accessible to maintenance personnel. Material being removed and discarded from the general area of the containment rooms must be reesterilized and decontaminated in a pass-through autoclave which opens in to the external service alleys. Intake air into the containment rooms is filtered, with the filtration systems accessible for maintenance from the service alleys. Effluent from the containment rooms is sterilized in an effluent sterilization unit located at the rear of the facility. There would also be the need to develop suitable storage for treatment of effluent waste water which might contain pesticides. A neighboring unit is designed for the sterilization and filtering of intake air and water.

FIGURE 1

PROPOSED NEW CONTAINMENT AND QUARANTINE FACILITY
UNIVERSITY OF CALIFORNIA, DAVIS



Description of the Facility:

- Reception Area (656 a.s.f. - BL1): User entrance to the facility is through an anteroom, with a reception window monitored by the receptionist/security person. A user is granted access from the anteroom by the receptionist, after check of credentials, through a door controlled by the receptionist.
- Administrative Offices (448 a.s.f. - BL1): Two administrative offices are envisioned for the facility, the first is 192 a.s.f. and occupied by the receptionist. It has a window to the reception anteroom. The second is 256 a.s.f. and occupied by the Contained Research Facility Director/Coordinator.
- Control Room (400 a.s.f. - BL1)
- Conference/Reading Room (736 a.s.f. - BL1): A room with conference tables and chairs to accommodate meetings of up to 35 participants; in addition, a portion of the room will house pertinent reference books, journals, and periodicals so that the room can be used for reading or studies when not otherwise scheduled for group meetings.
- Researcher Offices (5 = 672 a.s.f. - BL1): These offices are assigned to scientists and research personnel currently using the Contained Research Facility.
- Restrooms (144 a.s.f. - BL1): Provide restroom facilities for administrative, research, and support personnel outside the decontaminated area.
- Decontamination Room (224 a.s.f. - BL2): For changing of clothing or donning clean laboratory and protective clothing prior to entering the contained area. The facility will allow for hand-washing and provide lockers for storage of clothing and personal items.
- Soil/potting Room (Headhouse) (2892 a.s.f. - BL2): This area is used for storing steam-sterilized soil of various formulations and textures for use in the Contained Research Facility. Soil is sterilized in the influent decontamination unit and shelves and cabinets provide storage sterilized pots and supplies to be used in the Contained Research Facility. This area also provides a receiving area and storeroom for receipt and unpacking of goods delivered by outside vendors. In addition, sufficient storage areas for commonly-used chemicals, flammable storage cabinets, glassware, and supplies are provided. Provision should be made for collection of soiled laundry and linen and receipt and dispersal of clean items. In addition to the traditional receiving and storage function, this area will serve as a receiving area and for diagnostic specimens which will be initially processed and routed to appropriate work areas.
- Contained Laboratory Space (5 = 2320 a.s.f. [1840 a.s.f./BL2; 480 a.s.f./BL3]): These laboratories are designed for research on the diagnosis of exotic species and germplasm, recombinant DNA laboratories, biochemistry and physiology laboratories, etc.
- Preparation Rooms (6 = 2080 a.s.f. - BL2): The preparation rooms are designed and assigned for the rearing of insects and nematodes on defined media, tissue culture, microbiology, and for media preparation. Although located on the outside wall, the preparation rooms, as with all rooms in the contained area, do not have outside windows. The media preparation room is for the preparation of media, cleaning and sterilization of glassware, etc. The floor will be concrete, sealed, covered with tile, and painted a light-colored epoxy paint with mold inhibitor, as are the walls. Fluorescent fixtures are not recessed, all electrical outlets are at bench level or above and sealed as are wall switches. Equipment will include an autoclave, dishwasher, drying oven, water distillation apparatus, refrigerator, balance, glassware, etc. The sink will be a double tub, chemical-resistant or stainless steel with glass insect trap in drain. Wall cabinets will be available for storage.
- Store Room (220 a.s.f. - BL2): For storage of materials within the contained area.

- Restrooms (2 @ 144 a.s.f. - BL2): For personnel working within the contained area.
- Secondary Decontamination Rooms (6 @ 144 a.s.f. - BL3): These provide areas for changing clothing, donning disposable sterile coveralls, head covering, foot covering, etc., before entering the primary containment area. Three of these facilities are designed for females and three for males. All used disposable coverings are sealed in plastic bags and destroyed in a furnace in the soil/potting room.
- Primary Containment Rooms (3 @ 2832 a.s.f. - BL3): These rooms house portable walk-in controlled environment chambers in which the research on exotic germplasm, exotic plants, genetically-altered germplasm, etc., is actually conducted. The controlled environment chambers line the outer walls of the containment rooms, so that their electrical and air-conditioning equipment are outside of the containment rooms in service alleys. Each controlled environment chamber has a pass-through autoclave in one wall, so that any material removed from the controlled environment chamber is sterilized before entering the general containment room area. All material leaving the containment rooms for disposal does so through a pass-through autoclave which opens into the service alley. Each Primary Containment Room contains a prep room to allow work in organisms and plants removed from the controlled environment chambers. At least one of the prep rooms must have soil washing facilities to allow work with soil organisms.
- Service Alleys (5080 a.s.f. - BL2): These alleys provide access to the mechanical equipment and plumbing service to the containment rooms. They also provide access to one side of the autoclave through which material disposed from the containment rooms is sterilized. The pass-through autoclaves into the containment rooms also allow for ingress and reesterilization of pots and soil to be used in the controlled environment chambers within the containment rooms. Service alleys have access to the soil/potting room and to the exterior of the building for disposal of refuse and ingress of maintenance personnel. They are not contained.
- Influent and Effluent Units (2 @ 900 a.s.f. - BL2): These units house the engineering and controls necessary for the filtering and sterilization of air and water intake into the Contained Research Facility and air and water intake into the Contained Research Facility and air and water effluent from the facility. They are designed to prevent the escape of organisms and germplasm into the environment and also to exclude organisms and germplasm for entering the facility.
- Greenhouse (separate rooms totalling 8000 a.s.f. - BL3): The greenhouse rooms will be in a single unit serviced by a central walkway that can only be accessed from the contained area of the building. The facility can be designed so that these greenhouses are on the roof or as a wing which can only be entered through the controlled areas of the main building. Restrictions on movement of material and organisms into and out of the greenhouse area will be as for the Controlled Environment Chambers. Individual greenhouse rooms will meet biosafety level 3 containment standards. Effluent and influent air and water will be engineered to meet the requirements of the respective level of containment.

Estimated Costs:¹

<u>Biosafety</u>	<u>Total a.s.f.</u>	<u>Cost factor</u>	<u>Cost</u>
Level 1	3,056	\$ 300	\$ 916,800
Level 2	14,424	\$ 400	5,769,600
Level 3	17,840	\$ 500	8,920,000
Total a.s.f.	35,320		15,606,400
Equipment @ 10% of a.s.f. costs			<u>1,560,640</u>
		Sub-total	\$ 17,167,040

Total Project Costs:¹

UC Riverside	\$ 6,155,050
UC Davis	<u>17,167,040</u>
Total	\$ 23,322,090

¹Cost estimates shown above were obtained from current costs reported by institutions having recently constructed or currently constructing various types of laboratory and containment facilities at different biosafety levels. These costs were estimated as: \$300/project a.s.f. for biosafety level 1, \$400 for level 2, and \$500 for level 3.

B. REMODELLING

1. **Berkeley Campus:** The UC Berkeley's Division of Biological Control has about 8,000 a.s.f. of enclosed greenhouse and insectary space at their Gill Tract location in Albany. As with many other such facilities, these are best described as grossly inadequate and clearly "antiquated" and in need of extensive renovations and expansion in order to effectively utilize scientific expertise available to implement biological control strategies with many of the pests of economic importance in the western United States. The projected increase in the current facilities is based on the development of quarantine and mass rearing and culture facilities that would handle insects, plant and insect pathogens/antagonists and insect/pathogens of weeds. Needed additional a.s.f. is displayed in the following table which shows the current space and the projected needs for to provide for future program needs:

	<u>Current Space</u>	<u>Projected Needs</u>	<u>Increase</u>
Insectary			
Interior space	2800 a.s.f.	5000 a.s.f.	2200 a.s.f.
Exterior work & storage	990	1000	10
Ref. cold boxes	192	400	208
Quarantine	1131	2500	1369
Methyl bromide chamber	250	250	
Greenhouse	1800	3000	1200
Lathhouse	1355	1500	145
Laboratory/office		700	<u>700</u>
		Total a.s.f.	5832

Estimated Costs:

Quarantine, insectary and greenhouse (4,769 @ \$400 a.s.f.)	\$1,907,600
Laboratory/office 700 a.s.f @ \$300 a.s.f.	210,000
Other [Lathhouse/Ext. work & storage/Ref. cold boxes] 363 a.s.f. @ \$100 a.s.f.	<u>36,300</u>
Total a.s.f. Costs	2,153,900
Equipment @ 10% of a.s.f. costs	215,390
Improvement of existing 5,193 a.s.f. @ \$200	\$1,038,600
Equipment improvement - 10% of a.s.f. costs	<u>103,860</u>
Sub-total	\$3,511,750*

* If these facilities were to re-located in the Bay Area, their costs would be \$5,106,000.

2. Riverside Campus: UC Riverside's existing Insect Quarantine Facilities have deteriorated in the past 30 years since their last major modifications and require major renovations. The existing Insectary and Insect Quarantine Facilities at UCR require major renovations of the heating and ventilation systems. The heating, ventilation and air conditioning system (HVAC) and the lighting systems are the two most critical needs for these facilities. It is important that temperature and humidity can be controlled independently for each room in the facility so that these parameters can be optimized for the individual cultures being raised. Similarly, for arthropods which must be cultured on a host plant there is need to have lighting fixtures with greater light intensity, flexibility and timing than exists in the facilities currently. Because of the importance of electrical power, the insectary and adjacent facilities are equipped with two natural gas powered generators that feed into key electrical circuits in case of power failure. These generators are limited to providing back-up to the current lighting and temperature cabinets. With the upgrade of the HVAC additional generator capacity would need to be developed to provide the total power supply needed.

Estimated Cost:

Renovations	\$	<u>500,000</u>
Sub-total	\$	500,000

Total Renovation Costs:

Berkeley Campus	\$	3,511,750
Riverside Campus		<u>500,000</u>
Total	\$	4,011,750

V. RESEARCH MANAGEMENT PLAN

Authorization, planning, design, and construction of the containment and quarantine facilities will follow regular University, State, and Federal rules and regulations. Dr. James M. Lyons, Director, Center for Pest Management Research and Extension, will serve as the coordinator for development of these facilities.

Grants and contracts for research activities within these facilities will be coordinated by the Center for Pest Management Research and Extension (cf. Appendix III) and processed through each appropriate campus department and contracts and grants offices. The applied research, technology transfer and extension education programs relating to the activities of these facilities will be carried out through the existing campus departmental Agricultural Experiment Station faculty and Cooperative Extension Specialists and the county-based Cooperative Extension Advisors. Coordination of these activities will also be the responsibility of the Center.

For the facilities on the Riverside campus, each appropriate department has an existing structure for management. That is, the Entomology Department has a faculty committee that oversees operation of the insect quarantine facility and a Coordinator who is responsible for management and implementation; Nematology has a faculty committee with a Staff Research Associate as the responsible individual for day to day oversight and management; and Botany and Plant Sciences has a Facility Coordinator to provide the oversight and management of the biotechnology facilities.

The facility on the Davis campus would have a full-time Director appointed and a staff of service personnel. A Technical Advisory Committee and a Scientific Advisory Committee would be established with representation from UC campuses, CSUS, appropriate states in the Western Region, CDFA and the USDA-ARS and APHIS. These committees would ensure access to all users on a project basis, provide advice on priorities of the individual research projects to be carried out within the facility and ensure adherence to the regulatory process at all stages of research planning and implementation.

These management schemes for the proposed facilities include mechanisms that ensure their availability to all scientists on a project basis - within the public universities in California, USDA, CDFA and other university scientists in the Western Region. The proposed design of the new facility for the Davis campus was to provide visiting scientists with offices, preparation laboratories and various containment levels so that their accomplishments during their time at the facility could be maximized.

VI. INSTITUTIONAL COMMITMENT

This project has been identified as a very high priority by the Division's Capital and Space Planning Committee, Council of Deans and Directors, and the Vice President for the Division of Agriculture and Natural Resources.

A. As indicated in Section IV. A., the proposed development of new Biosafety Level 3 facilities at the University of California are estimated at \$ 23,322,090. Of this, \$11,661,045 is being proposed for the USDA Competitive Facilities Grants program and \$11,661,045 for California state general funds. That the development of facilities to conduct research on technologies to control pests is significant for California can be seen by the 1990 passage of AB 2756, a bill introduced in the California Legislature by Assemblyman Costa, which requires the Department of Food and Agriculture in consultation with the University of California to conduct a study on the desirability and feasibility of establishing a containment facility in California. A joint CDFA/UC Committee was established with representation from the USDA-ARS, USDA-APHIS, California State University System, County Agricultural Commissioners, and agricultural organizations to develop this needs assessment (see Appendix IV).

B. The \$4,011,750 for renovation of existing facilities will also be requested from California state general funds to complete the overall goal of providing the necessary containment and quarantine facilities in terms of both amount and quality to meet the research agenda outlined.

C. In management of the facility, the University of California would provide academic personnel and base level support for management and operation of the facility through redirection of existing resources. Furthermore, the University would be working with state and federal agencies to obtain additional extramural support for operation of the facility and individual investigators would be recharged for portions of the services.

SUMMARY

The University of California's Division of Agriculture and Natural Resources is uniquely positioned to maximize the development of highly efficient and cost-competitive biological technologies to control exotic pests and to develop viable alternative pest management systems. The benefits accruing from development of state-of-the-art proposed Biosafety Level 3 facilities (as well as remodelling of the other containment and quarantine facilities described in the proposal) include the ability to conduct the type of research that will reveal the basic molecular mechanisms which control host-pathogen interaction, the development of novel strategies to control plant and animal diseases and pest outbreaks, and the feasibility of using recombinant DNA approaches for pesticide residue disposal. The containment facility will also provide the necessary pre-release assessment environment for any strategies for disease management that may result from the application of recombinant DNA technologies to modification of the regulatory steps in host-pathogens interactions or development of biological control agents. Without these facilities, investment in the scientific talent and expertise built up within the University of California over a number of years would not be utilized to the fullest extent. Instead, California will have to seek other private or public sources for completion of a delivery system of new technology to continue a pest prevention/management system that is acceptable to public health and safety as well as averting environmental concerns associated with current pesticide practices.

WATER QUALITY RESEARCH

Report to Western Directors Association, April 4, 1991

Submitted by V. Volk

1. CSRS

- a. Water quality grant proposals - 254 proposals submitted (West, 59; North Central, 71; Northeast, 47; South, 74). Five national peer panels, identical in discipline orientation, reviewed proposals followed by two "super" panels to review top proposals from each region and make final recommendations. Eleven proposals from western region recommended for funding - individual investigators have been notified. Resources to western region: \$1,439,000.00. Review comments for unsuccessful proposals may be obtained from Berlie Schmidt (CSRS) upon request in writing.
- b. NRI - Proposals have been received (due March 18, 1991). The number of proposals submitted has not been tabulated. Review panels are scheduled to meet July 1-3, 1991.

2. Regional Water Quality coordination.

Southern and Western regions have no formal coordinating committees. The NC and NE have coordinating committees which helped identify priorities and are helping organize CSRS funded research proposal evaluations. The Western Region has opted to obtain priority information in other ways (input from current water related committees). Discussion on project evaluations in next section.

3. Research project evaluation

- a. USDA has mandate to review/evaluate all research projects funded in the special grants water quality program. Investigators have been instructed to include travel expenses for participation in evaluation program. No evaluations have been conducted for any funded projects to date.
- b. An executive group from the NE and NC coordinating committees developed a possible evaluation process on January 17, 1991 in Washington, D.C. After the NE and NC meetings, Neville Clark and Van Volk met with ARS, CSRS, and administrators of the NE and NC groups to discuss guidelines for evaluation which could be done in all regions (January 18, 1991). CSRS summarized discussion and is proceeding to develop a program for the NE and NC who have proposed to do a joint review. ARS projects will also be reviewed. Formats attached, but detail on evaluation panels not yet completed.
 - 1). Issues/plans - Review required by USDA and will be organized by them. AES have been invited for input.
 - 2). All P.I.'s will submit written progress reports prior to evaluation meeting.

- 3). For NE and NC an external evaluation committee will evaluate written reports and report to workshop. Concurrent workshops will be held for program areas.
 - 4). ARS and Management Systems Evaluation Area (MESA) projects will also be evaluated.
- c. Western Directors are invited to provide input in evaluation system at present time. V. Volk has served as principal contact person to date.
- ** Suggestion - Appoint a small committee - perhaps 3 - to coordinate with CSRS in finalizing the evaluation conference for the western region (i.e. WDA representative plus two faculty with geographical and discipline differences).

4. Presentation

V. Volk presented information on behalf of ESCOP to the President's Water Quality Initiative: Interagency Processes and Perspectives with regard to involvement of AES in the national research system program on water quality (Washington, D.C., February 6-7, 1991). The program was dominated by federal agencies so input from ESCOP was important!



United States
Department of
Agriculture

Cooperative
State Research
Service

Natural Resources,
Food and Social
Sciences

Washington, D.C.
20250-2200

TO: Principal Investigators and Program Managers
USDA Funded Research Under President's Initiative on Enhancing
Water Quality

SUBJECT: Program Review and Evaluation

As a recipient of USDA funding for the President's Initiative on Enhancing Water Quality, you are an important member of the water quality research team. Continued success of this important research depends upon our ability to demonstrate progress and positive change in agricultural practices due to the research efforts.

As a principal investigator, one of the program requirements is to report progress through written reports and presentations at periodic meetings. As a means of accomplishing the reporting responsibilities, a major information exchange and progress evaluation meeting is being scheduled for July 23-25, 1991, at the Harley Hotel adjacent to the Michigan State University campus, East Lansing, MI. The meeting is being held in conjunction with NEC-61 and NCS-5. Attendance will be limited to committee members and principal investigators or designated representatives, and invited participants from other agencies and organizations.

The review is not intended to be a merit evaluation of individual projects, but, rather an evaluation of the scientific progress, organization and research structure for water quality research and development programs under the President's Initiative.

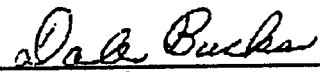
The review and evaluation will consist of the following activities:

1. A Written Report--as per attached outline. The abstract and significant findings will be used as a lay report for congressional and other delegations.
2. A Poster. Principal investigators are requested to prepare a poster illustrating current research.

*Please reserve the meeting dates and make plans to attend.



Charles B. Rumburg
Deputy Administrator



Dale Bucks
National Program Leader
Water Quality and Water Management

EVALUATION OF USDA FUNDED RESEARCH UNDER
PRESIDENT'S INITIATIVE ON ENHANCING WATER QUALITY

Dates: July 23-25, 1991 (noon to noon)

Location: Earley, Hotel
East Lansing, MI

- Purpose:
1. Scientific and technical information exchange between principal investigators and program managers
 2. Evaluation of progress, cooperation and coordination in USDA funded water quality research programs including Midwest Initiative Management Systems Evaluation Areas (MSEA).
 3. Identify significant accomplishments, deficiencies and opportunities within the research program, (External Review Panels) and for increased collaboration with other related programs.
 4. Identify promising systems, adaptive technology transfer and effective public relations activities.

PROPOSED MEETING SCHEDULE

July 23

Overview	1:00 - 2:00 p.m.
Reports from external review panels	2:30 - 4:00 p.m.
Poster Session	4:00 - 6:00 p.m.

July 24

Concurrent Workshops	8:00 - 11:30 a.m.
Lunch	
Summaries and Discussion on Workshop Reports	1:00 - 5:00 p.m.

July 25

Reports from Systems and Technology Transfer Groups and Discussion	8:00 - 10:30 a.m.
Business Meeting NEC-61 and NCS-5	11:00 a.m.

PROJECT TITLE:

NAME OF INVESTIGATORS AND ALL INSTITUTIONS PARTICIPATING:

PERIOD COVERED BY THIS REPORT:

ABSTRACT OF RESEARCH RESULTS AND SIGNIFICANT FINDINGS: (not to exceed 15 lines)

OBJECTIVES OF THE PROJECT: (as stated in project proposal)

RESEARCH RESULTS TO DATE: (not to exceed 3 pages of narrative plus 3 pages of figures or tables)

PUBLIC RELATIONS ACTIVITIES:

DEADLINE FOR RECEIPT OF REPORTS: May 1, 1991

SEND TO: Dr. Berlie Schmidt
USDA/CSRS
329-P Aerospace Center
Washington, DC 20250-2200

March 1991

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**SENATE CALENDAR 1991
NONLEGISLATIVE PERIODS
102ND CONGRESS, FIRST SESSION**

January 3.....Senate convenes
 January 7-22.....Senate not in Session
 January 21.....Martin Luther King Jr.'s Birthday
 January 23 (Wed.).....Senate reconvenes
 ⁸⁻¹⁸ ^{House}
 February 11-18.....Senate not in Session
 February 12.....Lincoln's Birthday
 February 18.....Presidents' Day
 February 19 (Tues.).....Senate reconvenes
 February 22.....Washington's Birthday
 ⁸
 March 25-April 7.....Senate not in Session
 March 29.....Good Friday
 March 30.....Passover
 March 31.....Easter
 ⁸
 April 8 (Mon.).....Senate reconvenes
 April 29-May 5.....Senate not in Session
 May 6 (Mon.).....Senate reconvenes
 ⁸
 May 27-June 2.....Senate not in Session
 May 27.....Memorial Day
 June 3 (Mon.).....Senate reconvenes
 ⁸
 July 1-7.....Senate not in Session
 July 4.....Independence Day
 July 8 (Mon.).....Senate reconvenes
 ¹⁰
 August 5-Sept. 9.....Senate not in Session
 (August Recess)
 ⁸
 September 2.....Labor Day
 September 9.....Rosh Hashana
 September 10 (Tues.).....Senate Reconvenes
 September 18.....Yom Kippur

Office of the Majority Leader

Report to
Western Association of Agricultural Experiment Station Directors
Tucson, Arizona
April 3, 1991

JOINT COUNCIL

The Joint Council last met January 23-25 in Washington D.C. A main order of business was to establish the FY 93 Priorities for Research, Extension, and Higher Education. These are now in press and should be widely distributed within two to three weeks. The Council also adopted formation of a NATIONAL COMMITTEE ON INTERNATIONAL SCIENCE AND EDUCATION (NCISE). This committee will report directly to the Joint Council and its mission is "to enhance the long-term viability and competitiveness of food and fiber production and the agricultural system (federal, non-federal higher education and private sector) of the United States within the global economy by more effectively involving it in international research, extension, teaching and networking". This will be a fairly large committee with broad representation including ESCOP.

The committee also reviewed current status and new efforts in the areas of Food Animal Production Medicine Consortium, Rural Community and Rural Development research (Ford Foundation, Aspen Institute), and the Patenting of Plant and Animal Forms.

The upcoming meeting will be directed largely toward selection of topics for the FY 91 Accomplishments Report and reviewing the new duties and responsibilities assigned to the Joint Council by the FY 91 Farm Bill. The implications of the Farm Bill which redirects many of the purposes of research and extension activities (i.e. from "production agriculture" to socio-economic issues, LISA, sustainability, the environment, etc.) will also be discussed at some length.

Colin Kaltenbach

(text for an INTERNET message to directors of all AES in western region and DAL) - FAX'd to
New Mexico/INTERNET failed (or rejected)

March 27, 1991

MEMORANDUM to: Directors of Western Agricultural Experiment Stations

from: Helen F. McHugh
Western Representative to NARC

subject: Suggested topics for accomplishment reports; ESCOP research initiatives

Each of you has received a substantial mailing from Lannie related to the above. My tardiness forces a different approach to addressing these issues. Thus, I am suggesting some "home work" before the meetings in Tucson next week.

ACCOMPLISHMENTS. Your ideas (a title and a sentence or two of description) are requested to be ready for submission early on Wednesday. We will discuss the various ideas on Thursday. Lannie received suggestions from Thayne Dutton and has offered some elaboration as well as additional topics. These topics combined include:

- Effective management of pests -- to include biocontrol and perhaps encompass environmental and socioeconomic considerations
- Development of new and improved varieties -- some aspects of the topic relate to pest management
- Water quality -- including socioeconomic and sustainability ramifications
- Human nutrition and health -- may include some elements related to food safety and consumer sciences
- Animal systems -- perhaps to focus around integrated resource management and/or reproduction
- some issue with socioeconomic orientation -- perhaps marketing of new products, community and family stability, impacts of biotechnology, and/or market concentration

The six broad programmatic areas used in the development of the ESCOP research initiatives report may elicit other ideas.

ESCOP Research Initiatives. In the materials that Lannie sent you earlier this month is a page listing the 31 research initiatives and their ranking both on the composite basis and for the Western region itself. Please study the list for any research areas that you believe have not been included. If you wish to recommend additions, deletions and/or combining any of the 31, please follow the format used in the 1990 report. We will **NOT** be establishing rankings among initiatives at this time.

Research Accomplishments - Washington State University

1. Improving Pest Control with Fewer Chemicals. Biological control agents of diffuse, spotted, and meadow knapweeds, bachelor's button, and yellow starthistle have been introduced and are established on weeds in Washington. Gary Piper, Entomology, Ben Roche, Natural Resource Sciences, and County Cooperative Extension agents were cited in 1990 USDA Report of the Secretary of Agriculture for this work.
2. Plant Defense Mechanisms. WSU scientists have demonstrated for the first time the presence of interplant communication through the atmosphere that regulates the defense genes via a chemical called methyl jasmonate. This proves that certain plants contain volatile signal molecules that can affect genes in nearby plants. The scientists also identified, isolated and synthesized the first polypeptide hormone like molecule in plants. This shows that plants have polypeptide hormones that regulate defense response and suggests a parallel to similar responses in animals. C. A. Ryan, Institute of Biological Chemistry and colleagues, were cited in 1990 USDA Report of the Secretary of Agriculture; and NSF 1991 Budget Request.
3. Wood Quality and Design. Nondestructive testing of all wood materials, using stress-wave devices, improved design quality and reduced wastage of wood, especially in laminated wood products. Roy Pellerin, Engineering Wood Materials Lab, received 1989 USDA Honor Award for Superior Service for this McIntire-Stennis funded research.
4. Fast growing hybrid poplar trees have been developed for quality pulp production using short rotation intensive culture. Nearly 60,000 acres are planned in Washington. Paul Heilman, in cooperation with University of Washington scientists, developed these hybrids with McIntire-Stennis funding.
5. International Marketing and New Products. The IMPACT program has moved new crops, such as edamame and azuki beans, through varietal trials, greenhouse trails and field commercial trials to food processor tests. Tom Lumpkin, Crop and Soils Sciences, colleagues in Entomology, Food Science and Human Nutrition, Agricultural Economics and Cooperative Extension have carried this effort from concept to production. (Funding source, NSF, USDA).
6. Food Processing and Handling. Agricultural engineers, Ralph Cavalieri and Marvin Pitts have produced a successful pilot device for non-destructive testing for fruit firmness and are now producing a scaled-up version to test on packing house lines. This is an application to tree fruit of an invention of an Israeli scientist, K. Peleg. (Funding sources, USDA, Washington Tree Fruit Research Commission).
7. Animal Health. Scientists from CAHE and Veterinary Medicine in the Field Disease Investigation Unit have resolved herd health problems of salmonella, mastitis, and neonatal calf mortality, reducing losses to farmers and improving the quality of animal products to the consumer. (Funded by USDA/Animal Health).

8. International Germplasm Collections. Scientists in Horticulture, Scott Cameron, and Entomology, C. Shanks, conducted a USDA-funded collection in South America for wild strawberry germplasm. This will bring new genes for insect and disease resistance into the strawberry breeding programs of Pat Moore for the Pacific Northwest.
9. New apricot and cherry cultivars have been released in Washington and Europe, by Ed Proebsting, Horticulture, and Tom Toyama (retired). A significant royalty stream provides long-term support for the maintenance of mother blocks of these cultivars.
10. Food and Environmental Quality Lab for pesticide residue analysis is one step closer to establishment at Tri-Cities with \$484,000 USDA federal grant for equipment. A request for scientists and technicians is under consideration by the Washington state legislature.
11. Child, Consumer and Family Studies faculty have found that quickly returning injured workers to the job saves the company money and improves worker satisfaction and self-esteem. Other faculty are helping children learn new techniques for solving interpersonal conflicts in a positive manner. Strategies of conflict resolution are valuable for children, families, and organizations and are being implemented in many Cooperative Extension programs.

March 28, 1991

Report to
Western Association of Agricultural Experiment Station Directors
Tucson, Arizona
April 4, 1991

Animal Care Issues

The "animal rights" philosophy can be summed up by the often-quoted phrase that "a rat is a pig is a dog is a boy". The "animal rights" movement regards the right to human life (over that of another animal) as perversion, meat-eating as barbaric and pet "ownership" as a form of human manipulation. Unfortunately the "animal rights" folks are often confused with "animal welfare" which is a legitimate cause involving human responsibility for all aspects of animal well-being. The most prominent "animal rights" group is People for the Ethical Treatment of Animals (PETA) and organization with annual revenues exceeding \$ 9 million. Their latest activities are targeted heavily at the nations school children. They have developed extensive literature and visual aids to support their claims. These materials have received wide distribution and PETA has two paid outreach coordinators who visit schools and present programs. Unfortunately, information and efforts to counteract this information is limited or lacking.

The Heflin bill (S.544 the Animal Research Facility Protection Act) has gained eight co-sponsors including Burns (R-MT), Craig (R-ID) and Symms (R-ID). It would be helpful to have other western Senators as co-sponsors. **Letters to our delegations requesting such support would be in order.**

The National Association for Biomedical Research has summarized current bills in State Legislatures that affect animal research. A total of 24 states are currently (as of March 1, 1991) considering some sort of legislation. Below are summaries of the western states involved. I have the complete listing if anyone is interested in seeing this information.

Alaska HB 67, a bill amending the animal cruelty statute was introduced on Jan 21 and referred to committee. It does not affect the current exemption for researchers from animal cruelty charges.

Arizona In accordance with proposed HB 2348 it would be a Class 2 misdemeanor to "hold" a live animal "for purposes of cosmetic experimentation, except those used directly related to medical experimentation and research". No action to date.

California AB 110 prohibits the use of skin irritancy and ocular tests, including the Draize, for cosmetics and household products. It passed the Assembly with a vote of 52-17.

Hawaii The existing animal cruelty statute states that cruelty charges "are not applicable to accepted veterinary practices and to activities carried on for scientific research (a) if they are governed by standards of accepted educational or medical practices." SB 218 would add "(b) if their proposed cannot be achieved by alternative means not involving animals." In committee.

Montana HB 120 prohibits the following acts at animal research and agricultural facilities: acquiring control over a facility with intent to deprive the owner or to damage the enterprise; damaging or destroying the facility, an animal or property; entering when closed to the public; remaining concealed with intent to commit the above prohibitive act and entering to take pictures of videos. Passed House and in the Senate Agriculture Committee.

New Mexico SB 432 similar bill to Montana HB 120. In Committee.

Utah HB 189, a measure amending the animal cruelty statute without affecting the existing exemption for research died on 2/27/91 when the legislature adjourned.

Washington SB 5629 also similar to the Montana bill. Was scheduled for committee hearing on March 1.

Wyoming HB 366 would ban the release of abandoned pound animals for research purposes. Action unknown. SF187 would amend the animal cruelty statute with no mention of research. Action unknown.

Since the above summary was compiled three additional states (total of 14) including **Oregon** had introduced legislation to protect research facilities, employees and laboratory animals.

On March 12 Representative Torricelli (D-NJ) re-introduced the "Information Dissemination and Research Accountability Act" (HR 1329) marking the seventh time he has done so in so many years. This is the bill that would establish a panel of 20 to review all research proposal involving animals approved by any federal agency. Hopefully the cost of implementing this act will prevent its passage.

Much of the above legislation is very positive. We need to support appropriate legislation whenever possible.

Colin Kaltenbach

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APPENDIX P
REPORT OF THE ESCOP

PEST MANAGEMENT STRATEGIES SUBCOMMITTEE

March 28, 1991

David Schlegel

The Pest Strategies Subcommittee (PMSS) of ESCOP has been expanded and broadened to cover all aspects of Pest Management, and has working groups that cover the major component areas related to pest management. (This has been an on going effort for about two years.) PMSS consists of a steering committee made up of one representative from each region and the subcommittee chair. The subcommittee also includes the chair of each of the component working groups. The committee membership is as follows:

Steering Committee

- R. L. Lower, University of Wisconsin, Chair
- C. W. Donoho, University of GA, Southern
- B. A. Jones, University of Illinois, North Central
- R. A. Rohde, University of Massachusetts, North East
- G. W. Ware, University of Arizona, West

Working Group Chairs

- Biological Control.....Seymour Van Gundy, CA
 - Pest Resistance.....Eldon Ortman, IA
 - Application Technology.....Bill Brown, LA
 - Resistance Management.....R. J. Kuhr, NC
 - Pest Management Integration*.....D. E. Schlegel, CA
 - IR-4*.....Roger Wyse, NJ
 - NAPIAP*.....Gale Buchanan, GA
- Director at Large.....Lannie Boyd

*These three Work Groups are funded lines in the budget.

This combination of disciplines brings together representatives of the most active component areas in pest management. These working groups, particularly the first 5, epitomize Integrated Pest Management when it is working properly. There are a number of other candidate working groups such as Cultural Control and Exotic Pests that may need to be added as they achieve an identity. The National IPM Coordinating Committee, as it existed in the past, involved all of the above Work Groups and projects in all of these areas were funded, including Cultural Control and Exotic Pests. Support of research in the component areas identified by the Work Groups was by chance... there was not an effort to involve them. Some groups felt very much disenfranchised.

With the new structure of PMSS, the old National IPM Coordinating Committee lost much of the purpose that it had originally served. It is being replace by Integration Management Working Group. Its role has not yet been defined entirely, and its membership is currently being developed. Work Groups will include a strong

contingent of working scientists, in contrast to the old National IPM Coordinating Committee, whose membership was primarily Administrative. The overall goal of this subcommittee will likely be something along the following line: To facilitate the development and transfer of comprehensive integrated pest management systems.

Integrated Pest Management is a funded budget line \$4,000,000, up from \$3,000,000 last year. The current year will have to be business as usual, as all of the regions are nearing the end of the grant award process. Next year it is expected that some of the other working groups will come on line, particularly if the budget improves. Biological control would be the first work group to formally be activated.

The Western Region's IPM program was restructured several years ago, and recognizes the Work Group areas in its call for proposals. The West has consistently funded biological control projects, and last year nearly a third of the Western funding went to that area.

There is a widely held belief that the Special Grants, Pest Management Program will continue grow, based on Congressional Interest in it as it relates to Water Quality, Food Safety, Sustainable Agriculture, and the environment.

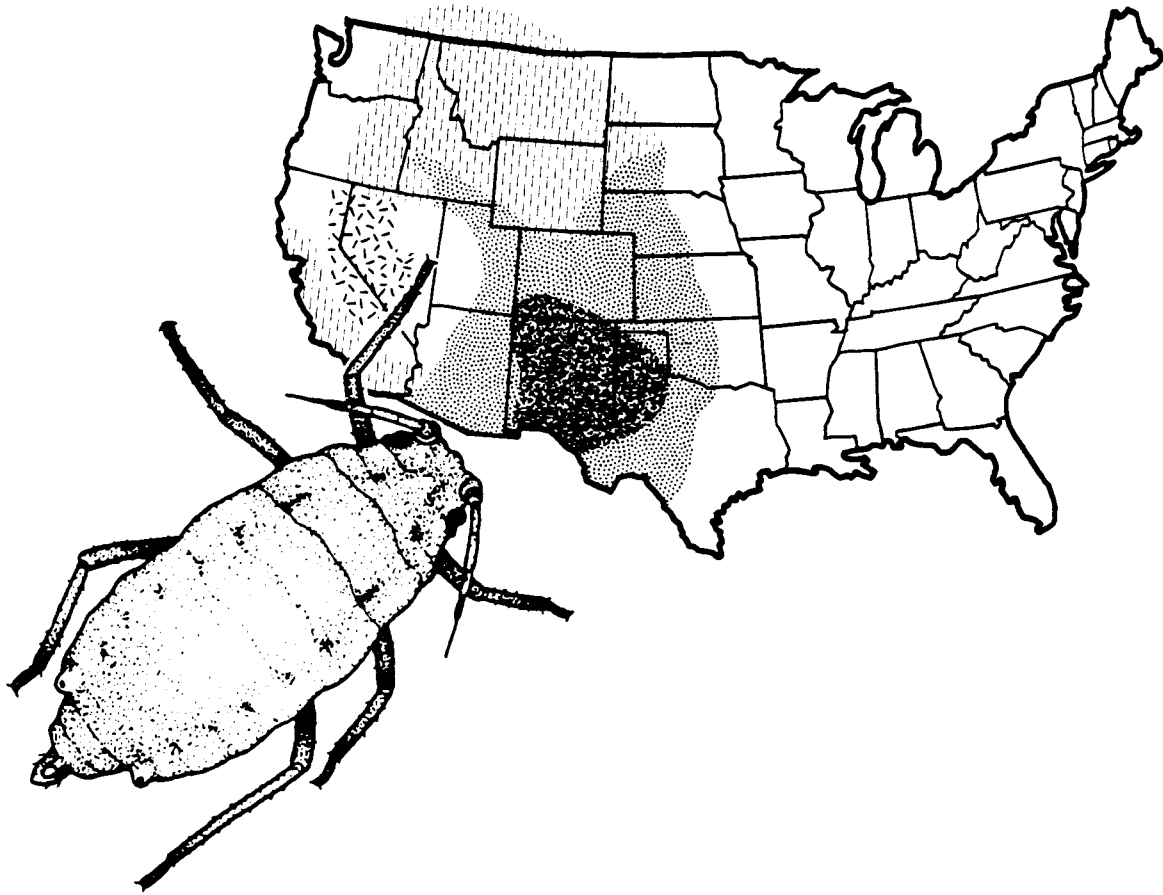
The question of management of this program and funding the component parts has been rightly raised. There is a strong feeling that the regional mode should be followed, but unless major funding increases come about we cannot justify separate calls for proposals for each of the Work Groups in each region. The answer is not obvious, and a management committee composed of the Work Group Chairs, Ron Kuhr, Bill Brown, Eldon Ortman, Seymour Van Gundy, and David Schlegel was appointed to study this question. Dick Rohde, a member of the PMSS Steering Committee will serve as Chair. This Committee has not yet met.

The PMSS will have a number of functions. The most obvious one is to increase the budget for Pest Management. Basic component research is included in the National Research Initiative, but it does not lead to the continuum of basic to applied research that is required to solve the real problems. The goals of this program pick up where the NRI leaves off. A draft budget plan has been developed that shows how the IPM budget would be distributed among that various Work Group areas over a variety of funding levels.

IR-4 and NAPIAP have a different relationship as Working Groups, but are a part of Pest Management Strategies. These two programs play key roles in the total pest management program and should be under the PMSS umbrella, however their roles are very different from those discussed above. There is a major effort underway to coordinate these two programs in such a way that NAPIAP programs can be of more direct benefit to IR-4. This will be discussed at a meeting of National Pesticide Impact Coordinating Committee in

Washington, April 10 and 11.

Russian Wheat Aphid



**A Progress Report to the
National Association of State
Departments of Agriculture**

March 1, 1991

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February 20, 1991

Dr. J. B. Grant
Executive Secretary, National Association
of State Departments of Agriculture
1616 H. Street, NW
Washington, DC 20006

Dear Dr. Grant:

The National Russian Wheat Aphid Steering Committee has continued to actively participate in the coordination of research and educational programs related to the control of Russian wheat aphid. We welcome the National Barley Growers Association as a member of the committee and appreciate the support and encouragement from a number of cereal associations, councils, boards and commissions.

The 1991 Russian Wheat Aphid Report to the National Association of State Departments of Agriculture reflects the coordinated program results generated through the Western Research Coordinating Committee, WRCC-66, "Biology and Control of Russian Wheat Aphid." Scientists and specialists from State Agricultural Experiment Stations, USDA-ARS, USDA-APHIS, USDA-CSRS and the Cooperative Extension System represent the membership of WRCC-66 and collaborated on specific programs. Individual agency reports are available which detail specific projects and results.

Although excellent progress is being made to develop and implement control measures for Russian wheat aphid, much work still needs to be done as soon as possible. Aphid infestations continue to cause serious economic loss to wheat and barley crops in many growing areas. Yield and quality losses have created economic hardship for growers throughout the western United States. Need to apply pesticides to protect cereal crops has increased production costs at a time of declining prices, drought conditions and tight financial policies. The added financial burden of controlling this pest has caused serious economic problems for numerous growers.

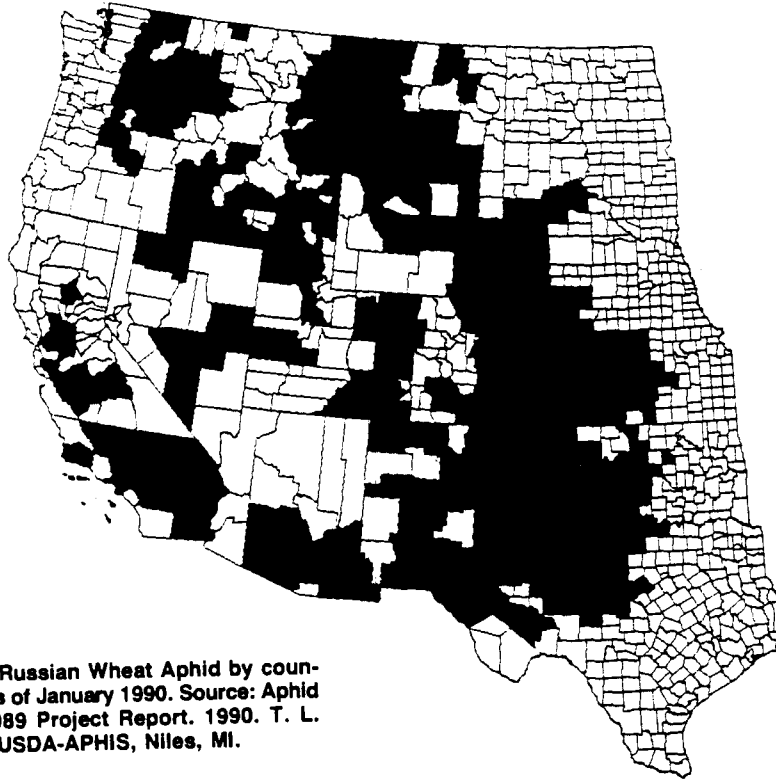
The U.S. Congress appropriated \$2.95 million in FY91. Some of the funding was redirected within agencies, taking away funds from other important agricultural programs. States have redirected funding and grower associations have provided resources to address the Russian wheat aphid problems. Thus, it is imperative that the FY92 federal budget provide funding at an appropriate level to help solve this national problem.

On behalf of the National Russian Wheat Aphid Steering Committee, I want to thank you and NASDA for continued support and encouragement. We are pleased to provide the 1991 Russian Wheat Aphid Report.

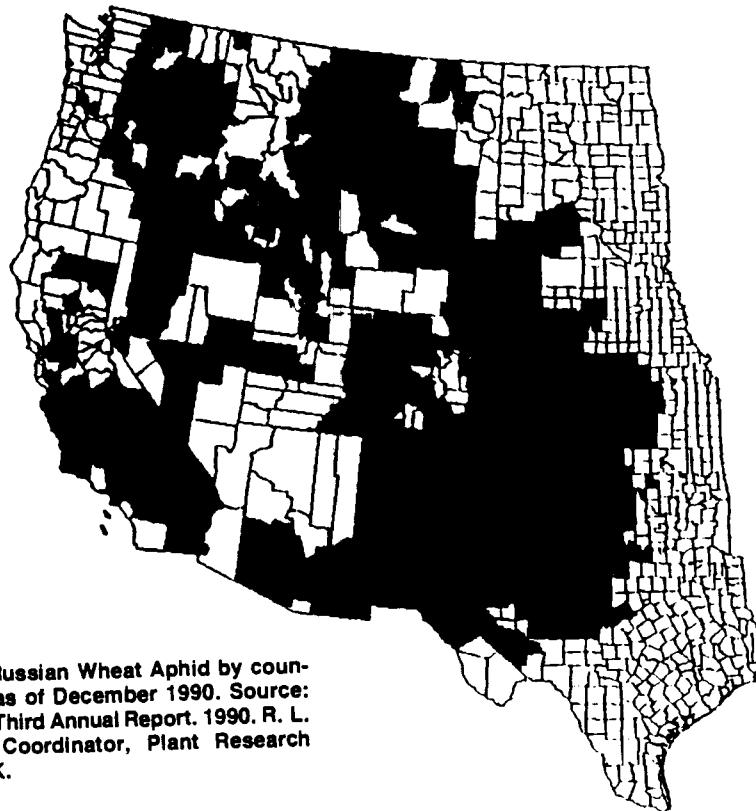


Gary A. Lee, Chairman
National Russian Wheat Aphid
Steering Committee

Russian Wheat Aphid Distribution



Reported distribution of Russian Wheat Aphid by counties in the United States as of January 1990. Source: Aphid Biological Control FY 1989 Project Report. 1990. T. L. Burger, Project Leader, USDA-APHIS, Niles, MI.



Reported distribution of Russian Wheat Aphid by counties in the United States as of December 1990. Source: The Russian Wheat Aphid Third Annual Report. 1990. R. L. Burton, ARS Technical Coordinator, Plant Research Laboratory, Stillwater, OK.

National Russian Wheat Aphid Integrated Pest Management Program

Executive Summary

The national coordinated program to develop effective control of the Russian wheat aphid (RWA) has been in existence for three years. Significant research contributions have provided an understanding of the aphid's life cycle, adaptability, distribution and economic damage to cereal crops. In addition, educational materials and programs are being delivered to producers so that this knowledge can be incorporated into management practices at the farm level. Despite the orchestrated efforts of research scientists, extension specialists and regulatory personnel, the pest continues to cause severe crop yield losses and product quality reduction throughout the western United States. In addition, infestations of the aphid continue to spread to previously uninfested areas resulting in increased use of pesticides and crop loss.

The state agricultural experiment stations, United States Department of Agriculture (USDA) including Agricultural Research Service (ARS), Animal and Plant Health Inspection Service (APHIS), Cooperative State Research Service (CSRS) and Cooperative Extension System (CES); state departments of agriculture; National Association of Wheat Growers; National Barley Growers Association; National Agricultural Chemical Association; and the National Plant Board are actively coordinating programs and projects to direct funding into highest priority areas and ensure unnecessary duplication is avoided. The National Russian Wheat Aphid Integrated Pest Management Program has been endorsed by a number of national, regional and state councils, committees and grower organizations. The devastating crop loss that has been experienced throughout wide geographic areas has stimulated strong support for this program from the cereal industry. A number of groups have initiated action to address the Russian wheat aphid problem which further justifies the need for careful coordination of efforts to maintain effective progress.

The United States Congress appropriated and directed \$2.95 million to support research on Russian wheat aphid in fiscal year 1991. While these funds provide some assistance, less than one-third of the needed resources are being provided to address an acute national problem.

funds for USDA-CSRS were directed to four states leaving 10 states with active research programs without opportunity for additional assistance. The National Russian Wheat Aphid Steering Committee has developed a long-range plan which requires \$9.5 million of federal assistance in addition to the redirected resources presently being provided.

The 1991 Progress Report contains the contributions of scientists and specialists participating in the Western Regional Research Committee, WRCC-66, "The Biology and Control of Russian Wheat Aphid." The collective contributions of scientists working together, regardless of agency, is indeed impressive. State and federal researchers are jointly addressing components of the six project objectives. This report does not attempt to separate contributions, but rather, show the benefits derived from collaborative research. Individual annual reports to the National Association of State Departments of Agriculture have been prepared by agencies which complement this report. The Great Plains Agricultural Council¹ has published a report on the economic impact of Russian wheat aphid. USDA-ARS and USDA-APHIS have summarized agency program activities in detail. State agricultural experiment stations and the Cooperative Extension System have generated numerous research and educational publications.

Significant progress is being made to develop effective control measures for the Russian wheat aphid. Natural enemies of RWA have been collected throughout the world and are being evaluated for potential use in the United States. Environmentally safe and compatible pesticides are being evaluated for use as a temporary crop protection tool. Progress is being made on the development of Russian wheat aphid resistant crop varieties. Understanding of the Russian wheat aphid's life cycle and feeding habits is providing information for changing crop management practices to minimize economic damage. Educational programs for producers have been initiated in all impacted states. Timely development of effective control practices is essential to stop further spread of the pest and to protect the nation's cereal grain industry.

Federal appropriations to USDA-ARS were reduced to

Budget Summary

Timely development of effective Russian wheat aphid control practices to protect the nation's small grain supply is essential for a secure food and feed resource. Small grains are an important part of our basic nutritional diet as well as for populations throughout the world. Other nations rely on U.S. cereal production which translates into essential trade products for the export and balance of payment.

States and agencies have reallocated significant resources to protect crops from the Russian wheat aphid. However, additional funds are needed to address the pest problem and avert future crop loss. Congress has provided a portion of requested funds in the past three

years but at a level below critical needs. The National Russian Wheat Aphid Steering Committee has prepared a multi-agency budget which reflects resource requests to allow program development and delivery for the nation's small grain producers.

The total federal appropriated funds in FY91 were \$2.95 million. This represents 31 percent of the needed funds required for a full-scale implementation of the RWA-IPM program. Appropriations below the requested funding level have resulted in the inability of agencies to respond to this national emergency in a timely manner.

Financial Resources Needed

National Russian Wheat Aphid Integrated Pest Management Program Budget Summary (\$ × 1,000).

Program components	Agency	FY1	FY2	FY3	FY4	FY5	FY6	FY7	FY8	FY9	FY10	TOTAL
Biology and Ecology	States	\$ 450	\$ 450	\$ 450	\$ 450	\$ 300	\$ 300	\$ 300	\$ 300	\$ 300	\$ 300	\$ 3,600
	ARS	300	300	300	300	300	300	300	300	300	300	3,000
	Subtotal	750	750	750	750	600	600	600	600	600	600	6,600
Host Plant Resistance	States	550	550	550	400	400	400	400	400	400	400	4,450
	ARS	400	400	400	400	350	350	350	350	350	350	3,700
	Subtotal	950	950	950	800	750	750	750	750	750	750	8,150
Insecticide Mgmt.	States	700	700	700	700	700	700	700	700	700	700	7,000
	ARS	400	400	400	475	600	600	600	600	600	600	5,275
Biological Control	States	750	750	750	1,000	1,000	1,000	1,000	1,000	1,000	1,000	9,250
	APHIS	3,175	3,175	3,175	3,000	3,200	3,200	3,200	3,200	3,200	3,200	31,725
	Subtotal	4,325	4,325	4,325	4,475	4,800	4,800	4,800	4,800	4,800	4,800	46,250
	Integrated Pest Management System	States	950	900	900	900	900	900	900	900	900	900	9,050
Economics	ARS	850	900	900	900	900	900	900	900	900	900	8,950
	Subtotal	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	18,000
Info. & Tech Transfer	ES	200	200	200	200	75	75	75	75	75	75	1,250
Total		\$9,500	\$9,500	\$9,500	\$9,500	\$9,500	\$9,500	\$9,500	\$9,500	\$9,500	\$9,500	\$95,000
Total/Agency	ARS	\$1,950	\$2,000	\$2,000	\$2,075	\$2,150	\$2,150	\$2,150	\$2,150	\$2,150	\$2,150	\$20,925
	States	3,400	3,350	3,350	3,450	3,300	3,300	3,300	3,300	3,300	3,300	33,350
	APHIS	3,175	3,175	3,175	3,000	3,200	3,200	3,200	3,200	3,200	3,200	31,725
	ES	975	975	975	975	850	850	850	850	850	850	9,000

Budget Request FY92

Agency	FY89*	FY90*	FY91*	FY92*
ARS	\$ 0	\$ 750	\$ 200	\$1,950
SAES	100	350	350 ^a	3,400
APHIS	0	1,000	2,400 ^b	3,175
CES	0	0	0	975
	\$100	\$2,100	\$2,950	\$9,500

*(\$ × 1,000)

^aDirected to California, Washington, Idaho and Oregon.

^b\$1 million increase with \$1.4 million redirected funds.

WRCC-66, "Biology and Control of Russian Wheat Aphid"

Summary

Edited by Susan E. Halbert, President, WRCC-66

February 20, 1991

Russian wheat aphid is a new pest in North America which has been responsible for over a quarter of a billion dollars in loss for growers over the past three seasons. The pest threatens all classes of wheat and barley. Nearly all of the wheat acreage and barley acreage in the Western United States is at risk. Failure to protect cereal crops from Russian wheat aphid could result in inadequate global supplies of wheat and barley.

Russian wheat aphid also jeopardizes profitability of producing small grains. Decreased yield (up to 70%) and a substantial increase in the need for insecticide treatment have cut sharply into the already limited returns expected from small grain production. Besides reducing profitability, increased insecticide usage may also cause outbreaks of secondary pests, cause buildup of insecticide-resistant insect populations, pose a threat to farm workers, sportsmen and wildlife and increase the risk of groundwater contamination.

The goal of the Russian wheat aphid management program coordinated through WRCC-66 is to provide sustainable management strategies which minimize cost to the grower and do not adversely affect the environment. The foundation of this approach will include biological control, development of plants resistant to the aphid and discovering cultural management practices which maximize production and profitability and minimize crop exposure to infestation.

Considerable progress has been made to date. In the area of host plant resistance, good sources of resistance have been found in barley, wheat and triticale. Plant breeders are now working to incorporate the genes into locally adapted varieties.

Numerous expeditions have been carried out to areas where Russian wheat aphid is native. Most explorers have found that the aphid is under good natural control in its native range. More than 70 separate populations of natural enemies have been collected, processed through quarantine and cultured. Most, with the exception of

some of the newest acquisitions, have been released at least once. It is usually possible to find specimens a few weeks after release, but it is too early to know which of these will become permanently established in North America.

Registered and unregistered insecticides have been subjected to an extensive screening effort. This has resulted in several new local registrations and the possibility for general registration of some products in the near future.

There is currently a major effort to devise efficient sampling techniques for Russian wheat aphid and develop accurate economic threshold models which account for economic and biological variation. Incorporation of research on basic biological parameters such as cold tolerance, temperature specific growth rates and host range will add to the reliability of the models.

The Western Regional Suction Trap Survey System has been very useful for alerting growers about the potential for Russian wheat aphid infestations and for tracking geographic range expansion. The combination of trap collection-based management thresholds and local field surveys will provide a more accurate means of predicting the potential for infestations, enabling growers to make more timely and efficient control decisions.

Releases of agronomically acceptable resistant varieties in most classes of small grains are expected within the next five years. It is also expected that some of the released natural enemies will become well established by then, at least in some states. In the future, an integrated approach, emphasizing sustainability, will be stressed. Plant resistance, biological control and appropriate cultural management practices will be incorporated into a regional Russian wheat aphid management decision support system. Producers will have access to the information through the Cooperative Extension System, state newsletters and the public media.

WRCC-66, "Biology and Control of Russian Wheat Aphid"

Authors:

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C. Michael Smith, Kansas State University*

February 20, 1991

Introduction

Russian wheat aphid is a new pest in North America which has been responsible for over a quarter of a billion dollars in cost to growers over the past three seasons (1987-89). It was introduced into Mexico in the late 1970's or early 1980's and was first discovered in the United States in the early spring of 1986. Since then its range has expanded to include 17 Western states and three Canadian provinces. The Russian wheat aphid is native to Central Asia and possibly the Middle East. A world-wide distribution now includes every major cereal producing region except Australia.

Russian wheat aphid threatens all classes of wheat and barley and can also cause losses in rye and triticale. Nearly all of the wheat acreage and barley acreage in the Western United States is at risk. Yield losses up to 70% have been reported, and some crops have been damaged so badly they were never harvested. Estimates of losses for the 1990 season are not available yet; however, preliminary indications are that Russian wheat aphid was less of a problem in the southern part of its range and much more serious in the north, especially in Washington, Oregon, Idaho, Nebraska and Wyoming.

Wheat is a world-wide staple food crop, important both for domestic consumption and as a major component of the global food supply. Wheat is also an important American export product. Failure to protect cereal crops from Russian wheat aphid could result in inadequate supplies of wheat and barley to serve domestic and international markets and could threaten American ability to compete in a global economy. Inadequate supplies of wheat or a significant increase in price could make this staple food unaffordable or unavailable to the world's poor.

Throughout much of the United States, small grain production is only marginally profitable. Prior to the introduction of Russian wheat aphid, insecticides were rarely used on small grains. In some cases, growers must now apply up to three insecticide treatments to control Russian wheat aphid. This substantial increase in need for insecticide treatment can, in some cases, reduce profitability to the point that it is no longer economically viable to produce wheat and barley. Increased insecticide use may cause outbreaks of secondary pests or insecticide resistance and may also pose a threat to farm workers, sportsmen and wildlife, including endangered species, and increase the risk of groundwater contamination.

The seriousness of the threat to one of North America's most important crops has resulted in unprecedented cooperation among U.S. federal and state researchers, Canadian researchers and international agencies, state agricultural experiment stations, the USDA's Agricultural Research Service, Animal Plant Health Inspection Service, Cooperative Extension System and Cooperative States Research Service, the state departments of agriculture, the National Plant Board, the National Association of Wheat Growers, the National Agricultural Chemicals Association, state wheat and barley commissions, Agriculture Canada, Alberta Agriculture, Saskatchewan Agriculture Department, CIMMYT, ICARDA and the Commonwealth Institute of Biological Control. These agencies have all actively participated in an effort to develop economically viable management strategies for Russian wheat aphid. In many cases sacrifices have been made in redirecting limited funds toward Russian wheat aphid research.

Substantial progress to date would have been impossible without the cooperation achieved in this effort.

The goal of this wide ranging cooperative program on Russian wheat aphid pest management is to provide profitable management strategies which minimize the need for recurrent chemical intervention. So far, pesticides have been the only option for Russian wheat aphid management. In the future an integrated approach more in line with modern concepts of Low Input Sustainable Agriculture (LISA) will be developed. The foundation of this approach will include biological control, development of plants resistant to Russian wheat

aphid and discovering cultural management practices which maximize production and profitability and minimize crop exposure to infestation.

This report summarizing substantial progress to date and delineating future plans and benefits includes chapters on host plant resistance, biological control, biology and ecology, insecticide management, integrated pest management and information and technology transfer. Chapters were written by the WRCC-66 section chairmen. A list of publications and presentations by committee members also is included.

Reports of Progress

BIOLOGY AND ECOLOGY

Objectives

Basic Biology

- * To determine Russian wheat aphid reproductive and developmental thresholds at constant temperatures on wheat, and compare these parameters to other small grain aphids in the High Plains.
- * To determine the best laboratory media for rearing Russian wheat aphid.

Dynamics of Field Infestations

- * To monitor Russian wheat aphid flight activity.
- * To determine the potential for reinfestation in the spring or fall of those areas where Russian wheat aphid did not overwinter or oversummer successfully.
- * To estimate population levels of Russian wheat aphid in winter wheat and spring barley.
- * To develop numerical and binomial sampling plans for the Russian wheat aphid in winter wheat and spring barley.

Overwintering Capabilities

- * To monitor and model overwintering of Russian wheat aphid in the field. To determine the supercooling points (freezing points) of Russian wheat aphid. To determine the effect of sub-lethal freezing temperatures on Russian wheat aphid survival and reproduction.
- * To determine prevalence of Russian wheat aphid sexuals in the field.

Non-Crop Hosts

- * To determine the impact of Russian wheat aphid on Conservation Reserve Program grasses and other dryland grass species.
- * To determine whether grasses used in U.S. government soil conservation programs serve as reservoirs of Russian wheat aphid.

Interactions Between the Russian Wheat Aphid and Its Physical and Biotic Environment

- * To determine the influence of water stressed wheat on Russian wheat aphid development in the field.
- * To study Russian wheat aphid increase in dryland wheat and relate it to the presence of aphid competitors and beneficial insects.
- * To evaluate the influences of downy brome infestation

and fertility on Russian wheat aphid damage in winter wheat.

- * To monitor local populations of Russian wheat aphid to determine whether they develop capability to transmit barley yellow dwarf virus (BYDV).
- * To assess the impact of Russian wheat aphid chemical control activities on non-target organisms.
- * To evaluate the effect of planting date on Russian wheat aphid incidence and intensity.
- * To evaluate the effect of cattle grazing of winter wheat on Russian wheat aphid populations.

Current Activities

Surveys

Most states have ongoing survey programs using field scouting, suction traps and occasional pan traps. The surveys are used in extension programs to warn growers. They also have been used to document range expansion and population fluctuations. The current research focus is on correlating data from trap surveys with field observations.

Basic Biology

Much of the preliminary work on developing life tables and temperature related population growth rates has been completed. Current research in the area of basic biology emphasizes population development under simulated field conditions and development of laboratory media for rearing Russian wheat aphid.

Overwintering Capabilities

Several states as well as Alberta, Canada, have research programs on overwintering capabilities of Russian wheat aphid. Research is being conducted on cold tolerance, winter distribution as a function of microclimate, the role of cryoprotectants and the occurrence of sexuals.

Non-Crop Hosts

Current research on grass hosts assesses both potential damage to rangeland grasses and the potential for those grasses to serve as reservoirs of Russian wheat aphid during the winter and in the summer dry season.

Interactions with Biotic and Abiotic Factors

Research on interactions between Russian wheat aphid and other factors and organisms is varied, but generally focuses on those interactions which have potential economic importance.

State Reports

Colorado

Research is being conducted on the distribution of Russian wheat aphid in wheat during the winter as influenced by microclimate. The supercooling points of Russian wheat aphid are being determined, and the role of cryoprotectants in Russian wheat aphid overwintering is being investigated.

A number of grass species have been classified as to their suitability as hosts for Russian wheat aphid.

Russian wheat aphid flight activity is monitored with a series of 20 Allison-Pike suction traps.

Pheasant chicks have been exposed to commercial applications of chlorpyrifos and disulfoton. The presence of nontarget insect species was assessed in the same experiments with sweep net and pitfall samples.

The influence of N and P fertilization on Russian wheat aphid population increases is being evaluated in both greenhouse and laboratory experiments.

The effect of winter wheat planting date on Russian wheat aphid is being studied in both controlled field experiments and extensive surveys.

The effects of cattle grazing, planting date and variety on Russian wheat aphid populations have been evaluated.

Idaho

Replicated plots including 25 conservation grasses and wheat have been established at Parma and Kimberly under irrigated and dryland regimes. These are being sampled in the early spring to detect overwintering Russian wheat aphid, mid-season during peak Russian wheat aphid flights, in the summer dry season to detect potential sources of Russian wheat aphid prior to fall planting season, and in the fall to detect potential sources of infestation for fall crop and potential overwintering populations.

So far there is little to no evidence that Russian wheat aphid is a significant vector of BYDV in North America; however, selection pressure for vector capability is great. Monitoring naturally occurring populations in Idaho for transmission will continue, and efforts will be intensified in years when outbreaks occur of either Russian wheat aphid or BYDV or both.

Suction trap catches are being correlated with local infestation levels. The suction trap network has been useful in tracking range extension of Russian wheat aphid throughout Idaho, for alerting growers to the potential for infestation of spring-sown cereal crops and for advising safe fall planting dates.

Montana

Research is being done on the use of benzimidazole agar to keep leaf pieces alive for rearing Russian wheat aphid in growth chambers. The technique can be used to do life table analyses of biological control agents.

Two winter fields and one spring barley field were sampled at approximate weekly intervals during June and July 1990 and the number of Russian wheat aphids per tiller was determined. The sample size (number of tillers) necessary to maintain a 15% error level (sample error/mean) was determined for each field and sampling date by taking five random tillers in each of 20 locations within the respective fields sampled. The mean and variance of the number of Russian wheat aphid per tiller were then used in an optimal sample size formula to determine the number of additional tillers necessary to achieve the 15% error level. Error levels obtained using this approach ranged from 8 to 10%. Taylor's Power Law Analysis was then conducted on the mean and variance values obtained and numerical and binomial sampling plans were generated for Russian wheat aphid that was infesting winter wheat and spring barley.

The Russian wheat aphid population reached a peak density of 48 aphids per tiller in winter wheat during the third week in June. In contrast, Russian wheat aphid population in June for spring barley were generally low, but rapidly increased to a peak of 136 aphids per tiller the third week in July.

Nebraska

Spring barley trap crops are being used to monitor for Russian wheat aphid activity through the spring each year. Russian wheat aphid infesting the barley can be rapidly detected because of the severe and rapid development of leaf yellowing. Flight activity of Russian wheat aphid is also being monitored with yellow water-pan traps and suction traps. Spring populations were not present in the plot areas or in the surrounding counties. Flights of Russian wheat aphid have been detected in late May-early June in 1988 and 1989.

Texas

Research on the effect of drought stress on Russian wheat aphid bionomics is being done in the field by excluding rainfall to produce varying degrees of drought stress. In 1990, preliminary research was conducted in a rainout shelter to develop techniques using wheat grown at several available water levels. Based on this experience, the study will be modified and continued in 1991.

Research evaluating the effects of humidity on the bionomics of Russian wheat aphid is planned for the near future. The studies will compare the effects found to those of other small grain aphids.

Wyoming

Research plots were established on the University of Wyoming Research and Extension Centers at Archer and Torrington for the 1989 cropping season. Plots represented all possible combinations of two levels of downy brome infestation and three levels of fertilizer application. Chlorpyrifos was used on one half of each plot to produce an aphid-free control.

Two studies were conducted in 1989 to determine the impact of Russian wheat aphid on grasses recommended for use in the Conservation Reserve Program along with other dryland grasses commonly grown on Wyoming native rangelands. The first study was a field trial, and the second was a complementary greenhouse trial. The field trial consisted of 30 grasses that were adapted to dryland production. These grasses were seeded into plots of fallow seedbed on April 18, 1989, and good stands of all grasses were obtained. Half of the seeded area (two of four blocks) was sprayed with dimethoate at 3/4 pint per acre in late May, late June and late July. The greenhouse study consisted of planting selected grasses in pots and infesting them with 10 Russian wheat aphids per pot (one grass plant per pot).

Preliminary results indicate that the numbers and distribution of Russian wheat aphid, as well as symptoms, are all extremely variable; however, some grasses, including "Fairway" crested wheatgrass and "Manchar" smooth brome grass, appeared resistant.

Russian wheat aphid seemed to increase most successfully on mammoth wildrye, bluebunch wheatgrass, intermediate wheatgrass, pubescent wheatgrass and tall wheatgrass. Russian wheat aphid numbers on western wheatgrass and slender wheatgrass were slightly lower. Mountain brome was infested with Russian wheat aphid on all observation dates.

Alberta, Canada

Supercooling points have been established. A threshold for development has been established and compared to other published thresholds. Survival and development after exposure to constant freezing temperatures have been examined. Russian wheat aphid populations are being monitored in the field. Periodic collections are being assessed to determine the seasonal changes in cold tolerance of Russian wheat aphid. Field information is being compared to data already accumulated using lab-reared aphids.

Future Emphasis

In the area of basic biology, researchers hope to evaluate the effects of humidity in a manner similar to the temperature studies. The effects will be compared to those found with other small grain aphids. There are also plans to determine the effect of water stress on Russian wheat aphid bionomics and damage potential, to determine the effect of preconditioning of aphids at temperatures close to the developmental threshold on cold tolerance and to model the survival and development of overwintering populations. Future studies will also be directed at determining if wheat vigor or canopy reflectance influences the attractiveness of wheat to the aphid. Finally, bionomic studies will be expanded to include the effects of other aphid species and beneficial insects on growth, development and movement of Russian wheat aphid.

Making use of the extensive Western Regional Suction Trap Network, the timing of flights and the propensity toward long range or local flights will be studied. One potential use of the suction trap data also may be the development of indices based on cumulative seasonal trap collections for area-wide yield loss caused by Russian wheat aphid.

Winter wheat and spring barley fields will be sampled again in 1991 to determine Russian wheat aphid population levels throughout the growing season in many western states. Mean and variance relationships (estimated from the number of Russian wheat aphids per tiller) generated in 1990 and 1991 will be compared among crops and among states and Canadian provinces. The data will be used to develop regional numerical, binomial and binomial-sequential sampling plans.

Current research on the effect of Russian wheat aphid on the vigor of conservation grasses will be expanded to include the effect of the aphids on seed and forage production. Other possible future emphases may include investigation of basic questions such as biochemical characteristics of host acceptability, incorporation of resistance genes into wheat through wide crosses or use of conservation grasses as reservoirs for biological control agents of Russian wheat aphid.

Potential Benefits

The potential benefits of Russian wheat aphid biology and ecology research will be felt largely in improved management strategies due to modified cultural practices and a better ability to predict changes in Russian wheat aphid populations. The suction trap survey system has already been very beneficial for alerting growers about the potential for Russian wheat aphid infestations. Refinement of trap-based management thresholds will

provide an even more useful service. If counts can be used to provide an index of aphid related crop loss, this could be beneficial to economists and agricultural strategists.

Cereal producers will know which, if any, of the conservation grasses constitute potential overwintering or overwintering reservoirs of Russian wheat aphid. Grasses which show promise as reservoirs of natural enemies of Russian wheat aphid could be incorporated into large scale Low Input Sustainable Agriculture (LISA) systems. Basic information on host/non-host characteristics could be incorporated into development of future resistant crop varieties or exploited to prevent aphids from recognizing their host plants.

Research on Russian wheat aphid bionomics in the field and in the laboratory can ultimately be used to formulate developmental models. Models such as one being developed in Canada, which will predict the potential for overwintering in Canada and the northern United States, will be used to warn farmers of the likelihood of spring infestation in winter and spring cereals.

Currently, there is great interest in reducing the number of stress factors that could exacerbate the effects of Russian wheat aphid. Certain weeds, such as downy brome, may harbor Russian wheat aphid and provide a source of infestation for crop seedlings. Results of research in this area could be used to adjust the timing of weed control applications to decrease the potential for Russian wheat aphid infestations.

The benefits of the wide ranging program on Russian wheat aphid biology and ecology are many. In summary, as a result of ongoing research in the Western United States and Canada, more accurate means of predicting the potential for infestations will be developed. These will enable growers to make more timely control decisions. Research on winter and summer dry season reservoirs of Russian wheat aphid will lead to the development of cultural management strategies which maximize production while avoiding unnecessary crop exposure to infestation.

Implementation

Preliminary results of many of the projects in this chapter have already been presented at meetings scientists and industry personnel. Some studies have been published in scientific journals and extension publications. Several states have a weekly newsletter alerting growers about the potential for Russian wheat aphid infestations. Commercial media also has been used extensively when situations warrant immediate dissemination of information to the public. Information on bionomics, field population dynamics and sequential sampling will be incorporated into a Western Regional

Decision Support System for Russian wheat aphid management being developed at Bozeman, Montana, in cooperation with most of the other states in the region.

INSECTICIDE MANAGEMENT

Objectives

- * To develop longer duration of control.
- * To determine application timing for greatest economic return.
- * To develop applications with ground and aerial equipment.
- * To develop acceptable grazing allowances.
- * To develop environmentally compatible integrated usage with low risk to man and animals.
- * To develop strategies to prevent or delay the development of resistance in Russian wheat aphid to effective insecticides.

Current Activities

Many registered and unregistered insecticides are being tested by land-grant universities, U.S. and Canadian agencies and industry with the intent of identifying products which provide longer duration of control than is now achieved by small grain producers with currently registered treatments.

The timing of insecticide applications must be based on an economic threshold which is based on a documented economic injury level. The use of economic thresholds is the cornerstone of sound insect pest management. Investigators in California, Colorado, Montana (MSU and USDA-ARA), Texas and Washington have initiated a joint effort (funded through WR-160, CSRS Special Grants Programs) to develop economic injury levels and economic thresholds for Russian wheat aphid across its U.S. geographic distribution. Parallel efforts are underway to develop the Russian wheat aphid sampling schemes needed to assess aphid populations for the injury level and threshold calculations.

Little has been done to improve ground and aerial foliar insecticide application technology (spray volume, spray adjuvants, nozzles, droplet size, etc.). Several spray adjuvants have been tested and limited studies have been conducted of the effect of spray volume on the level of Russian wheat aphid control. Planting-timing insecticides in the form of conventional granules, slow release granules, microtube injected liquids and seed treatments have shown promise as new means of applying Russian wheat aphid insecticides for long-term control in winter grains.

Any work on grazing allowances is being done by industry.

Pheasant chicks have been exposed to commercial applications of two most commonly used Russian wheat aphid insecticides for two years in Colorado with little effect on this important wildlife species. The effects of the same applications on non-pest insects were also evaluated. Insecticides are being tested in Texas for their relative toxicity to Russian wheat aphid and to natural enemies of Russian wheat aphid.

Baseline toxicities of several insecticides to Russian wheat aphid have been measured. This information can be used to monitor the development of resistance. Seasonal changes in insecticide efficacy and the influence of ambient temperature on efficacy have also been studied. These factors might explain some control failures that might otherwise be attributed to genetic resistance to a given insecticide.

Future Emphasis

Substantial insecticide testing will continue, although the prospects for the development of new compounds are not great. It is likely that the number of registered insecticides will decrease, making even greater the needs for improving the efficacy of existing compounds and for insecticide resistance management.

Concerns for the effects of Russian wheat aphid insecticide applications on non-target organisms will increase. Application safety will have to be improved operationally given the limited number of available insecticides, their relative toxicity and the prospects for new materials.

The major emphasis will be placed on the development of computer-based insecticide application decision support systems which will take into account economic injury levels, control costs, presence of Russian wheat aphid natural enemies, crop condition and development, expected economic returns and climatic factors. Much research will be needed to develop these systems.

Potential Benefits

Properly timed and applied Russian wheat aphid insecticide treatments can result in yield savings of 50% or more. Given that more than 2 million acres have been treated yearly for Russian wheat aphid, the savings have likely been enormous. Much of this benefit is due to the insecticide research that has been conducted. As Russian wheat aphid treatment decision making improves, growers will benefit from fewer, more economically effective insecticide applications. Environmental benefits will derive from fewer treatments and operational modifications intended to minimize impacts on non-target organisms.

Implementation

Results of insecticide performance and application technology research are made available to growers and industry personnel through public meetings, personal contacts, and in-house and formal publications. This channel of information has been in place for years and is quite effective. The implementation of computer-based decision support systems may pose more of a challenge to Cooperative Extension, given its lack of appropriate equipment and experienced personnel. Insecticide resistance management programs may also pose a number of informational and policy challenges.

BIOLOGICAL CONTROL

Objectives

- * To collect and import natural enemies from the aboriginal home of the Russian wheat aphid.
- * To release and permanently colonize imported Russian wheat aphid enemies in all possible parts of the U.S.
- * To evaluate the potential and actual impact of existing and new Russian wheat aphid enemies for biological control.
- * To integrate biological control research results with other crop protection tactics.

Current Activities

The U.S. multi-agency program is comprised of 16 State Agricultural Experiment Stations (SAES), the USDA-Agricultural Research Service (ARS), and the USDA-Animal Plant Health Inspection Service (APHIS). Generally, each agency is engaged in the listed objectives, and WRCC-66 coordinates these activities. Specific agency activity: APHIS mass produces and in some states releases imported enemies, provides funds for international collection and SAES quarantine activity and sponsors a national data management activity; and SAES and ARS conduct the local research and most foreign collection of exotic RWA enemies. Non-member cooperators and contractors include State Departments of Agriculture, Agriculture Canada, Commonwealth Institute of Biological Control and many foreign-based scientists.

A three-phase plan is set to implement Russian wheat aphid biological control. Each implemented phase continues as the next phase begins. Phase I of the WRCC-66 biological control program began in August 1988, with importation of five species of Russian wheat aphid parasites. Since then, several SAES and ARS

scientists have travelled to numerous countries where Russian wheat aphid originated. These scientists collected enemies and trained collaborators for future collecting. Collected enemies are shipped to SAES or ARS quarantine facilities where they are used to start cultures of the enemies. These cultures then produce enemies for field release. Russian wheat aphid exists in a wide range of weather extremes and in very different cropping systems. Thus, optimal success of Russian wheat aphid biological control will require that many types of Russian wheat aphid enemies be imported from all countries of where Russian wheat aphid occurs. Enemy release techniques have been developed to optimize success of permanently establishing Russian wheat aphid enemies in all parts of the U.S. Many Russian wheat aphid-infested states do not have facilities or personnel to produce large quantities of imported Russian wheat aphid enemies. Thus, APHIS produces imported enemies for these states and for cooperating agencies.

Phase II is the focus of current activity, and emphasizes collaborator and U.S. scientist collection of Russian wheat aphid enemies in prime areas for effective enemies. Repeated collections in key countries are necessary because the enemy complex attacking Russian wheat aphid changes as the wheat production season progresses. Phase II also emphasizes continued local research on aphid/enemy interactions, magnifies the program for release and field colonization of imported enemies and initiates development of research tools needed to evaluate the impact of released and extant Russian wheat aphid enemies.

Phase III began in earnest in 1989. It consists of domestic research needed to optimize biological control. Field studies in progress on Russian wheat aphid parasites and predators are diverse and include (1) measuring the population dynamics of aphids and enemies in key locations, (2) appraising the diversity of extant aphid enemies attacking Russian wheat aphid in the field, (3) verifying establishment of permanent populations of exotic enemies that have been released, (4) determining the extent of mortality from extant enemies, (5) assessing the role of Conservation Reserve Program areas in aphid/parasite population dynamics, (6) determining overwintering capabilities of released exotic enemies and (7) assessing the potential of extant pathogenic organisms that can cause disease in Russian wheat aphid populations. Domestic laboratory studies are developing tools to (1) distinguish between closely related exotic and extant enemies (i.e., using DNA analysis, electrophoresis or biological characteristics), (2) anticipate which exotic enemies each locale should emphasize for optimal chances of establishment, (3) produce developmental biology for Russian wheat aphid enemies present in local populations of Russian wheat

aphid and (4) provide understanding to optimize the value of biological control.

Specific Progress

Objective 1: Import natural enemies from the aboriginal home of the Russian wheat aphid. To date, more than 150 Russian wheat aphid enemies have been processed through federal and state quarantine facilities, including enemies from Burundi, Czechoslovakia, France, Greece, Holland, Iran, Iraq, Jordan, Morocco, Pakistan, Peoples Republic of China, Poland, Spain, Syria, Turkey, U.S.S.R. and Yugoslavia. More than 70 of these imported Russian wheat aphid enemies have been cultured, many have been field released at least once, and at least 15 have been released many times. Cooperating agencies are culturing more than 53 different Russian wheat aphid enemies. Some of these cultured enemies are so recently imported that they have not yet been released.

Objective 2: Release and colonize imported enemies in the U.S. The first imported Russian wheat aphid enemies were imported in fall 1988. Within several months, many research agencies and APHIS began production of these first enemies. About 100,000 exotic aphid parasites and 576,000 exotic predators were produced and released in 1989; and about 612,000 exotic parasites and 431,000 exotic predators were produced and released in 1990. These nearly 1.5 million Russian wheat aphid enemies were sent in about 500 shipments to cooperators for release in about 25 sites (at least one site in each of 16 states and in Canada).

Objective 3: Evaluate impact of Russian wheat aphid enemies. Research was initiated in 1990 to (1) use electrophoresis, behavior and reproductive isolation to identify indigenous and exotic populations of two species complexes, *Aphelinus sp nr varipes* and *Diaeretiella sp nr rapae*, prominent candidates controlling Russian wheat aphid, (2) develop check methods for evaluating respective enemies for impact on Russian wheat aphid and other wheat infesting aphids and (3) determine adverse effects of currently registered insecticides against extant and exotic Russian wheat aphid parasites.

Objective 4: Integrate biological control research results with other crop protection tactics. Many aspects of current research will apply this objective, but little integration is possible until greater understanding is available. However, discussions on integration began in 1990, and continuance of these discussions will be critical to biological control developing needed information to facilitate integration.

Future Emphasis

Collection, importation, culture, distribution and field release of exotic enemies were the initial goals of biological control. These activities are sustaining, and

major remaining tasks are to (1) establish in the field one or more efficacious enemies, (2) measure the Russian wheat aphid population suppression by new and existing enemies and (3) perfect tools for distinguishing between enemies that look identical but are biologically different. The ultimate goal of biological control is to optimize the impact of effective Russian wheat aphid enemies when used with other effective crop protection tools, and to provide farm-level information needed to integrating these tools in a cost-effective system of crop production.

Potential Benefits

Biological control is a distinct prospect for unilateral and complete control of Russian wheat aphid. If biological control is only partially successful, it is historically completely compatible with all other non-insecticide tools. Regardless of the extent of biological control success, costs for continued biological control will diminish to those required to integrate biological control with other tactics.

Implementation

The use and coordination of biological controls in crop protection are being implemented as WRCC-66 research progresses. If biological control can be a unilateral control, very little additional research will be required for effective implementation at the farm level. If biological control is partially successful and must be used in concert with other crop protection tactics, information collected in Phases II and III will provide the understanding needed to integrate biological control with other tactics.

INTEGRATED PEST MANAGEMENT

Objectives

- * To incorporate the knowledge and information obtained in research on biology, ecology, host plant resistance, biological control, cultural control and insecticidal control into an integrated approach to managing the Russian wheat aphid.
- * To develop a comprehensive decision support system for Russian wheat aphid on wheat that addresses differences in Russian wheat aphid-plant interactions as affected by production systems, geographic location, plant age and multiple biotic and abiotic stresses. Initial focus: To determine the influence of plant stage and aphid density on plant damage.
- * To assess the economic threshold and injury levels for the Russian wheat aphid in spring barley.
- * To develop an efficient sampling plan utilizing numerical and binomial sampling plans for Russian wheat aphid in wheat and barley.
- * To develop fall thresholds and sampling plans.

Current Activities

A multi-state integrated pest management research group, including cooperators in Texas, Colorado, Montana, Washington and California (Tom Archer, project leader), is currently determining the effect of plant growth stage on Russian wheat aphid damage. Similar experimental protocol is being used in each participating state. This will increase the data base and optimize the application of these data across the entire region. Planting date and Russian wheat aphid levels will be varied and the impact of the aphid infestation on the plants will be measured. The initial phases of this research will focus on studying the plant response to aphid feeding in small plots using artificial infestation techniques.

A number of other states are independently collecting data on the yield loss relationship for the Russian wheat aphid to determine local threshold recommendations. This larger data base will be valuable in developing and verifying the regional decision support system.

Three barley cultivars were planted at four locations in Wyoming. Varying rates of insecticides were applied at different plant growth stages to establish different aphid densities. Plant measurements were taken to determine the impact of the Russian wheat aphid on barley growth. The data provide information on the economic threshold for Russian wheat aphid on feed barley based on stage of plant growth.

In a multi-state sampling project (David Legg, project leader) data were used from spring and summer Russian wheat aphid infestations in winter wheat and spring barley in Colorado, Nebraska, Oklahoma and Wyoming to determine the relationship between the proportion of infested sample units and the mean number of aphids per tiller using five binomial regression models. A similar sampling program in Montana includes sampling winter wheat and spring barley through the season to determine Russian wheat aphid levels. Mean and variance relationships will be compared among crops and states or provinces.

Future Emphasis

The future emphasis of integrated pest management research dealing with the Russian wheat aphid will be to integrate all aspects of insect control into a workable management system. The components of this system will be host plant resistance, cultural control, biological control and insecticidal control.

The research on the multi-state integrated pest management project will be expanded with increased funding to incorporate abiotic stress, biological control, multiple aphid infestations, wheat varieties (especially resistant varieties) cultural practices and spring wheat and barley into the decision support system. Research

comparing suction trap collections with field infestation will allow incorporation of trap collection data into the system. The data generated in this project will be used by Jim Berry (USDA-ARS, decision making process) and Norm Elliott (USDA-ARS, insect/plant model) to develop and refine the system. The implementation of this decision support system will require a large and diverse data base for the verification and fine tuning required to make it useful on a wide scale.

Future studies on spring barley economic thresholds will be conducted under irrigated conditions to ensure malting quality. These studies will be conducted to determine how the Russian wheat aphid influences yield as well as malting quality.

The binomial models developed from the multi-state sampling project will be compared to those from data collected on fall-infested winter wheat. These models will also be compared to those derived from data collected with a consistent 15% level of precision. Simulation sampling experiments will be conducted to thoroughly test the sensitivity of test models to changes in sample size. Mean and variance relationships will be compared among crops and among states. Regional numerical, binomial and binomial-sequential sampling plans will be developed.

Potential Benefits

All of the research underway on the Russian wheat aphid has at least an indirect relationship to the development of efficient management strategies. Integrated pest management research is the mechanism by which the data obtained in the laboratory, greenhouse or field are transferred into information meaningful to the small grains grower. Data from host-plant resistance, biological control and insecticide, biological, ecological and damage threshold studies are integrated and evaluated as to their importance in the management system.

The development of sampling plans that can be used to reach a decision more efficiently will improve the grower's ability to accurately identify fields where the damage potential is high. In addition, efficient use of sampling resources will improve economics of sampling and increase the acceptance of the recommended practice of regular scouting for aphid infestations. Currently, Russian wheat aphid management relies almost entirely on the use of insecticide treatments to reduce the potential for economic damage. Many thresholds that are utilized are based on a limited data base that has limited application. Other thresholds that are used are merely nominal "best guess" thresholds supported by little or no data. The early benefits of increasing the economic threshold data base will be to make the application of insecticides more efficient, thus eliminating unnecessary treatments. These savings will

have a major impact on the economics of growing wheat in the Russian wheat aphid-infested areas. In addition, the reduced number of insecticide treatments will reduce the impact of insecticide treatments on the environment.

The long range goal of the multi-state economic threshold research group is to develop a comprehensive decision support system. Because the development of the decision support system will be a region-wide effort, the utility of this mechanism will be extensive. This decision support system will be flexible and will apply to a variety of production systems, weather patterns, geographic locations and changing economic conditions. This process will be the basis for the Russian wheat aphid integrated pest management system. Within this framework new research information can be readily incorporated to update the management system.

Implementation

The results of the studies mentioned will be presented at scientific meetings and published in scientific journals. These activities will inform the scientific community of the results of these studies and also will serve as a check on the quality of the research.

The information from these studies will also be utilized in all Russian wheat aphid-infested states as a basis for the development of extension recommendations. Russian wheat aphid management recommendations will be disseminated via extension publications, programs, newsletters and the media (including television, radio, newspapers and popular journals).

The development of a decision support system will be used by extension personnel, agriculture consultants and small grains growers. This mechanism will enable these individuals to utilize the expertise that has been developed into the decision support system to make well informed judgments as to the proper management decisions.

DISSEMINATION OF INFORMATION

Objective

- * To inform and educate producers, field personnel and extension and research personnel as well as the concerned public of current developments with the Russian wheat aphid regarding distribution, detection and management.

Current Activities

Newsletters that contain information pertaining to Russian wheat aphid infestation levels and locations, suction trap catches, management strategies, biology and ecology are published by several states (California, Colorado, Idaho, Montana, Nebraska, Texas and

Wyoming). Newsletters are distributed to county extension offices, small grains producers, small grains organizations, agribusiness personnel and Russian wheat aphid researchers located throughout the western U.S.

Montana has developed a Russian Wheat Aphid Hotline with an in-state toll free number that operates from April through October. The hotline has a two to three minute recorded message that is updated every 7 to 10 days. For each of the past three years over 700 phone calls have been registered with this service. The University of Wyoming has developed an electronic bulletin board that contains weekly accounts of Russian wheat aphid infestations as well as suction trap catches. This information is available to those with a computer and modem.

Aphid suction traps have been established in most western states to detect the onset of Russian wheat aphid flight activity in the spring and fall. Trapping efforts serve as an early warning system by alerting growers to potential Russian wheat aphid infestations in their area. Aphid suction trap data are published in newsletter formats by several states.

Extension entomologists from western states are members of the Great Plains Agricultural Council Russian Wheat Aphid Investigative Committee and have provided economic loss data for the annual report.

Numerous press releases have been generated by individual states on topics of general interest dealing with Russian wheat aphid. Radio public service announcements and television interviews directly related to Russian wheat aphid were reported by Nebraska and Montana. Two states (Montana and Colorado) have developed videos describing Russian wheat aphid biology, damage and management strategies.

Future Emphasis

Each state indicated that the previously mentioned "Current Activities" will be continued as the major emphasis of educational activities. In addition it was generally stated by several state cooperators that electronically-based data/information systems will be developed to provide the public with more immediate access to time-sensitive information. Computer-based decision support programs will be developed as binomial sequential sampling models and economic injury level equations become available.

Potential Benefits

The benefits from having well-informed grain producers and agribusiness personnel are numerous. The tangible benefits of Cooperative Extension efforts have been the yield savings from properly timed insecticide applications and in production costs saved by avoiding unnecessary insecticide treatments. The benefit to the producer is that management decisions being

made are based on the latest information available. Accurate management decisions are critical to the long term viability of wheat growers in areas continuously threatened by Russian wheat aphid.

Implementation

It is vital to keep growers, consultants and agribusiness personnel up to date on current research activities dealing with Russian wheat aphid management. Dissemination of educational information will be accomplished through grower meetings/workshops, development of educational bulletins and newsletters. Future impacts will be made through electronic bulletin boards and computer models, with the latter located at the county level.

ECONOMIC IMPACT

Through the 1988 growing season it was estimated that the Russian wheat aphid had been responsible for \$184 million in losses from control costs and yield reductions (Peairs et al. 1989). This estimate is based upon economic impact studies by the Great Plains Agricultural Council Russian Wheat Aphid Investigative Committee (Morrison et al. 1988, Peairs et al. 1989). Because of the rapid spread of the Russian wheat aphid, infested areas in the western U.S. in 1988 included 28 million acres of small grains (Peairs et al. 1989). This third economic impact study covering the 1988-89 winter and spring small grains growing season was approved by the Crops and Soils Subcommittee because of the continuing severe impact of Russian wheat aphid.

The economic impact of the Russian wheat aphid for the 1988-89 small grains growing season is estimated at over \$92 million (Tables 1-4). The data gathered for this assessment were obtained from questionnaires sent to members of the committee and to entomologists from those states not represented on the committee. Of the 34.4 million acres of winter wheat grown in the western U.S., 51% (16 million acres) of the dryland wheat and 75% (2.6 million acres) of the irrigated acres were grown in areas infested with the Russian wheat aphid (Table 1). The higher percentage for irrigated wheat is likely due to a greater proportion of irrigated wheat grown in the drier areas where the aphid seems to survive best. Only 11% (1,293,000 acres) of the spring wheat and 37% (2,100,000 acres) of the barley were grown in Russian wheat aphid-infested areas. The lower percentages for the spring planted grains are the result of a vast majority of these small grains produced in the northern Great Plains (Montana, North Dakota and South Dakota) where the aphid has not yet had an economic impact.

The Russian wheat aphid has not developed into a major pest of other small grain crops. No states reported significant yield reductions for oats, rye or triticale as a

result of Russian wheat aphid infestations. Only Texas (1,000 acres) and Wyoming (365 acres) noted any Russian wheat aphid treatments in oats. Wyoming also indicated that 37 acres of triticale were treated for Russian wheat aphid. It appears that significant infestations of these crops will develop only under isolated circumstances (e.g. early growth stage, extreme populations and ideal environmental conditions).

The number of acres treated for Russian wheat aphid in barley and wheat in 1988-89 was just over 2.2 million (Table 2). The total cost of these treatments amounted to nearly \$21 million. About 7% of the treated winter wheat acres and 8% of the barley were treated more than once. Spring wheat (35%) required second treatments more often. Fall treatments made up 22% of the total winter wheat acreage treated, and ground treatments made up 5.5% of the total acres of all wheat and barley treated. Comments were received as to the difficulty of estimating ground treatment acres; therefore, ground

treatments may be significantly underestimated.

Estimated yield reductions attributed to the Russian wheat aphid in 1988-89 totaled \$71 million (Table 3). This loss figure was comprised of \$55 million for winter wheat \$5.4 million for spring wheat, and \$10.4 million for barley. No other crops were noted as having significant yield reductions.

The total economic impact of the Russian wheat aphid during the 1988-89 winter wheat and 1989 spring grain growing season was \$92.14 million (Table 4). These losses were intermediate in comparison to the two previous years. Approximately \$4 million more was spent for aphid control than in previous years and only 64% as much yield reduction occurred. This indicates that controls are being used more effectively than in previous years. The total loss from the Russian wheat aphid in the U.S. has now accumulated to over a quarter of a billion dollars through 1989.

Table 1. Wheat and barley acreage and percentage of acres in Russian wheat aphid-infested areas in the western United States, 1989.

	Crop acreage (% in RWA Infested Areas) (x 1,000)			
	Winter wheat		Spring wheat	Barley
	Dryland	Irrigated		
Arizona	-	85 (56)	-	13 (69)
California	40 (25)	550 (55)	-	-
Colorado	2,200 (100) ¹		70 (100)	160 (100)
Idaho	569 (100)	231 (100)	330 (100)	840 (100)
Kansas	7,326 (52)	674 (72)	-	18 (- ²)
Montana	2,500 (35)	10 (0)	3,500 (20)	1,700 (45)
Nebraska	1,973 (61)	77 (87)	-	25 (60)
New Mexico	359 (100)	190 (100)	-	10 (100)
Nevada	-	8 (31)	14 (47)	33 (52)
North Dakota	130 (0)	-	4,700 (0)	2,000 (0)
Oklahoma	6,800 (22)	156 (78)	-	-
Oregon	486 (80)	284 (78)	152 (78)	158 (78)
South Dakota	1,800 (20) ¹		2,500 (1.5)	-
Texas	5,418 (70)	882 (97)	-	25 (100)
Utah	155 (100) ¹		22 (100)	125 (75)
Washington	1,000 (52)	300 (25)	970 (0.5)	490 (1)
Wyoming	207 (83)	14 (36)	18 (18)	148 (25)
Total	30,963 (51)	3,461 (75)	12,276 (11)	5,745 (37)

¹Dryland and irrigated wheat not separated in estimates.

²Infested acreage not estimated.

Table 2. Estimated number of acres treated and cost of Russian wheat aphid control in the western United States, 1989.

	Acres treated (x 1,000) ¹										Treatment cost/acre (aerial)	Total cost of treatments (x \$1,000)
	Winter wheat		Spring wheat		Barley		Spring wheat		Barley			
	Dryland	Irrigated	1x	2x	1x	2x	1x	2x	1x	2x		
Arizona	-	-	2	1	-	-	0.6	0.2	-	-	9.50	48
California	0	2	10	0	-	-	-	-	-	-	20.00	280
Colorado	832	104 ²	-	-	3.5	0.5	64	8 ²	-	-	8.30	9,545
Idaho	55	-	55	-	35	-	75	-	-	-	13.00	2,860
Kansas	135	0	0	0	-	-	0	0	0	0	7.68	1,037
Montana	5	0	0	0	2	0	0	0	0	0	8.00	56
Nebraska	7	0	0	0	-	-	1	-	-	-	8.00	64
New Mexico	30	0	50	0	-	-	1	-	-	-	7.55	612
Nevada	-	-	60	0	0	0	0	0	0	0	-	-
Oregon	53.6	8.6	29	11	10	30	34.3	7.4	-	-	8.50	1,954
Texas	61	0	164	5	-	-	2	0	-	-	7.41	1,756
Utah	8	0	-	-	0	0	0	0	0	0	8.50	68
Washington	300	0	0	0	0.1	0	1.2	0	0	0	8.54	41
Wyoming	3.5	0	0	0	0.1	0	1.2	0	0	0	8.54	41
Total	1,490	115	310	17	55	30	183	16	-	-		20,939

¹ North Dakota and South Dakota report no treatments for the Russian wheat aphid. Oklahoma reported an insignificant amount of treatment because of drought and freeze problems.

² In addition Colorado reported 7,500 acres of winter wheat and 1,000 acres of barley treated three times.

Table 3. Estimated yield reductions attributed to Russian wheat aphid in the western United States, 1989.

	Estimated yield losses (\$1,000) ¹					Total	Remarks
	Winter wheat		Spring wheat	Barley	Total		
	Dryland	Irrigated					
Arizona	0	852	-	128	980	\$2.74/bu barley.	
California	260	3,900	-	-	4,160	Estimated losses in infested area 0.1 T/A (dryland) and 0.1 T/A (irrigated).	
Colorado	10,696	-	92	1,465	12,253	Calculated using 5% yield reduction (winter wheat, barley) or 0.5% (spring wheat). \$3.74/bu	
Idaho	6,373	4,406	4,331	7,820	22,930	\$3.50/bu wheat; \$2.45/bu barley.	
Kansas	224	0	-	0	224	17% yield loss for 15,000 acres infested and not treated.	
Montana	1	0	0.5	0	1.5	Calculated using approx. 0.1% yield reduction.	
Nebraska	829	0	-	39	868	Calculated using 1% yield reduction for wheat (743,000 A) and 5% for barley. \$2.10/bu	
New Mexico	- ²	1,805	-	0	1,805	\$3.80/bu wheat.	
Nevada	-	3.9	0	0	3.9	Calculated using 0.5% yield reduction.	
Oklahoma ²	-	-	-	-	-	-	
Oregon	546	791	943	631	2,911	Calculated using 1% (winter wheat) and 3% (spring wheat and barley) yield reduction. \$4.14/bu wheat; \$2.25/bu barley.	
Texas	12,984	4,752	-	146	17,882	\$3.82/bu wheat; \$2.33/bu barley.	
Utah ¹	5,925	0	46	32	6,003	\$4.30/bu wheat; \$2.20 bu barley.	
Washington	900	52	17	209	1,178	\$4.20/wheat; \$4.06 bu barley. Calculated using 2% yield reduction for barley.	
Wyoming							
Total	38,738	16,562	5,430	10,470	71,200		

¹ Yield reductions calculated at 5% of yield in infested acres and using \$3.90/bu wheat price unless stated otherwise in remarks.

² Not estimated due to drought (New Mexico, Oklahoma) and freeze problems (Oklahoma).

Table 4. Economic impact of the Russian wheat aphid on small grains production in the western U.S., 1987-89.

	1987 ¹	1988 ²	1989
Infested acres (x 1,000)	16,481.0	27,971.7	19,574
Control costs (\$1,000)	\$ 17,217.5	\$ 17,096.8	\$ 20,939
Losses from yield reductions (\$1,000)	\$ 36,652.0	\$ 113,254.5	\$ 71,200
Total losses (\$1,000)	\$ 53,869.5	\$ 130,351.3	\$ 92,139

¹ Morrison et al. 1988.

² Peairs et al. 1989.

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Subtitle C—Export promotion

- Sec. 1531. Amendment to the Agricultural Trade Act of 1978.
Sec. 1532. Amendment to the Agricultural Act of 1954.

Subtitle D—General Provisions

- Sec. 1541. Cottonseed oil and sunflower oil exports.
Sec. 1542. Promotion of agricultural exports to emerging democracies.
Sec. 1543. Agricultural fellowship program for middle income countries and emerging democracies.
Sec. 1544. Assistance in furtherance of narcotics control objectives of the United States.
Sec. 1545. World livestock market price information.

Subtitle E—Studies, Reports, and Other Provisions

- Sec. 1551. Study of North American free trade area.
Sec. 1552. Rose and flower study.
Sec. 1553. Commodity transportation and technology assessment and report.
Sec. 1554. Report on section 22 suspension or termination.
Sec. 1555. Agricultural exports to the European community.
Sec. 1556. Language proficiency and evaluation of foreign agricultural service officers.
Sec. 1557. Reporting requirements relating to tobacco.
Sec. 1558. Report on origin of exports of peanuts.
Sec. 1559. Sense of Congress concerning rebalancing proposal of the European community.
Sec. 1560. Sense of the Senate regarding multilateral trade negotiations.

Subtitle F—Conforming provisions and technical changes

- Sec. 1571. Amendments to the Omnibus Trade and Competitiveness Act of 1988.
Sec. 1572. Amendments to the Food Security Act of 1985.
Sec. 1573. Amendments to the Agriculture and Food Act of 1981.
Sec. 1574. Amendment to the Food for Peace Act of 1966.
Sec. 1575. Amendment to the Agricultural Act of 1949.
Sec. 1576. Amendment to the Agricultural Act of 1956.
Sec. 1577. Amendment to the Agricultural Technical Corrections Act.
Sec. 1578. Amendment to the Agricultural Act of 1970.

TITLE XVI—RESEARCH

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Sec. 1602. Purposes of the agricultural research and extension system.
Sec. 1603. Definitions.
Sec. 1604. Joint Council on Food and Agricultural Sciences and National Agricultural Research and Extension Users Advisory Board.
Sec. 1605. Agricultural Science and Technology Review Board.
Sec. 1606. National Agricultural Library.
Sec. 1607. Grants to enhance research capacity in schools of veterinary medicine.
Sec. 1608. Grants and fellowships for food and agricultural sciences education.
Sec. 1609. Grants for research on the production and marketing of alcohols and industrial hydrocarbons from agricultural commodities and forest products.
Sec. 1610. Food Science and Nutrition Research Center.
Sec. 1611. Animal health and disease research study and Animal Health Science Research Advisory Board.
Sec. 1612. Grant programs for 1890 land-grant colleges, including Tuskegee University.
Sec. 1613. International agricultural science, education, and development and international trade development centers.
Sec. 1614. Aquaculture assistance programs.
Sec. 1615. National competitive research initiative.
Sec. 1616. Special research grants.
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Sec. 1618. Agricultural experiment stations and transportation of virus of foot-and-mouth disease.

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- Sec. 1628. Technical guides and handbooks.
- Sec. 1629. National Training Program.

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- Sec. 1632. Establishment, purpose, and functions of the National Genetic Resources Program.
- Sec. 1633. Appointment and authority of Director.
- Sec. 1634. Advisory council.
- Sec. 1635. Definitions and authorization of appropriations.

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- Sec. 1638. Agricultural Weather Office.
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- Sec. 1652. Research on exotic pests.
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- Sec. 1654. Authorization of appropriations.

Subtitle G—Alternative Agricultural Research and Commercialization

- Sec. 1657. Short title, purposes, and definitions.
- Sec. 1658. Alternative Agricultural Research and Commercialization Center.
- Sec. 1659. Alternative Agricultural Research and Commercialization Board.
- Sec. 1660. Research and development grants, contracts, and agreements.
- Sec. 1661. Commercialization assistance.
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- Sec. 1676. Turkey research center.

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- Sec. 1678. Special grant to study constraints on agricultural trade.
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- Sec. 1701. Short title.

Subtitle A—Food Stamp Program

- Sec. 1711. References to the Food Stamp Act of 1977.
- Sec. 1712. Recipients of aged, blind, and disabled benefits in the territories.
- Sec. 1713. Restaurant meals at concessional prices for the homeless.
- Sec. 1714. Categorical eligibility for recipients of general assistance.
- Sec. 1715. Exclusion of education benefits.
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- Sec. 1717. Excess medical expense deduction.
- Sec. 1718. Budgeting and monthly reporting.
- Sec. 1719. Simplifying resource and eligibility determinations.
- Sec. 1720. Emergency food for disaster victims.
- Sec. 1721. Transitional housing.
- Sec. 1722. Exclusion of general assistance payments.
- Sec. 1723. Budgeting and monthly reporting on reservations.
- Sec. 1724. Periodic eligibility information reports.
- Sec. 1725. Selection of household head by household.
- Sec. 1726. Expansion of employment and training program.
- Sec. 1727. Eligibility for students.
- Sec. 1728. Staggered issuances; reservations.
- Sec. 1729. Electronic benefits issuance.
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- Sec. 1732. State flexibility in assisting households.
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- Sec. 1734. Authorization of wholesale food concerns.
- Sec. 1735. Required submission of certain identifying information by retail food stores and wholesale food concerns.
- Sec. 1736. Simplified application requirements.
- Sec. 1737. Estimates in lieu of verification for homeless households with shelter costs.
- Sec. 1738. Rural issuance procedures.
- Sec. 1739. Nutrition education.
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- Sec. 1746. Fraud claims repayment.
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- Sec. 1754. Extension of pilot projects.
- Sec. 1755. Sales taxes in cash-out demonstration projects.
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- Sec. 1757. Demonstration projects for vehicle exclusion limit.
- Sec. 1758. Demonstration projects for AFDC/food stamp simplification.
- Sec. 1759. Grants to improve food stamp participation.
- Sec. 1760. Reauthorization of food stamp program.
- Sec. 1761. Nutrition education improvements.
- Sec. 1762. Nutrition assistance program in Puerto Rico.
- Sec. 1763. Automated data processing and information retrieval systems.

WESTERN ASSOCIATION OF AGRICULTURAL EXPERIMENT STATION DIRECTORS
1991 Spring Meeting, Viscount Suites Hotel, Tucson, AZ, April 2-5, 1991

Director-at-Large Report
L. L. Boyd

This report covers the time period from the Fall meeting at NASULGC in Kansas City through last week. I participated on your behalf in the following activities that required travel during this period.

11/19 DAL meeting, Washington, DC
11/20 ESCOP Leadership Development Subcommittee, Washington, DC
12/6-7 Committee of Nine, Tucson
12/12 DAL meeting in Clemson, SC
12/18-21 ASAE Winter Meeting, Chicago, IL
1/7-9 DAL meeting with Krueger and Schlegel, Washington, DC
1/10-11 Western Agricultural Economics Council, Tucson
2/11-12 ESCOP Interim, Washington, DC
2/12 ESCOP Research Planning & Budgets Exec Committee
2/18 DAL meeting, Washington, DC
2/19 FY92 Division of Agriculture Budget Committee, Washington, DC
2/19-20 ESCOP Pest Management Strategies Subcommittee, Washington, DC
2/22-25 Users Advisory Board, Washington, DC
3/5-6 FY93 ESCOP Budget Development Group
3/12-13 FY93 NASULGC Division of Agriculture Budget Committee, Washington, DC
3/16-22 CSRS review of American Samoa research programs

Budget Committees (FY92 and FY93): Much of the effort since the November meeting has been devoted to budget development. You have had reports from committee members on both, so I will limit my comments. Vic Lechtenberg, FY92 ESCOP Chair, and I have made a major effort to better link programs, specifically those of research and extension. Some language was developed by the NASULGC staff for consideration by the Division of Agriculture FY92 Committee under the heading of "Joint Programs". Actually, a more appropriate heading would have been linked programs. I'm not certain what was included, as I left that meeting for another before the language was discussed. Bob Merrifield, FY93 ESCOP Chair, and I got an earlier start than we did for FY92 in trying to work closely with Extension and ARS. We exchanged correspondence with Rachael Tompkins, ECOP FY93 Chair, and Bob Crom, ECOP Executive Director. We also met with Tompkins during the Land Grant meeting in Kansas City. Bob Crom came to our original meeting in September, 1990 and outlined some of ECOP's priorities. Neither Crom (he was at a Western ECOP meeting) or Tompkins came to our March meeting. Bill Tallent of ARS also participated in our September meeting and planned to come to our March meeting, but didn't make it. Merrifield and I will continue to try to link more with Extension, before the final amounts are determined and the documentation prepared. However, after the initial presentations at the FY93 Division of Agriculture meeting, March 12-13, 1991, the opportunities appear limited. It is quite clear that ECOP is not terribly interested in joint requests. We may have a chance yet to link with ARS on Food Safety. If we are successful with ARS, ECOP also may want to link with ESCOP. If I can find the time, I plan to get the text in electronic form for the FY92 document from NASULGC, I will try to work up some linked language. I also hope to work with Merrifield to improve the language in general and perhaps the presentation in general. Because of the rush twice each year after the amounts are determined, NASULGC staff usually do most of the writing as near as I can determine. If we can get an early start, perhaps we can have some impact. Also, if we can make an impact on the "needs" document in the late summer, it should carry over to the "response" document. Please share any ideas that you have about how to present the budget. I will pass them along.

DAL meetings: We held the last DAL meeting for Jim Halpin at Clemson, so we could honor him in our own way. Jim had been so certain that Southern Directors would wear bow ties in November, that he borrowed a long one from his son; however, none did. Jim seemed disappointed when he told me about it, so we wore bow ties when we met with Jim in Clemson. I really miss not having Jim around. He always had so many ideas and so much enthusiasm. Chuck Krueger and Dave Schlegel both have made concerted efforts to meet with the DALs, so we have tried to schedule to make it possible. As a result of these efforts, I believe we completed the ESCOP appointments the

earliest ever, at least since I have been your DAL. Chuck is especially persistent in trying to develop closer working relationships with Extension. He and Dave are doing a good job of working together and working with the DALs, especially keeping us informed and also seeking our advice. Because we are scheduling six people instead of four, and because of Neville's other activities with CARAFE and the National Research Initiative, we are having some difficulty in finding times that all can meet.

ESCOP Pest Management Strategies Subcommittee: I was asked to be the DAL representative to this subcommittee. I attended my first meeting with the group in February, leaving the FY92 Division Budget Committee meeting to be with them. As you are aware from Dave's report, they have reorganized considerably. I was able to give them some insight about how they might approach a major budget request. They accepted my suggestion to show how the funds would be invested at different levels of funding without regard to years. There seems to be good attitude within both the executive and legislative branches toward pest management, especially at it relates to biological control, registration and sustainable agriculture. Dave has provided major leadership to this group. I look forward to continuing to work with them.

Users Advisory Board: The Board met in Washington, DC, February 22-25, 1991, which was over a weekend. On the initial day, Friday, they heard budget presentations by Assistant Secretary Hess followed by ARS, ES, CSRS, ERS, FS, HNIS and NAL. Neither ECOP or ESCOP were asked to make presentations, as they had been in the past. Instead, the NASULGC FY92 Division Committee was offered an opportunity, but for some reason Roger Mitchell, the Chair, and/or Jim Cowan declined. I have not pursued why, but have talked with Durwood Bateman, FY93 Chair, to make certain that we don't forfeit the opportunity next year. There are a number of new members on the Board, all of which seemed impressive in their first meeting. A new category on the Board is a USDA member. I am not certain that this was a wise inclusion. The person appointed is a career employee and his point of view because of his experience was very evident. The Board continues to be very conservative relative to the budget. The writers that Marshall Tarkington employs to help get the information pulled together don't exhibit any understanding of agriculture and little more of the legislative process. I spoke with Bill Carlson about volunteering to be the writer for one of the groups, preferably the CSRS group. He agreed that I should talk with Marshall about it. I don't know what the outcome will be. A later thought that I had was to offer to assist Marshall developing in some possible language that she prepares for the groups, especially those that don't get it done themselves. I also discussed the selection of Chairs for the writing groups. The CSRS group has not had a capable Chair since Jeanne Edwards. Even if I don't serve as a writer, and I have mixed emotions about doing so, perhaps I can discuss the CSRS programs with the Chair of that writing group for next year. I seek your input on this too. Let me know what you think could be done to improve the writeups.

Western Agricultural Economics Council(WREC): The WREC continues to invited me to its meetings. I have gone the last two years to try to get better feel for what economists believe are the social science research priorities. As you know we do not have many Directors with social science backgrounds. Jim Hildreth always participates. Jim announced to the group that he was planning to retire in December, 1991. The research community with miss Jim's input and support, both moral and that of the Farm Foundation. The WREC serves a role similar to the NCA (North Central Administrative) Committees, except they do not review the regional projects of the economics discipline. The South also recently decided to have disciplinary administrative committees, although they may give the groups a different name. I still believe that the West should ask its Department Chair /Heads to meet annually and to cover the expenses via RRF funds. They should be given some charge(s) relative to regional research planning and evaluation.

ESCOP Leadership Development Subcommittee: Chair Gale Buchanan has kept the group working at a high level of intensity. Both Thayne and Sandra, a welcome newcomer to the Western region, have been heavily involved. Sandra took the lead in designing and getting the brochure printed and probably other things for which I am not giving her credit. They have reported on the status of the first course and the plans for phases II and III. One thing that needs to be addressed is working with Extension and its leadership program. Extension has a Kellogg grant for a rather extensive program that tends to focus on leadership development for current administrators. ESCOP has tried

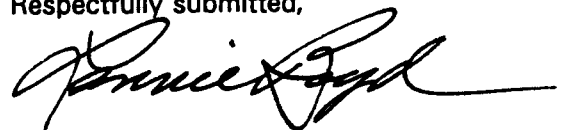
to keep in contact with Extension relative to leadership programs. Again Chuck Krueger has tried to help bring the groups together. Chuck believes strongly in working together, but he also is being pushed hard by Lam Hood, the Penn State Dean and Director. Relative to working together, I would agree with Pat Borich, Director at Minnesota with whom I worked when I was there, that we should work together on things for which it makes sense, but not try to force everything together. I hope our leadership training will provide some insights about how to make these judgements.

Committee of Nine: I attended the December meeting in Tucson, because I had offered to try to further develop the concept of an NRSP on Germplasm that would include the four plant introduction programs, likely IR-1 and possibly IR-2. I pulled together the data that clearly showed minority ownership by the SAES. I was looking for ways to bring ARS, the majority stockholder into the NRSP structure. It appears that they may not want a role. The National Research Council report on "Managing Global Genetic Resources: The U. S. National Plant Germplasm System" recommend an even stronger role for ARS. I've been busy enough with Budget and other activities that I have not found time to learn what ARS' plans are relative to the NRC report recommendations and Farm Bill mandates. My personal feeling is that the SAESs have defaulted/forfeited a role in the "germplasm system" that we should have kept. I doubt that we have any opportunity to reclaim it, but ideally I think funding for germplasm should be appropriated nearly equally for ARS and the SAES system. With nearly equal investments, we would have a much better opportunity for sharing responsibility and working together closely and cooperatively. With funding so unbalanced and states unwilling or unable to invest heavily in germplasm, it is important for the SAES system to determine ways in which it can work closely with ARS and also play a major role in the policy decisions. I am not very concerned about scientist interactions, but I am deeply concerned that the SAES system, a major user and developer of germplasm, will have only a minor role, if any, in the decision making process. Returning to the NRSP germplasm issue, I seek your input as I try to finalize my recommendations for the Committee of Nine for probable action at its May, 1991 meeting. This means I need your ideas within the next month, because I need to send out the report by May 1, or very shortly thereafter. The C-9 meeting is May 15-17.

CSRS Review of American Samoa's Research Capability and Plans: American Samoa and Micronesia became part of the Land Grant System in 1980 through an amendment to the Morrill Act. It was given a \$3,000,000 endowment. The program has very limited facilities and very limited matching funds. It is not allowed to use the interest from the endowment for matching purposes, so a sizeable portion of the base funds for which they are eligible has to be returned each year. American Samoa made a request for a short term waiver of "match", so they could accumulate funds to build a research laboratory. CSRS agreed to consider, this subject to a review of the American Samoa program and plans. I accompanied Gene Spory, Director of the Cooperative Management Staff for CSRS and ES, and Karl Yanagihara of the University of Hawaii on the review. I believe the program has made considerable progress since I first visited there about three years ago. I recommended a waiver on the "non-matched funds" for a sufficient period of time for American Samoa to accumulate \$1,500,000, but that the last \$600,000 require at least a 33% match. There are many considerations, many of which I do not know about, so I don't know what the CSRS decision will be.

This has been a very busy year. In the first six months, I made 21 trips. I already have made 11 more in the past three months. I need to reduce the number of trips and involvements, so that I will have time for more planning. I seemed to have time for some of this, when I was making about 30-32 trips per year. Last year I made 35, which was the high until this year. There just are so many interesting things to do and learn about. As I have said in closing previous reports, I am thoroughly enjoying representing all of you. I hope and think that I am doing a good job. I certainly can do a better job, but I need feedback from each of you to make certain that I am representing you as you desire. Obviously, there has to be compromises and priority setting. We don't all think the same about issues.

Respectfully submitted,



REPORT TO WESTERN AGRICULTURAL EXPERIMENT STATION DIRECTORS
USDA/CSRS SUSTAINABLE AGRICULTURE AND EDUCATION PROGRAM*

April 1, 1991

David Schlegel

Planning for the FY 90/91 Sustainable Agriculture Program in the West was extremely difficult, because the Federal budget was approved so late... after the call for proposals had been sent out. The final CSRS budget for this program was \$6.675 million, a 50% increase over the previous year. This was augmented by an additional \$1.0 million from EPA, to be used to fund projects that met some of EPA's specific interests, interests that coincided with the goals of the CSRS. EPA's \$1.0 million was matched by a similar amount from the CSRS program.

EPA's entry into the program came late, and the West extended its deadline until January 31 to accommodate the joint program. This extension has resulted in problems in processing and review if the June deadline for a plan of work is to be met.

One hundred and ninety five preproposals were received, of which 6 were either received late or did not follow the guidelines for the format, and could not be considered. The budget request for these preproposals exceeded \$11 million for the first year. (The total funds available to the region for 90/91 was a little over \$1.4 million to cover new proposals and continuation requests.) The preproposals were sent to a review team composed of four farmers, two full-time extension specialists, two AES/CE split appointments, two AES scientists, an ARS scientist, and SCS and EPA each appointed a representative. The selection of this group took into consideration disciplinary specialties and geographical location.

Farmers:

Farmer, Diversified with sustainable program, WA
Farmer, Dryland Cereal, CO
Farmer, Organic (and produce marketing), WA
Farmer, Fruit and Grapes, CA

Cooperative Extension:

Agricultural Economics, MT
Pest Management (Entomology), AZ

Cooperative Extension/Agricultural Experiment Station

Irrigated Crops, (WY)
Range and Livestock, (OR)

Agricultural Experiment Station

Agricultural Economics, ID
Agronomy, UT

Federal Agencies

Agronomy, ARS

Plant Pathology, SCS

Pollution Control, EPA

Each panel member was sent all 195 preproposals, assigned 40 to 50 specific preproposals to review in depth, and asked to develop a brief written evaluations of each. Each project had three reviewers, selected on the basis of the subject matter of the preproposal and the specialties of the reviewers, to the extent that was possible. Preproposals for which no panel member had expertise were sent to outside reviewers as well, e.g., aquaculture.

Approximately one-half of the panel had served as reviewers for the LISA program before, the rest were new. Several were members of WRCC-67 which serves as the technical advisory committee for this program. This was the first time that EPA has been a part of the Sustainable Agriculture program and their involvement was very positive.

Reviewers were asked to rate the preproposals as good (1), average (2), or weak (3). When the panel met, all of the preproposals that were rated as good (three 1s or two 1s and a 2) by all three reviewers were automatically considered worthy of development into full proposals. Preproposals rated 3 by all three reviewers were not considered further unless a member of the panel requested that it be reviewed by the panel as a whole. Preproposals rated at a 5 or 6 were reviewed by the full panel... a lead reviewer presented the case and the other two reviewers made their comments. If, after discussion, the reviewers adjusted their evaluations to a total of 4 or less, the preproposal was recommended for development into a full proposal. This evaluation process identified about 60 preproposals for further development.

The Administrative Council reviewed all of the preproposals recommended for development into full proposals. They expressed concern that the number of truly "whole farm" or "systems" proposals was very limited. This was a key issue in the Congressional hearings on the 1990 Farm Bill, and clearly it was not being met in the preproposals submitted in the Western Region. (All four regions have had similar problems in getting proposals that address whole farm systems.) As a result, the Council went through the list and added a number of preproposals (that had not been recommended by the review panel) because they were more whole farm oriented, but with some specific instructions about what was needed to strengthen them. The Council also noted that several of the preproposals recommended by the panel were somewhat duplicative and urged that the PIs consider combining them to form a single project. A brief summary of the distribution of these proposals is attached... this summary does not take into consideration any that might be combined.

Each successful PI has been provided with as much information as possible about the panel discussion. The unsuccessful applicants have been notified by form letter. Those applicants requesting more information will be provided information that is available.

Some personal observations:

The preproposal idea has always seemed like a good one, but I continue to have some serious concerns about it. It was instituted because a two page preproposal does not require a large expenditure of time for development and permits the introduction of new ideas, often not fully developed. The down side of it is that, in my opinion, a number of those identified as worthy of further development are not really well thought out. They were ranked highly by the individual reviewers in their initial review, and because they were rated so highly, they were not discussed by the panel as a whole when flaws would likely have surfaced.

We ended up with more than an optimum number of preproposals approved for development into full proposals, given the funds available. My guess is that we will fund between 10 and 15 new projects this year, perhaps less after the continuation projects have been covered... not very good odds. This was a major concern to the Administrative Council and certain to be considered further before the next cycle.

The next cycle may not involve preproposals... it may be desirable to be more restrictive in the RFP in order to control the number being received. The popular press has identified this program in such a way that is perceived by many applicants as simply a source of funds earmarked for all kinds of on farm experimentation and development.

The 1990 Farm Bill will have considerable impact on the operation of the Sustainable Agriculture Research and Education Program. The term LISA has been dropped... which in my opinion is good as the negative connotations that name carried both with farmers and agribusiness were significant. A national advisory committee has been established with members from many walks of life. The impact that this committee will have on the program remains to be seen. The membership on the Administrative Council has been expanded and more clearly defined, and we are now working to identify additional farmers, USGS, agribusiness, etc.

The Extension representative to the Western Administrative Council, Dick Phillips, is leaving Montana for North Carolina, and the Western Extension Directors have named Jerry Schikendanz from New Mexico as his replacement.

We are now at a point where useful information is becoming available, and we are working on a national system that will be responsive to that. At this point, however, we do not have a good system for making the information that we have already collected widely available, and this is a concern.

Attachment:

State	Submitted	Full Proposals
Alaska	3	1
Arizona	17	8
California	69	18
Colorado	15	3
Guam	2	1
Hawaii	6	3
Idaho	12	3
Montana	17	7
New Mexico	14	2
New York (1)	1	
Nevada	2	
Oregon	8	3
Texas (2)	1	1
Utah	11	2
Washington	13	3
Wyoming	3	2

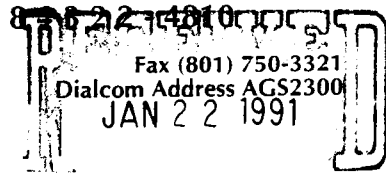
(1) From a non-profit in New York, but working entirely in Western States.

(2) Submitted by Texas with major involvement of Arizona. A full proposal was requested, but the Texas PI was advised to restructure the proposal to make a qualified Arizona scientist the project PI and Coordinator.



UTAH STATE UNIVERSITY • LOGAN, UTAH

Utah Agricultural Experiment Station
Office of the Director
(801) 750-2206



WAAESD

MEMORANDUM

TO: Western Area Directors of Agricultural Experiment Stations

FROM: H. Paul Rasmussen *H. Paul Rasmussen*

DATE: January 16, 1991

SUBJECT: Draft Policy on Pre-Release Multiplication and Distribution of Advanced Potato Clones for WRCC-27

The attached is a draft of the document being prepared through WRCC-27, "Potato Variety Improvement" for the control of material being tested through the Regional Coordinating Committee and the Tri-State Variety Release Program (Idaho, Oregon and Washington).

At our last Western Directors Meeting a request was made for each Director to have the opportunity to see the document being proposed. This request was made because many stations are currently considering their Release and Protection programs.

I have talked with David Holm from Colorado, who is the current committee chairman, informing him of my distributing the document to you. Inasmuch as WRCC-27 meets the end of January, there may be changes to the document which we can discuss at the spring meetings. With this memo I am asking Lannie Boyd to include this as an agenda item. That will give us time to have input before the document is put in final form for submission to each of the Experiment Stations.

Enclosure

F/D:3.91

RECEIVED
Utah Agri. Expt. Station

JAN 11 1991

Agricultural Experiment Station
San Luis Valley Research Center
0249 East Road 9 North
Center, Colorado 81125
(719) 754-3594

January 8, 1991

MEMO

TO: WRCC-27 Cooperators
FROM: Dave Holm *Dave*
SUBJECT: Policy on Pre-Release Multiplication and Distribution of
Advanced Potato Clones for WRCC-27

I received a few more comments regarding the proposed policy. Enclosed is a new draft copy of the proposed policy. Three major changes were made. Other changes were minor.

A definition was included in section 1.2 defining cooperating recipient program and who the contacts for the cooperating programs are.

Section 1.3 was deleted. The need for this statement was questioned. It is not needed as long as statement 1.2 is in place and followed. Continued evaluation of clones should be encouraged as long as each of us assumes responsibility to periodically update the originating program(s) and other cooperators of any information generating from our studies.

Also questions were raised about whether written consent should be required before originating program(s) move seed stocks to growers in other states. Personally I feel that originating program(s) should have the opportunity to move stocks into another state as long as the cooperating program is notified of such allocations. There is also concern that the movement of seed to growers in other states may not be in keeping the current USDA and Experiment Station policies. This will need to be clarified. For now, changes were made in sections 2.1.2 and 2.3.2 reflecting a more open policy on seed stock movement from one state to another.

Please review this document prior to our meeting on January 26 so that we can act on it at that time.

_____ Dept Dept
_____ Title
_____ Extension
_____ Sent instructions
_____ Attachment Heads
_____ Reason Discard
Return to _____

DRAFT COPY

POLICY ON PRE-RELEASE MULTIPLICATION AND DISTRIBUTION OF ADVANCED POTATO CLONES FOR WRCC-27

1. Seed availability

1.1. Recommend continued free exchange of seed stocks between cooperating public breeding/selection/testing programs.

1.2. Cooperating recipient programs will not distribute any seed stocks made available for evaluation purposes to any other breeding/selection/testing program, grower, commercial organization, or micropropagation laboratory without written consent of the originating program(s). Originating program(s) is (are) defined as the breeder(s) and/or selector(s) of the non-released clone. Cooperating recipient programs are defined as research and extension programs collaborating as part of WRCC-27. The contacts for cooperating programs are the designated committee members of WRCC-27.

2. Seed allocation.

2.1. Seed source. Primary seed refers to stocks produced by the originating program(s) (or designee). Secondary seed refers to stocks produced by cooperating recipient programs. Seed stocks originating from growers, commercial organizations, or micropropagation laboratories are considered to be other sources.

2.1.1. The originating program(s) (or designee) will be the initial seed source for WRCC-27 evaluations conducted by cooperating recipient programs. A cooperating program will be designated by WRCC-27 participants to develop a uniform seed source to be used for subsequent evaluations conducted as part of WRCC-27 trials.

2.1.2. Interested cooperating recipient programs (or designee) may initiate a secondary seed source for subsequent allocations to growers, commercial organizations, and micropropagation laboratories within their state upon written consent by the originating program(s). If the originating program(s) supplies seed stocks to growers/organizations in other states, they must notify the cooperating recipient program(s) of such allocations. Refer to section 2.3.2 for further information.

2.1.3. The originating program(s) (or designee) will be the primary seed source for all allocations not specified in 2.1.2 unless secondary or other sources are authorized by the originating program(s).

2.1.4. After initial seed allocations, other seed sources may become available in subsequent years through seed growers, commercial organizations, and micropropagation labs. These other sources will be produced under the supervision of the Agricultural Experiment Station and certification program in the state where the seed is grown.

2.2. Type of seed.

2.2.1. Recommend limited generation seed for primary seed allocations to cooperating recipient programs, growers, and commercial organizations if sufficient quantities are available. However, if this type of seed stock is temporarily not available, non-generation certified seed (not micropropagated or disease tested but entered in a certification program and inspected) may be substituted for primary seed allocations. This avoids delays in evaluation associated with generating sufficient quantities of micropropagated seed for large scale trials and it minimizes the costs associated with a clone that may be discarded after one or two years of trials.

2.2.2. The originating program(s) (or designee) will initiate and make available to cooperating recipient programs, upon request, limited generation seed stocks of advanced clones entered in WRCC-27 trials if supplies are available beyond the immediate needs of the originating program(s).

2.3. Allocation procedures.

2.3.1. Primary seed allocations to cooperating recipient programs will be based on needs consistent with the type of evaluations being conducted as part of the WRCC-27 trials at no cost. Seed stocks for increase or supplementary evaluations in addition to WRCC-27 trials will be the responsibility of recipient programs. The originating program(s) is (are) under no obligation to provide large amounts of seed for increase or additional evaluations. However, arrangements may be made to supply additional seed if available.

2.3.2. Requests for seed stocks for growers, commercial organizations, and micropropagation laboratories in a state should be directed to the breeding/selection/testing program within their state subject to provisions outlined in item 1.2. The originating program(s) may serve as an allocation source upon request of the cooperating recipient program.

This does not preclude movement of seed stocks between states for seed increase or commercial evaluations. However, such allocations must be communicated in writing by the originating program(s) to the concerned cooperating recipient program(s) and seed certification agencies for seed increases.

2.3.3. Allocation priorities will be determined by the breeding/selection/testing program within each state for its seed stocks. Consideration should be given to amount and type of seed available, the need for additional seed increase, the type of evaluations required (grower, processing, etc.), and characteristics of the state's potato industry (fresh market, processing, etc.).

2.3.3.1. Provisions in this policy allow for special evaluations requiring a dedicated seed increase of one or more years to accommodate large scale trials done in cooperation with commercial organizations. Seed stocks will be provided as outlined in sections 2.1.2 - 2.1.4. A plan outlining the purpose of the evaluation, justification for the seed increase and procedures for monitoring the seed increase, data collection, and preparation of annual progress reports will be prepared as an addendum to the Memorandum of Agreement referred to in section 3.1.

2.3.4. Each program is responsible for advertising the availability of seed stocks in their state unless other arrangements are made.

2.3.5. All seed allocations from secondary and other sources and associated inventories will be communicated in writing to the leader of the originating program(s) annually.

3. Seed agreements.

3.1 Cooperating WRCC-27 programs should use standardized documents (suggested forms attached - Exhibits A-D) when seed stocks are allocated to any of the following groups:

3.1.1. Seed growers/seed organizations (Exhibits A & C).

3.1.2. Commercial growers/organizations (Exhibits B & C).

3.1.3. Micropropagation laboratories.

3.1.3.1. An exclusivity agreement (Exhibit D) will be used which will allow labs to propagate non-released clones for individual growers/organizations only.

3.1.3.2. Labs will not be allowed to freely propagate and distribute non-released clones.

3.2. Each program in cooperation with their seed certification agency (for seed increases) will be responsible for the appropriate agreements and forms required for seed stocks of all non-released clones within their state. Terms of agreements will be standardized. Seed stock allocations and inventories will be communicated as specified in section 2.3.5.

4. Written evaluations. Growers/organizations who receive seed stocks of non-released clones will be asked to give a written evaluation of the clones (suggested form attached - Exhibit E). This information will be summarized and communicated with the originating program(s) and all cooperators.

5. Seed certification.

5.1. Recommend that seed certification agencies review and develop uniform rules and regulations governing non-released clones to facilitate movement of materials between states.

5.1.1. Recommend that written approval for subsequent seed propagation of non-released clones be provided to seed certification agencies by the originating program(s) and the recipient program before acceptance of seed stocks into the certification program of the recipient state.

5.1.2. Recommend routine testing for leafroll reaction.

5.1.3. Recommend routine testing for bacterial ring rot reaction.

5.2. Recommend that seed certification agencies participate in monitoring compliance with guidelines associated with pre-release increase and distribution of non-released clones.

5.3. Recommend that seed certification agencies in cooperation with breeding/selection/testing programs develop a current mailing list and centralized annual newsletter to:

5.3.1. Communicate naming and release notices for new potato cultivars.

5.3.2. Communicate the status of non-released clones undergoing grower/commercial evaluations in the cooperating programs on an annual basis.

5.3.3. Facilitate compliance with rules and regulations governing non-released clones.

5.4. Recommend that seed certification agencies use selection numbers or official cultivar names rather than descriptive grower generated names for listings in seed directories (i.e. Cherry Red, Minnesota Russet, etc.).