

Plant breeding and CSREES

How much is funded through CSREES

How to get credit

How to get attention

A new breed: CSREES “integrated projects”

Ann Marie Thro,
National Program Leader, Plant Breeding and Genetic Resources,
CSREES, USDA

INTRODUCTION

CSREES' mission is to advance knowledge for agriculture, the environment, human health and well-being, and communities by supporting research, education, and extension programs in the Land-Grant University System and other partner organizations. CSREES does not perform actual research, education, and extension, but rather helps fund it at the state and local level, and provides program leadership in these areas.

This poster summarizes CSREES funding invested in plant breeding. It also includes information on how plant breeders can:

- Make best use of CSREES reporting systems to describe their research and its implications--for stronger reporting of plant breeding accomplishments;
- Most effectively have input in agency planning.

Finally, it describes the agency's new integrated programs, which can include plant breeding components.



CSREES is USDA's Cooperative Research Extension & Education Service.

Funding through CSREES

In FY 2005, a conservative estimate of \$11,632,000, or about 1 % of all funding through CSREES, was invested by agency partners in plant breeding (Tables 1 plus 2). Most is Hatch funds, then Special Grants.

An accurate cross-cut of funding for plant breeding is challenging because projects are coded by knowledge area (KA), not by approach. The estimate includes a mix of plant breeding; genetics of insects, nematodes, or microbes (Table 1); and plant germplasm research *per se* (Table 2), and it omits some plant breeding projects. To capture all CSREES-funded plant breeding, projects must be included having a component in plant genomics, genetics, and/or genetic mechanisms research. Then the FY 2005 estimate rises to \$18,015,000, or about 1.5% of CSREES funding (Tables 1 + 3). However, this estimate includes many projects that are not plant breeding.

Definition of Codes

Field of Science (FoS) code:

1080 Genetics including plant breeding

Knowledge area (KA) codes:

- 201 Plant genomics, genetics, and/or genetic mechanisms
- 202 Plant genetic resources
- 203 Plant biological efficiency; abiotic stresses affecting plants
- 204 Plant product quality and utility (preharvest)
- 211 Insects, mites, and other arthropods affecting plants
- 212 Pathogens and nematodes affecting plants
- 213 Weeds affecting plants
- 214 Vertebrates, mollusks, and other pests affecting plants
- 215 Biological control of pests affecting plants
- 216 Integrated pest management systems

Funding sources and amounts

Figures in thousands. KA definitions above.

Data from CSREES Current Research Information System (CRIS), thanks to F. Allen Moore.

Table 1. All projects with FoS code 1080 but neither KA 202 nor KA 201; plus any of these KAs: 203-205, 211-216. Includes plant breeding; also genetics of insects, nematodes, and microbes. Following classification manual instructions, only Table 1 would include plant breeding. In practice, plant breeding is coded in various ways, as in Tables 2 and 3.

# Proj.	CSREES Program						Total
	Hatch	Special Grants	NRI	McI-Stennis	Evans Allen	Other	
318	3530	1060	1293	70	152	977	7082

Table 2. All projects with FoS 1080 plus KA 202 but not KA 201; plus any of these KAs: 203-205, 211-216. Includes plant germplasm research + plant breeding.

# Proj.	CSREES Program *						Total
	Hatch	Special Grants	NRI	McI-Stennis	Evans Allen	Other	
201	1923	1407	153	63	431	574	4550

Table 3. All projects with FoS 1080 plus either KA 201 and/or KA 202, plus any of these KAs: 203-205, 211-216. Includes plant genomics, genetics, and/or genetic mechanisms research; and/or plant germplasm; and/or plant breeding. Includes Table 2 + additional plant breeding projects not captured in Table 2 + many non-plant breeding projects. Excludes Table 1.

# Proj.	CSREES Program						Total
	Hatch	Special Grants	NRI	McI-Stennis	Evans Allen	Other	
346	3941	3276	1104	164	1298	1151	10933

Confusing? You can help!

Get credit !

MAKE THE BEST USE OF CSREES REPORTING

Table 4 is an example of why it matters. All else being equal, a program with a high OMB rating is more likely to receive continued funding. 'Effective' is the highest rating.

Table 4. Evaluation of CSREES Program Areas. U.S. Office of Management and Budget, FY 2004-2006. http://www.csrees.usda.gov/about/strat_plan_omb.html

	<i>Program Area</i>	<i>Rating</i>	<i>Assessment Category</i>	<i>Score</i>
	Economic Opportunities for Producers (plant & animal science assessed HERE)	Moderately Effective	Program Purpose & Design	80%
			Strategic Planning	100%
			Program Management	100%
			<i>Program Results/ Accountability</i>	<i>58%</i>
	Natural Resource Base and Environment	Moderately Effective	Program Purpose & Design	100%
			Strategic Planning	90%
			Program Management	100%
			<i>Program Results/ Accountability</i>	<i>47%</i>
	Protection and Safety of Agricultural Food Supply	Moderately Effective	Program Purpose & Design	100%
			Strategic Planning	90%
			Program Management	100%
			<i>Program Results/ Accountability</i>	<i>60%</i>
	Nutrition and Health	Effective	(Recent review; breakdown not yet posted)	
	Economic Opportunities for Rural America (social sciences)	Effective	(Recent review; breakdown not yet posted)	

What lessons for plant breeding from this chart?

What is reducing the rating of plant and animal sciences?--compared to, e.g., nutrition & health? Purpose & design, strategic planning, and management could not be better. The problem is in **program results & accountability**.

Does plant breeding have poor results? poor accountability?

If not, the problem must be in reporting.

USE KA CODES STRATEGICALLY

Include FoS 1080 and KA 202 on all plant breeding projects reported through CSREES. [The Classification Manual description of KA 202 “excludes research on breeding for specific traits”. However, all plant breeding uses and/or develops genetic resources; thus, all plant breeding projects include a KA 202 component.]

Additional KA codes for particular plant breeding projects may include:

- 502 New and improved food products
- 511 New and improved non-food products and processes
- 701 Nutrient composition of food
- 712 Food protection from contamination (bad microbes, parasites, toxins)

In practice, a combination of KA 202 with one or more additional KAs is the best currently-available way to identify plant breeding in CSREES database searches. This practice will minimize confounding with genomics or with genetics of insects, nematodes or microbes. Confounding with plant germplasm research *per se* will remain.

USE TEXT FIELDS STRATEGICALLY

Accomplishments and Outputs

Report **all steps that add value** to a plant breeding program.

Examples: report counts of these and similar steps, and state explicitly how they add value:

- New recombinations
- New experimental populations
- Newly advanced populations
- New varieties
- New methods, new...?

What else? If you were buying your program, what would you pay for? Why?

A ‘plant breeding thesaurus’ could be developed to provide a standard set of machine-searchable terms for accomplishments and outputs.

Avoid terms like “recent”; date outputs by year. “Recent” outputs may be ignored, if they seem to count the same output in more than one year.

Impacts and Outcomes:

Write popular non-tech summaries and impact statements. By “popular”, think of USA Today, Parade Magazine, airline magazines. Tell a general reader why your research is in *their* interest. Why should they care? These are PR opportunities.

In a historically continuous program, such as Hatch, report current impacts from long-term research. Example: if a cross from this program saved the crop this year, that is an impact for this year, even though the first cross (i.e., the first output) was years ago

Give CSREES credit, too (Help us help you)

Include acknowledgement of CSREES funding programs in all publications, presentations, posters, and press releases--this is critical for recognition of the value of these funding programs. Example:

“This project was supported by the Cooperative State Research, Education and Extension Service, USDA, ____ [program--e.g., Hatch, NRI, other] ____, project number # ____.”

Get attention !

EFFECTIVE INPUT in AGENCY PLANNING

Good ways to have effective input into CSREES planning include:

CONTRIBUTE STAKEHOLDER INPUT ON RFAS

Respond to request for comments on every RFA of interest. (Or draft a response and suggest your boss send it). All CSREES RFA's, including the NRI, contain a paragraph like this:

“CSREES requests stakeholder input from any interested party for use in development of the next RFA for this program. Comments will be used to meet the requirements of section 103(c)(2) of the Agricultural Research, Extension, and Education Reform Act of 1998 (7 U.S.C. 7613(c)(2)).... Written stakeholder comments should be submitted by mail ... or via e-mail: ... please state that you are responding to the ___[name of program, e.g., NRI, or other]_____ RFA.”

PARTICIPATE AS A REVIEWER IN PROPOSAL REVIEW PANELS

To be considered as a potential reviewer, send an e-mail with contact information and area(s) of expertise (4 or 5 keywords) to newreviewer@csrees.usda.gov.

Follow up! Contact the national program leader (NPL) responsible for the program(s) of interest to you. The name and email of the responsible NPL is listed in the RFA, posted under “Funding Opportunities” on the CSREES website. A phone conversation can be requested by email.

LEARN ABOUT FEDERAL REGS GOVERNING CSREES PROGRAMS

Understanding the statutory basis for agency funding programs will help target your comments to areas where there is scope for agency response. Beginning with the Hatch Act, all laws and regulations governing CSREES funding programs can be found at: http://www.csrees.usda.gov/about/offices/legis/legis_statutes.html
http://www.csrees.usda.gov/about/pdfs/funding_mechanisms.pdf

A new breed: CSREES “integrated projects”

In CSREES, “integrated” means bringing together the components of the agricultural knowledge system (research, education, and extension, or REE) around a problem or opportunity. The goal: to accelerate generation *and* delivery of new technology and knowledge in practical applications. Collaboration in an integrated project draws attention to the vital position of mission-oriented (“applied”) research, such as plant breeding, in delivery of science to practice. In integrated projects, and the corresponding review panels, CSREES is seeking a strong representation of extension and education.

In National Research Initiative (NRI) Competitive Grants, up to 22% of the budget is authorized and encouraged for integrated projects. Relatively few integrated projects have been funded through NRI so far, because

- a) emphasis on integrated projects is relatively new; some potential applicants who could develop outstanding proposals may not yet be well-informed about integrated projects opportunities; and,
- b) overall funding for NRI is highly limited, compared to the funding needs for agriculture. Even with outstanding proposals, few can be funded.

NRI program areas relevant to plant breeding that have requested integrated project proposals include:

- Plant Biosecurity
- Managed Ecosystems
- Plant Genome: Applied Plant Genomics Coordinated Ag. Project (CAP)
- Plant Biology: Gene Expression and Genetic Diversity
- Plant Biology: Environmental Stress

Other CSREES programs that fund integrated projects include:

- Crops at Risk (CAR) Program
- Integrated Organic Program (IOP)
- Methyl Bromide Transitions (MBT)
- Regional Integrated Pest Management (IPM) Centers
- Small Business Innovation Research (SBIR)

For more information and examples of funded integrated projects, check the CSREES integrated projects web site:

www.csrees.usda.gov → Funding Opportunities → Integrated Programs

Conclusions

CSREES funds plant breeding—but it is difficult to determine how much.

Get credit: Effective reporting allows stronger presentation of plant breeding accomplishments. Plant breeders can use CSREES reporting systems effectively:

- Use KAs strategically for computer identification of plant breeding projects and the areas they impact
- Specify each value-added step, how many (count), and why it adds value
- Use effective non-tech summaries and impact statements to “advertise” research and its benefits

Get attention: Plant breeders can have input in agency planning, through:

- Stakeholder comment responses to RFAs
- Participation on review panels
- Understanding opportunities and limitations created by authorizing laws and regulations.

Integrated programs include funding opportunities for plant breeding.

The number of integrated projects is limited because of limited overall funding for these programs.



CSREES programs in tables 1-3: NRI, National Research Initiative; McIntyre-Stennis, authorizes funding for forestry; Evans Allen, authorizes funding for 1890 universities. ‘Other’ may include: Small Business Innovation Research (SBIR); Crops at Risk (CAR); Methyl Bromide Transitions (MBT); Regional Integrated Pest Management Centers; Integrated Organic Program (IOP); Initiative for Future Food and Agricultural Systems (IFAFS) grants.