June 21, 2017, NIFA Update - Ed Kaleikau

Congress increased the appropriation for several competitive programs above the 2016 levels.

- Agriculture and Food Research Initiative (AFRI) - $375M (+$25M)
- Sustainable Agriculture Research and Education (SARE) – $27M (+$2.3M)
- Potato Research - $2.25M (+$250K)
- Alfalfa and Forage Research - $2.25M (+$250K)
- Crop Protection/Pest Management - $20M (+$2.8M)

Plant Breeding for Agricultural Production as Foundational Program in AFRI

Research: Pre-breeding and germplasm enhancement; Cultivar development; Selection theory; Applied quantitative genetics; and/or Participatory breeding;

Conference Grants: (i) Public-private collaboration in plant breeding; (i) plant breeding research and education to provide graduate student interaction with geneticists, breeders etc, and promote careers in plant breeding, genetics and genomics.

FY2016: Awarded ~$5.8M to fourteen research projects and six conference grants.

FY2017 Proposals due: July 19, 2017

2014 Farm Bill enables eligible state and national commodity boards to submit topics for research supported through AFRI

Commodity boards can propose topics for research and outreach that they are willing to equally co-fund

Topics must relate to established AFRI priority areas: e.g. plant health and production and plant products

Once topics are approved, the resulting proposals are reviewed using NIFA's established peer-review process. Letter of support required from CB.

FY2016 – AFRI Plant Breeding, 2 CB topics: (i) Kansas Wheat Commission - "Breeding for genetic resistance to wheat viruses"; (ii) Consortia of the Iowa Corn Promotion Board, Illinois Corn Marketing Board, Minnesota Corn Research and Promotion Council, Nebraska Corn Board, and Kentucky Corn Promotion Council Environmental - "Influence on phenomics in corn improvement and production".

1 CB topic awarded: Iowa State U, Low-cost nitrate sensors to populate genotype-informed yield prediction models for next generation breeders

FY2017 – AFRI Plant breeding, 1 CB topic: National Peanut Board - Develop and implement genetic and genomic tools to breed for improvements in aflatoxin resistance, disease resistance, size and shape, flavor, nutrient content, or drought tolerance, etc.

2016 AFRI Food Security offered phenomics and breeding

Research: Tools and methods for high-throughput phenotyping; Predictive phenotyping for new and improved plant cultivars or animal breeds; Predictive modeling for precision plant and/or animal breeding; Informatics tools -software interfaces, bioinformatics pipelines, and quantitative genetic analysis methods for breeding

FY2016 – 1 CB topic: Kansas Wheat Commission – "Novel pre-breeding applications for quality enhancement in hard red winter wheat".

1 CB Awarded: Kansas State U, An integrated omics approach to accelerating wheat quality improvement

FY2016: Awarded ~$4.8M to six research projects

FY2017: not offered.

In 2017, AFRI offering new funding opportunities

Water for Food Production Challenge Area

Use of transformative discoveries such as classical/conventional breeding as well as genomics, nanotechnology, sensors, modeling, microbiome manipulation, and data-driven decision tools to develop drought- and flood-tolerant cultivars, intensify food production, improve crop and livestock health, or reduce overall water use across food production systems.

Letters of Intent (not required) Due: May 17, 2017; Proposals Due: August 2, 2017

Social Implications of Emerging Technologies Foundational Program

Assess the broad social, ethical, legal and other potential impacts that gene drive/genome editing technologies may pose for society, agricultural markets, consumer preferences, and other domains.

Involve a range of disciplines including scientists, legal scholars, bioethicists, social scientists and researchers from the humanities, the general public, and other stakeholders to assess the technology's merits and risks and pursue an open and effective means to involve the public in deliberation over these issues.

Letters of Intent (not required) Due: June 1, 2017; Proposals Due: August 17, 2017

Food and Ag Cyber informatics and Tools FACT Initiative, Conference grants in 2017 and Foundational and Challenge grants in 2018

- All AFRI Foundational Program priorities welcome submission of conference workshop applications that address the FACT Initiative>>>focus on identifying priorities and bottlenecks in generating, managing and integrating data in a specific domain of the food and agricultural system.

Plant breeding priority has increased over past few years and funding in that area has increased

- New joint activity between the NSF and NIFA awarded ~$1.94M to seven Early Concept Grants for Exploratory Research (EAGER) to develop and enable breakthrough technologies for plant phenomics and microbiomes.

- New NIFA International Wheat Yield Partnership program awarded ~$15.4M to seven continuation grants on breakthrough technologies for breeding, genetics, and genomics of wheat yield.

- NIFA/DOE Plant Feedstocks Genomics for Bioenergy Program awarded ~$2M to two research projects aimed at accelerating genetic breeding programs to improve plant feedstocks for the production of biofuels, biopower, and biobased products.

- NIFA Fellowships grant program awarded ~$551K to three post-doctoral fellows and one pre-doctoral fellow to educate the next generation of plant breeders.