

USDA Agricultural Research Service
Assessment of National Program 301: Plant, Microbial and Insect Genetic
Resources, Genomics and Genetic Improvement
September 2005

Executive Summary

A panel of ten geneticists, plant breeders and molecular biologists was convened in Beltsville, MD September 14-15, 2005 to conduct a 5-year retrospective review of USDA-ARS NP301 (Plant, Microbial and Insect Genetic Resources, Genomics and Genetic Improvement). NP301 represents the largest single ARS national program with over 180 projects encompassing ten different research problem areas. The panel was provided with a retrospective accomplishment report that focused on the overall impacts of selected projects within the national program. This was meant to be an overarching review rather than a project by project review, which are conducted by the Office of Scientific Quality Review. In addition to this report, panelists were able to draw on other resources, including publications, databases and professional working knowledge of the research areas within NP301. The panelists were provided a brief overview of NP301 prior to our deliberations by USDA-ARS leadership including:

Dr. Judy St. John, Deputy Administrator, Crop Production and Protection
Dr. Kevin Hackett, National Program Leader, Biological Control
Dr. Kay Simmons, National Program Leader, Grain Crops
Dr. Peter Bretting, National Program Leader, Plant Germplasm and Genomes

The panelists also wish to thank program staff including Ms. Marilyn Low, Valorie Butler and Rosetta Proctor for their assistance with the review. We also want to thank Dottie Tapscott for her assistance with travel. Finally, we are most grateful to Dr. Caird Rexroad for his participation in the exit interview with the panel. Support for this critical national program at the highest levels within the agency was quite apparent to the panel.

The accomplishments report of NP301 was developed by the national program leadership staff based on impact statements submitted by ARS scientists. These accomplishments were assessed against commitments (goals and objectives) identified in the action plan created at the beginning of the five year cycle. The panelist reviewed the action plan, in addition to the accomplishment report. Our recommendations are outlined under each of the problem areas and are largely based on the following assessment criteria:

- Crop varieties or improved germplasm released
- Crop germplasm accessions conserved and distributed
- Crop genetic/genomic tools developed
- Crop genome information provided to users
- Technology that has been publicly released, patented or licensed, and/or commercialized
- Influence on other researchers in the same or related fields
- Advancement of scientific knowledge

- Major agricultural problems ameliorated, mitigated or solved
- New or improved scientific methods, tools or technologies developed by ARS and adopted by others (customers, stakeholders, etc).

Ratings in each of the problem areas ranged from low to high. A low rating should not be interpreted as a lack of support for the problem area, but rather the limited impact that the panel observed in the given problem area. This may be a result of limited data presented. Overall, the review panel was impressed by the breadth and depth of accomplishments under this national program area. Based on the number of projects within NP301 and the investment of resources in these projects, it is clear that USDA-ARS sees this national program as an important mission within the agency. The improvement of crop species for agricultural productivity is of critical importance to U.S. and world agriculture. USDA-ARS is in a unique position given its long term commitment to research of national importance to make lasting impacts on the fields of science represented within NP301. In particular, the panel applauds investments in core research programs that seek to conserve germplasm, genetic stocks and research collections, as well as those programs focused on the development of, and implementation of bioinformatics databases. In a number of cases, it is quite clear that USDA-ARS scientists are leading the way in research on problem areas represented within NP301. In most cases, collaborations with other public research scientists are a critical component of ARS programs. The agency is encouraged to continue to support and encourage these collaborations, as it is a proven way to leverage resources and expand the expertise base of ARS.

The panel is very encouraged by the planning process that leads to action plans for each of the national program areas. The involvement of the broad research community, as well as stakeholders from the agricultural community is critical to the long term success of ARS. An overall recommendation of this panel would be to put in place a number of specific advisor councils to keep various research components and problem areas closely tied to the user community. As the national intramural research agency for Agriculture, USDA-ARS must stay connected to customers and this goes beyond the stakeholder workshop that begins the five-year work cycle. Specific recommendations in this regard are highlighted under each problem area when appropriate.