Overview of ARS National Program 306 Quality and Utilization of Agricultural Products

Dr. Frank Flora, National Program Leader
Product Quality/New Products & Processes

NP 306 Stakeholders Workshop

June 10-11, 2008

Baltimore, Maryland

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NP 306 Management Team

- Dr. Frank Flora (co-leader)
  - NPL, Product Quality/Utilization
- Dr. Robert Fireovid (co-leader)
  - NPL, Bioenergy
- Dr. David Klurfeld
  - NPL, Human Nutrition
- Nadine Kessler
  - Program Analyst

Mission of NP 306

Enhance the economic viability and competitiveness of U.S. agriculture by maintaining the quality of harvested agricultural commodities or otherwise enhancing their marketability, meeting consumer needs, developing environmentally friendly and efficient processing concepts, and expanding domestic and global market opportunities through the development of value-added food and nonfood products and processes.

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NP 306 Resources

- **90 Projects**
  - **24 projects contributing to NP 306**
- **222 SYs**
- **$78.6 M (NTL)**

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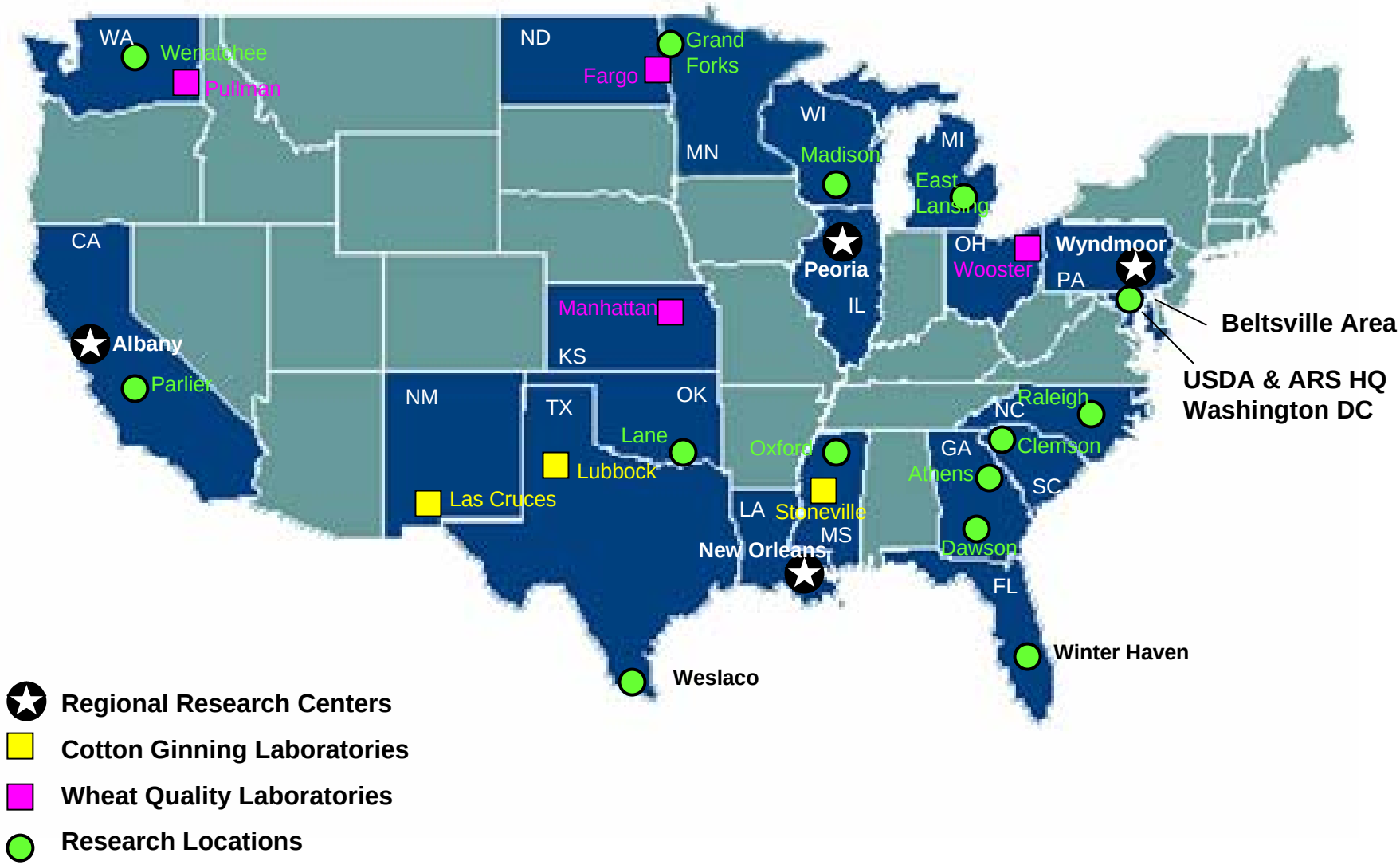
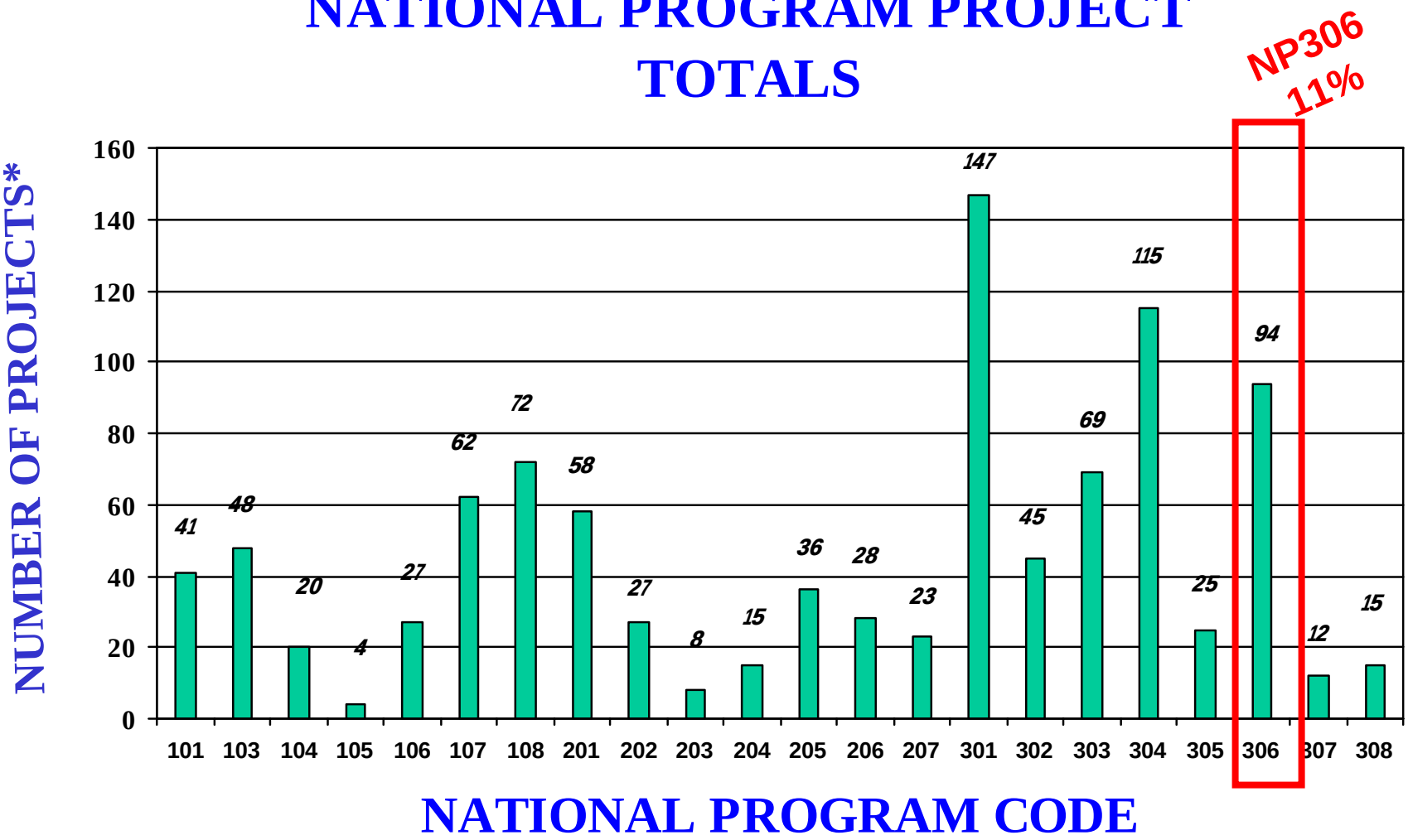
NP 306 RESEARCH LOCATIONS



NATIONAL PROGRAM PROJECT TOTALS



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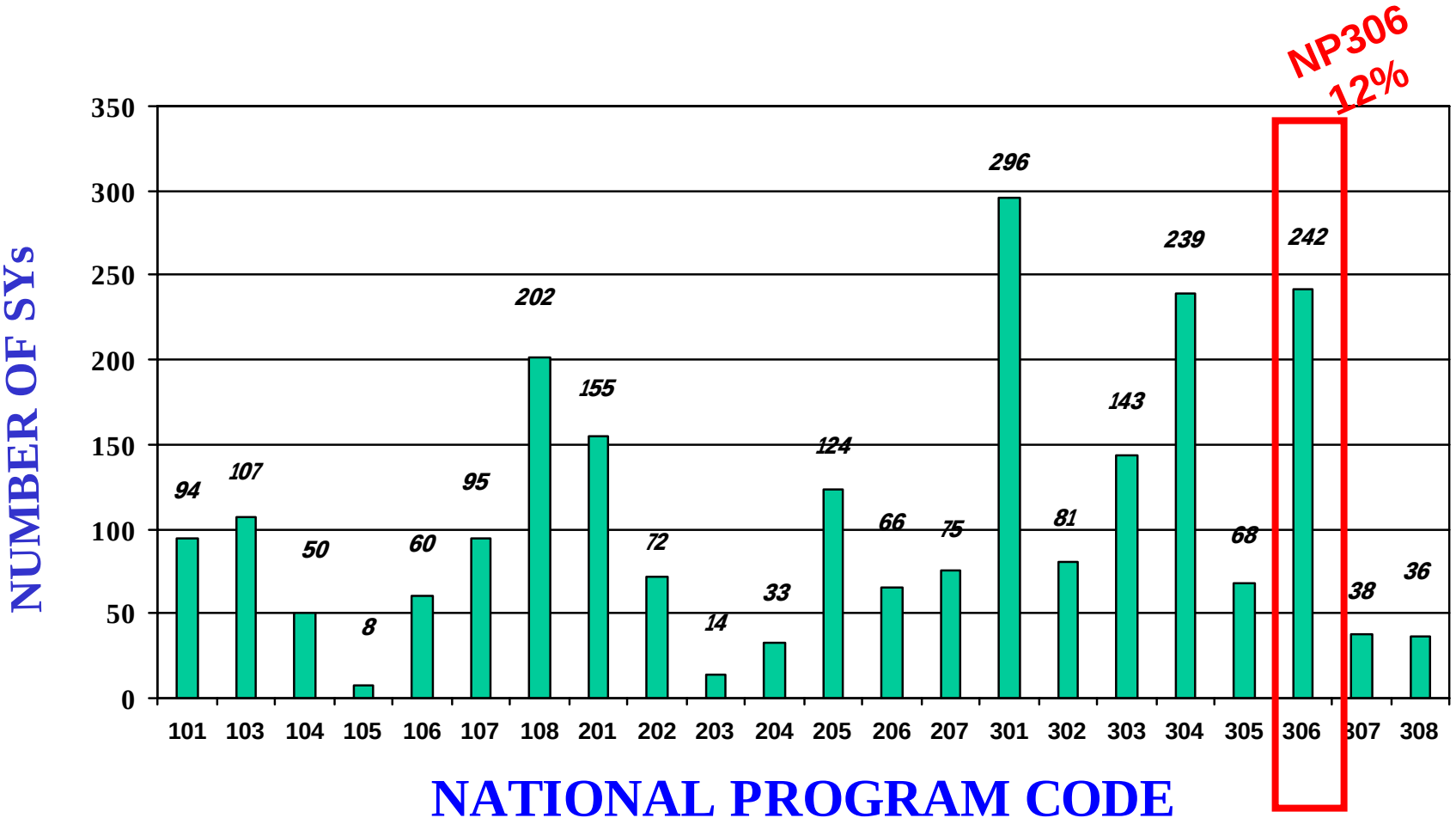
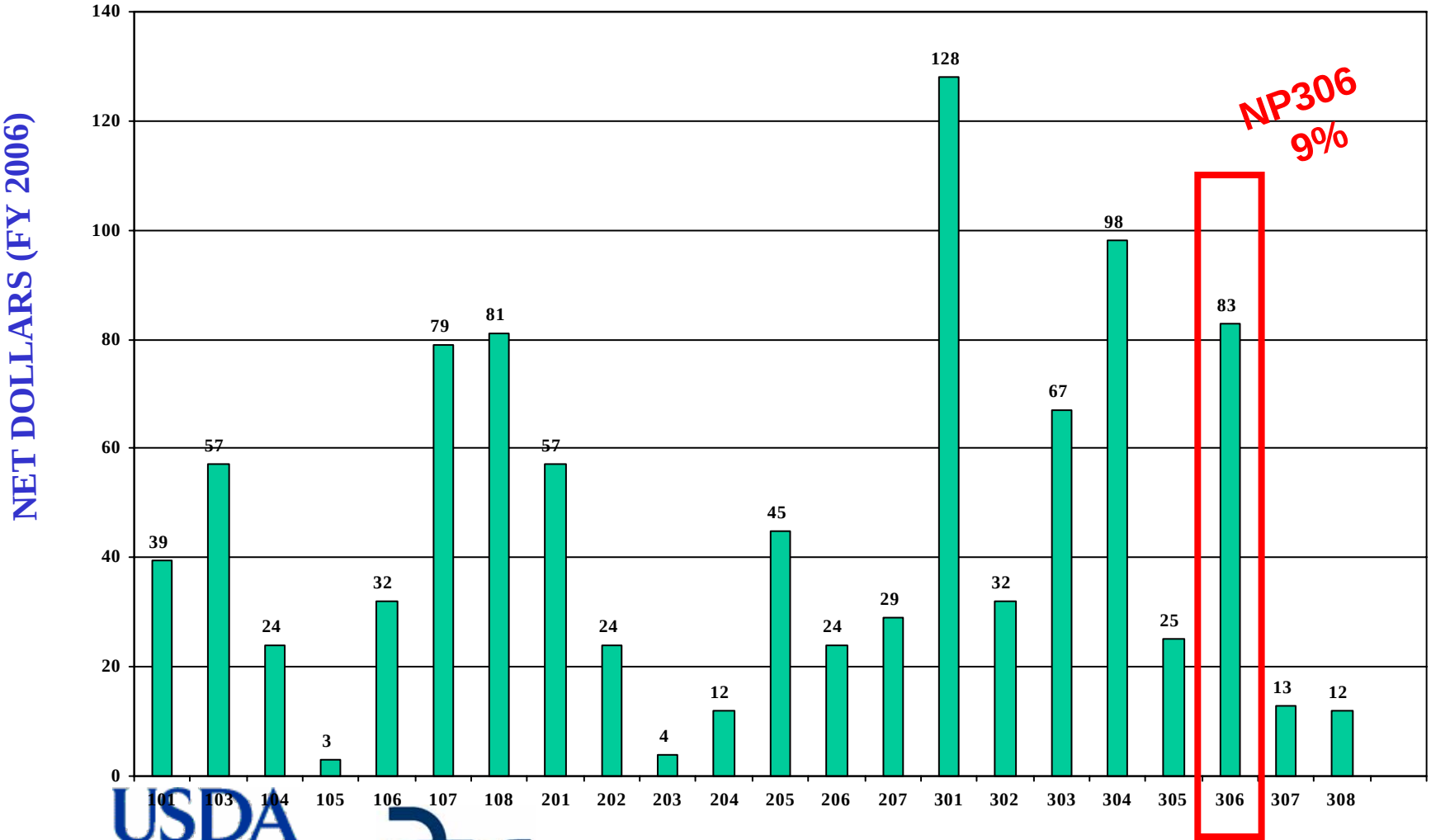
NATIONAL PROGRAM SY TOTALS



NATIONAL PROGRAM NET TO LOCATION TOTALS

(Dollars in Millions)



NET $ PER SY BY NATIONAL PROGRAM

APP	NFSQ	NRSAS	CPP
$489,172	$450,853	$362,517	$431,183

NP 306 Net $ per SY

$343,390

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2006 ACTIVE CRADA's

	# CRADA'S	TOTAL FUNDING
NP306	69	$7,037,442
TOTAL ARS	202	$19,540,035

% of Agency Total	
Projects	Funding
34%	36%

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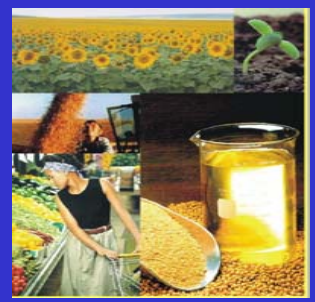
NP 306 articles approved for publication in 2006 = 358

NP 306 = 9% of Total ARS peer reviewed articles

Total ARS articles approved for publication in 2006 = 3,988

NP 306 Customer/Stakeholder Workshops, 1999

- **May – 33 stakeholders**
  - **Fruits, Vegetables, Tree Nuts, Sugar Crops**
  - **Animal Products**
- **November – 53 stakeholders**
  - **Cereals**
  - **Oilseeds**
- **December – 48 stakeholders**
  - **Agricultural fibers**



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Stakeholder Feedback About ARS

- Basic research should remain a cornerstone for ARS.
- Focus on global, national and/or regional issues.
- Increase private sector awareness of the opportunities, mechanisms and benefits of partnering with ARS, and streamline technology transfer to increase efficiency and accelerate commercialization of technologies.
- Research should consider economic feasibility and market opportunities.
- Research should reflect awareness of and sensitivity to consumer issues.

Stakeholder Priorities for NP 306

- Improved understanding of structure/function relationships
- Quality attribute identification, detection, quantification, and tracking from field to fork
- Phenotypic markers for high value traits
- New value-added biomaterials and co-products
- Products and processes with clear human health benefits

Stakeholder Priorities for NP 306 (Continued)

- Safer, more environmentally friendly processing technologies and products
- Domestic biobased replacements for imports, particularly petroleum
- Crops designed with specific end-use traits

Stakeholder Feedback About the Workshop

- Clarify ARS role and mandate.
- Clarify role of stakeholders.
- Clarify how this Program fits into overall ARS research program and how ARS national programs interrelate.
- Employ smaller, more narrowly focused workshop breakouts with questions designed to achieve specific results.
- Employ fewer presentations, allow more time for stakeholder discussion and input.
- Provide summaries of workshop discussion groups to workshop participants and advise of ARS actions resulting from workshop.

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NP 306 Program Title Prior to Customer Workshops

New Uses, Quality, and Marketability of Plant and Animal Products

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NP 306 Program Title After Customer Workshops

Quality and Utilization of Agricultural Products

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Program Components of NP 306 Prior to Customer Workshops

- Intrinsic Product Quality
- Pest and Disease Control
- Product Handling and Grading
- New Processes, New Uses and Value-Added products

Program Components of NP 306 After Customer Workshops

- Quality Characterization, Preservation, and Enhancement
- New Processes, New Uses, and Value-Added Biobased Products

NP 306 Planning and Coordination Workshop, March 11-13, 2003, Objectives

- Review the peer review process, peer review experiences with other national programs, and timeframe, requirements and expectations for NP 306;
- Review the NP 306 mission, components, action plan problem areas, and how NP 306 compares to other national programs;
- Review progress made on designated action plan problem area(s) for each project;
- Describe the proposed focus, objectives, and approaches for next 5-year cycle for each project;

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NP 306 Planning and Coordination Workshop, March 11-13, 2003, Objectives

- Identify specific stakeholders and advocates for each project;
- Constructively critique draft prospectuses within peer panel groupings;
- Identify gaps and needs in research within NP 306 and how we can address them
- Coordinate research planning to the extent possible within NP 306; and
- Identify potential cooperations and collaborations within NP 306 and beyond.

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NP 306 Planning and Coordination Workshop, March 11-13, 2003, Outcomes

- Modifications to NP 306 Action Plan (i.e., changed name of Component 2 from "New Processes, New Uses, and Value-Added Biobased Products" to "New Processes, New Uses, and Value-Added Foods and Biobased Products".)
- Redirection/restructuring of projects/programs within NP 306
- Reassignments of CRIS projects to peer panels
- Focusing within NP 306
- Improved coordination

ARS Peer Review Scores (First Cycle)

	All ARS	NP 306
Average Score	4.59	4.91
0= Not Feasible, 8= No Revision Required		
Average % Pass	75.6	81.3
Passing score is 3.1 or higher		

NP 306 had second highest scores among six NP's with more than 50 projects

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NP 306 Action Plan Problem Areas

COMPONENT 1. Quality Characterization, Preservation, and Enhancement

Problem Area 1a. Definition and Basis for Quality

Problem Area 1b. Methods to Evaluate and Predict Quality

Problem Area 1c. Factors and Processes That Affect Quality

Problem Area 1d. Preservation and/or Enhancement of Quality and Marketability

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NP 306 Action Plan Problem Areas

COMPONENT 2. New Processes, New Uses, and Value-Added Foods and Biobased Products

Problem Area 2a. New Product Technology

Problem Area 2b. New Uses for Agricultural By-products

Problem Area 2c. New and Improved Processes and Feedstocks

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NP 306 Action Plan Problem Areas

COMPONENT 1. Quality Characterization, Preservation, and Enhancement

Problem Area 1a. Definition and Basis for Quality

- Identify attributes that define quality of agricultural products.
- Develop better understanding of relationships between composition and component molecular structure and end-use quality and function and sensory characteristics.
- Assess quality trends and needs of agricultural products in global markets.

NP 306 Action Plan Problem Areas

COMPONENT 1. Quality Characterization, Preservation, and Enhancement

Problem Area 1b. Methods to Evaluate and Predict Quality

- Develop rapid, non-destructive methods for detection and measurement of physical/chemical quality attributes and quality defects.
- Develop automated, high-throughput on-line grading, sorting, and packaging systems for agricultural products.
- Develop and utilize multispectral techniques, imaging and image analysis, and methods incorporating information technology and artificial intelligence for further improvement of processing and grading.

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NP 306 Action Plan Problem Areas

COMPONENT 1. Quality Characterization, Preservation, and Enhancement

Problem Area 1c. Factors and Processes that Affect Quality

- Determine influence of pre-harvest factors on quality, including genetics, production practices and environment.
- Determine influence of post-harvest factors on quality, including storage, handling, grading, and processing.
- Evaluate effects of safety and environmental protocols on quality of foods.

NP 306 Action Plan Problem Areas

COMPONENT 1. Quality Characterization, Preservation, and Enhancement

Problem Area 1d. Preservation and/or Enhancement of Quality and Marketability

- Develop strategies to enhance intrinsic product quality and consistency.
- Improve storage technologies which maintain quality and nutrition and increase shelf life.
- Enhance nutritional value of agricultural products.
- Investigate use of antagonistic yeasts and bacteria for antimicrobial effects to enhance safety and reduce spoilage.
- Develop environmentally friendly strategies for plant and animal pathogen control.
- Minimize effects of pest infestation and food-borne risks on trade of agricultural products.

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NP 306 Action Plan Problem Areas

COMPONENT 2. New Processes, New Uses, and Value-Added Foods and Biobased Products

Problem Area 2a. New Product Technology

- **Identify and characterize functional compounds and components in agricultural commodities and their byproducts.**
- **Improve understanding of the relationship between composition, molecular structure, and physical state and end-use functionality of these compounds and components.**
- **Use new knowledge of product properties and component interactions to develop functional intermediates or products.**

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NP 306 Action Plan Problem Areas

COMPONENT 2. New Processes, New Uses, and Value-Added Foods and Biobased Products

Problem Area 2b. New Uses for Agricultural By-products

- Identify and characterize by-product components for potential value-added products.
- Convert low value agricultural residues into higher value products.

NP 306 Action Plan Problem Areas

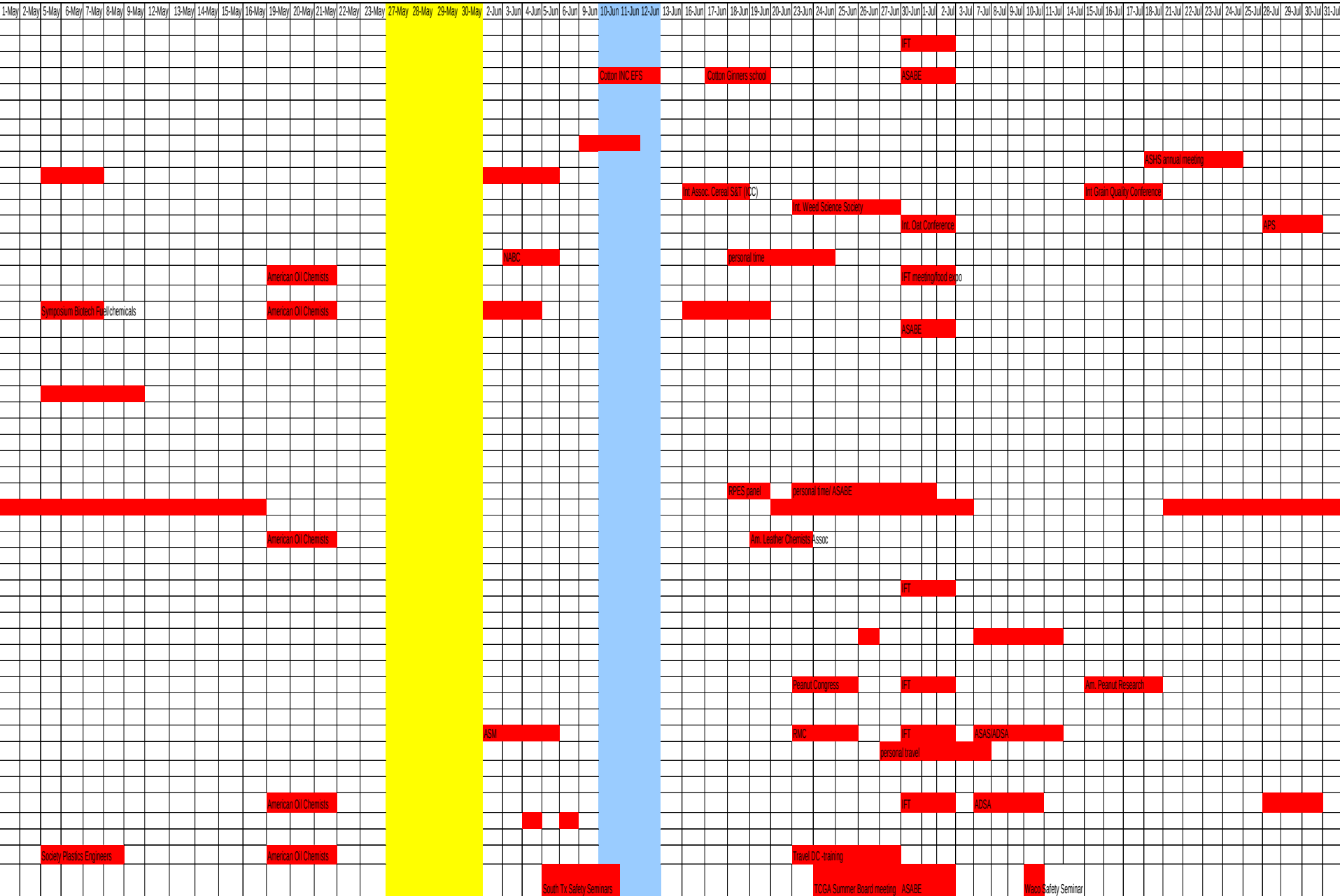
COMPONENT 2. New Processes, New Uses, and Value-Added Foods and Biobased Products

Problem Area 2c. New and Improved Processes and Feedstocks

- Develop improved and new techniques and technologies to convert agricultural products into value-added biobased products.
- Improve/develop processes and technologies that are environmentally benign.

NP 306 Planning Schedule	Target Dates
Data Call	Completed (September 2007)
Data Call Info Rec'd & Accomplishment Report Drafted	Completed
DA/AA Review & Approve Accomplishment Report	Completed
Accomplishment Report sent to Panel	Completed (January 2008)
External Assessment Panel Meeting	Completed
External Assessment Report Due to NPS	Completed
Customer/Stakeholder Workshop	June 2008
***Develop Action Plan**	July – Oct. 2008
Action Plan Finalized and available on Web	Nov. 1, 2008
Planning Sessions for ARS Scientists	Nov./Dec. 2008
PDRAMs Drafted	Jan. - Apr. 27, 2009
PDRAMs Due to Area	Apr. 27, 2009
PPO Due to NPS (9 weeks)	June 29, 2009
PPO Approved and Sent to Area with cc to OSQR (8 weeks)	Aug. 24, 2009
Project Plans due to OSQR (16 weeks)	Dec. 14, 2009
Review Period (14 weeks)	Dec. 15, 2009 –Mar. 22, 2010
Project Implementation Date	July 13, 2010

Known Schedule Conflicts for NP306 Stakeholders Workshop



Workshop Goals

- Provide an overview of the National Program and an assessment of Program accomplishments to stakeholders, customers, partners, and scientists.
- Assess how well this National Program has performed in meeting stakeholder needs and expectations.
- Gather information from stakeholders, customers, partners, and scientists to assist in the development of the next five year research plan for the Program.

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Role of Government Research

- Ensure national security
- Promote public health and welfare
- Promote discovery, innovation
- Stimulate the economy and economic competitiveness
- Long term, high risk, basic research
- National or regional scope
- Benefits to consumers
- Provide information necessary to make informed decisions as voters, consumers and policymakers

Next Steps

- Action Plan Workshop, Review Stakeholder Input
- Compile input from NP 306 Stakeholders Not at Workshop
- Notes from Stakeholder Workshop on NP 306 website
- Action Plan on NP 306 website