

Innovate 2012

Innovation: Funding Livestock Research and Outreach in the Future

October 3 – 5, 2012

The Cliffs Resort / Shell Beach, CA

Washington Tree Fruit Growers: Why Did They Invest?

Jim McFerson
WTFRC
Wenatchee, WA



Washington Apple, Pear Growers Approve \$27 Million Special Project Assessment to Support WSU Research, Extension; Largest Gift in WSU History

Apple and pear growers throughout the state have agreed to make a historic investment of \$27 million over the next eight years to support tree fruit research and extension at Washington State University. It is the largest single gift in the university's history.

Why???

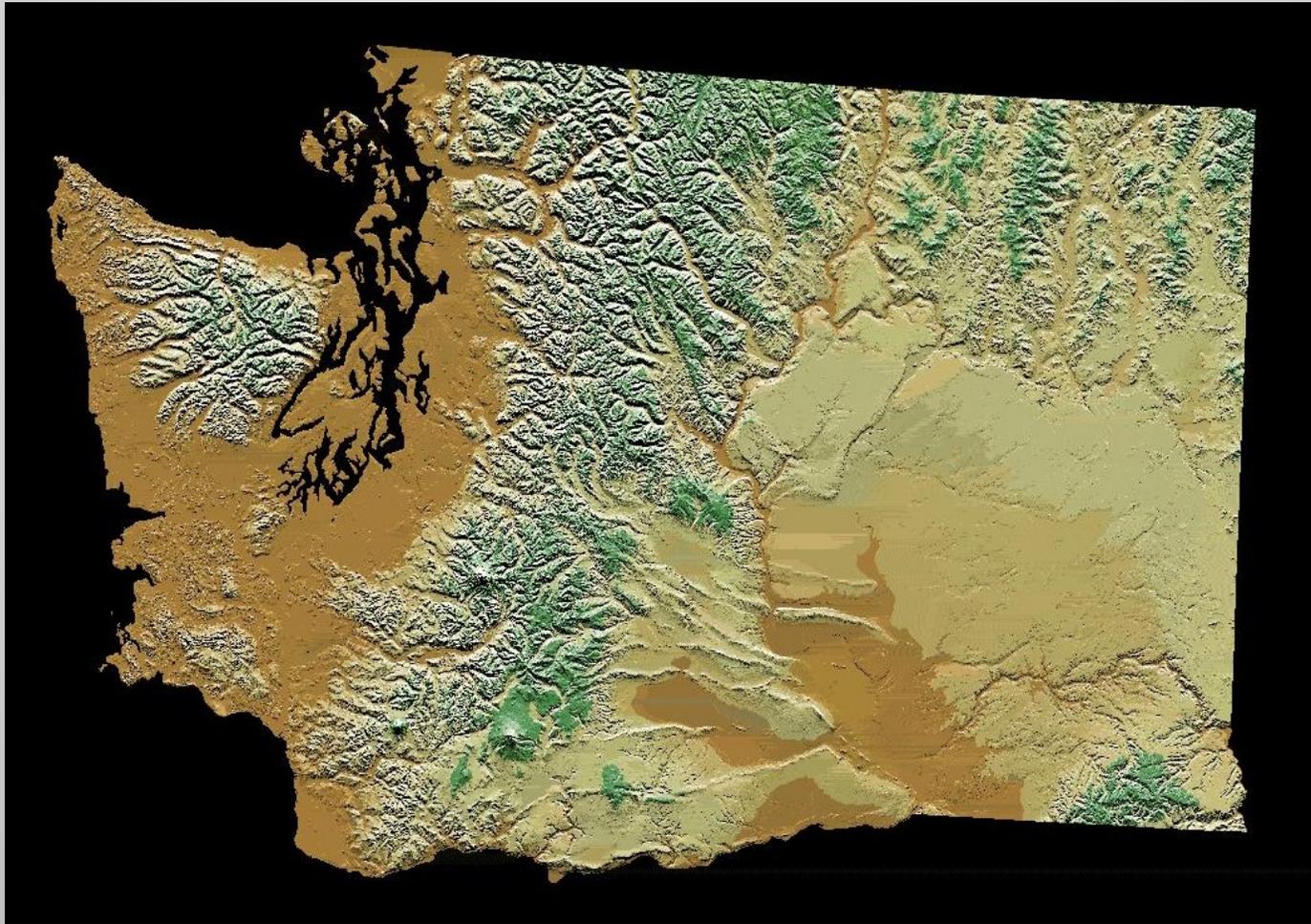


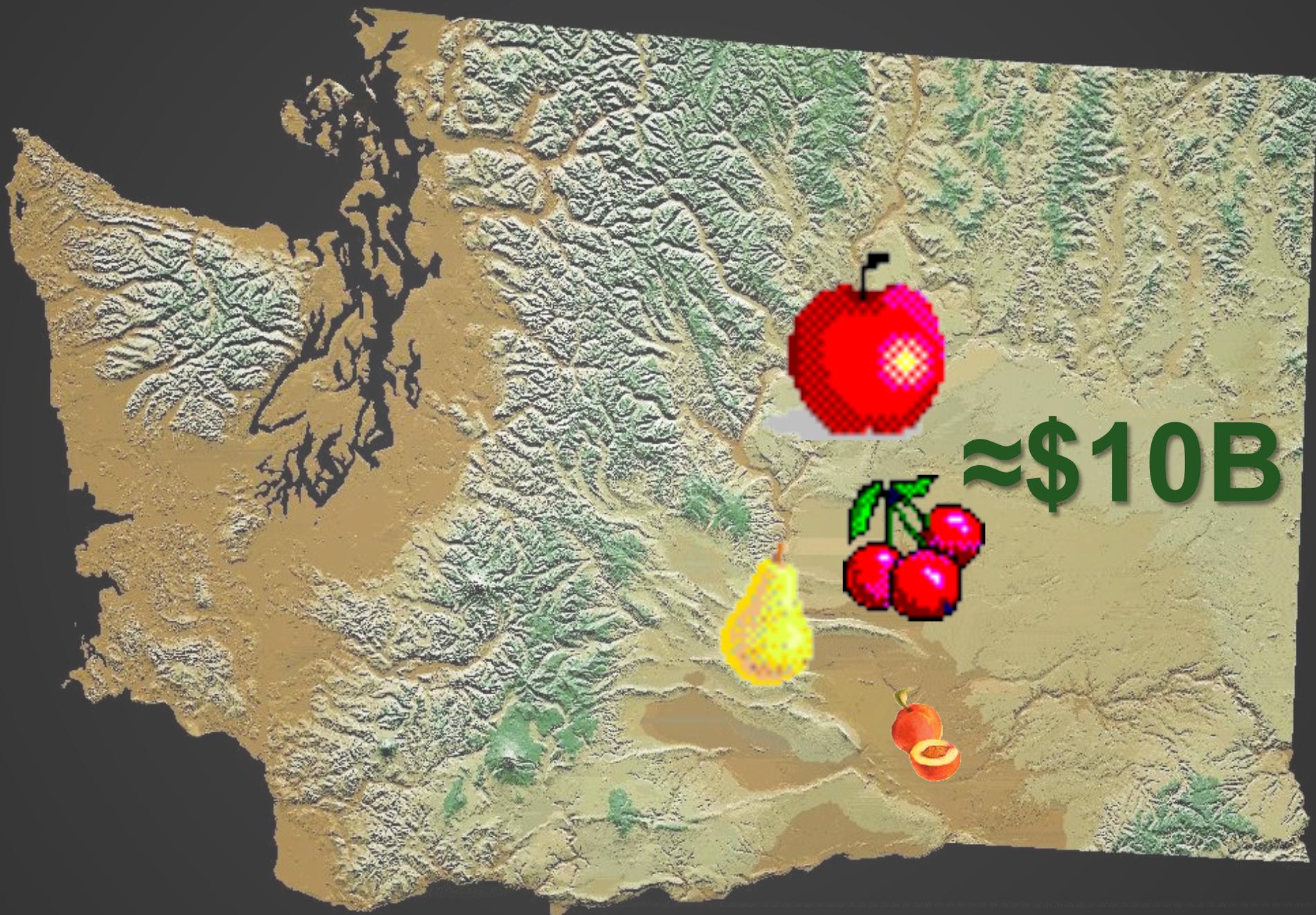
Dean Bernardo is totipotent

Growers love WSU



***There is more to
the story...***





≈\$10B

Background

**National Tree Fruit Technology
Roadmap**

Specialty Crops

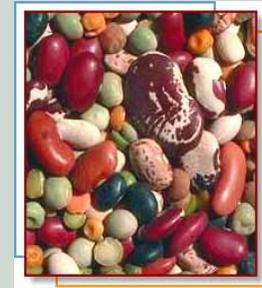
Federal funding opportunities

WSU Capital Campaign for Tree Fruit

Horticulture & Plant Breeding

UW-Madison --- BS, PhD

Texas A&M --- MS



Petoseed: Plant breeder



ARS-Geneva: Geneticist

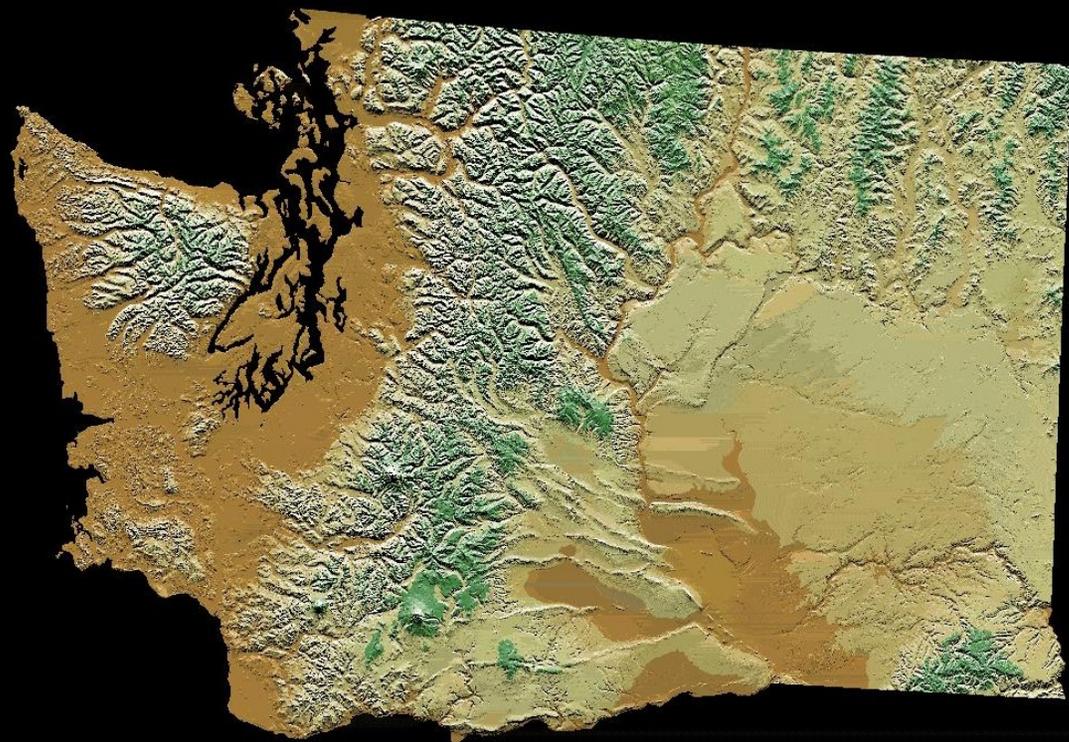


WTFRC: Manager, Researcher

cascadegarlic.com







WASHINGTON TREE FRUIT RESEARCH COMMISSION



research focus



established by State Legislature in 1969



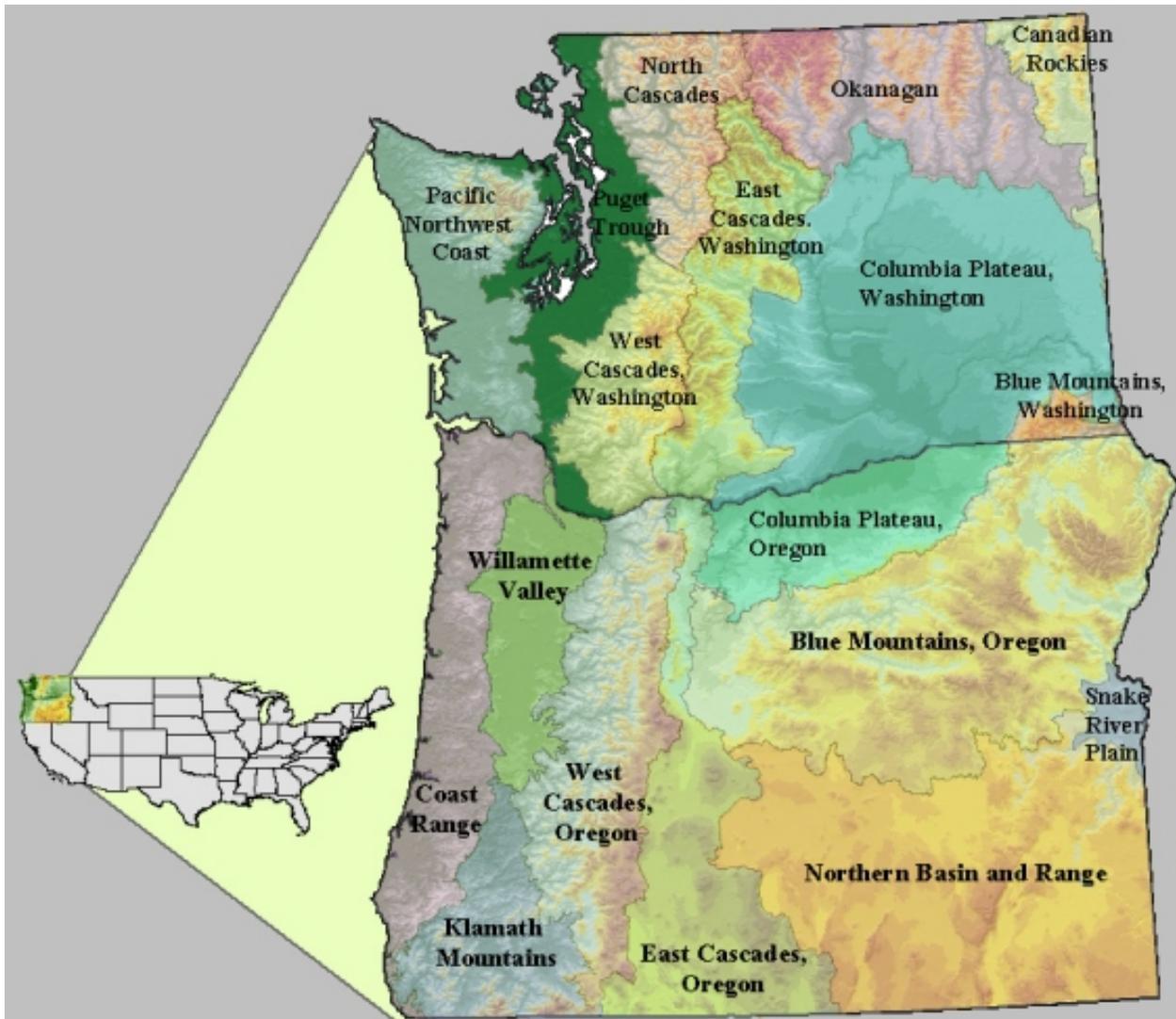
per-ton assessment on Washington producers



annual budget \approx \$4M



Oregon Sweet Cherry Commission



Pears Northwest (FMO 927)

WTFRC Research



Funded by growers...
conducted in their
orchards



Investing in the future: Worried about the present



GLOBALG.A.P.
The Global Partnership for Good Agricultural Practices



Analysing Pesticide Residues in Apple

J. Stevens, L. Zhao and P.L. Wylie, Agilent Technologies Inc., Wilmington, Delaware, USA.

Pesticides are commonly used within the agricultural industry as a means of killing or repelling pests to protect crops and livestock. The risk of pesticide toxicity in the foods we consume remains an area of concern. A number of studies indicate a link between the exposure to pesticides and acute health problems including cancer, respiratory, neurological and dermatological issues, and the risk of miscarriages and birth defects. The risks that pesticides pose to human health have prompted many international and national organizations to establish maximum residue limits (MRLs) for pesticides, which need to be monitored and enforced. The QuEChERS Quick, Easy, Cheap, Effective, Rugged and Safe — pronounced “catchers” — method for pesticide analysis was first introduced by United States Department of Agriculture scientists in 2003. To address this need, this technique is used for the determination of pesticide residues in fruits and vegetables. It is fast, simple and inexpensive. However, the method has since been modified to address some problematic pesticides by including a buffered extraction system.²

The European Norm (EN) method 15662:2007 is a European variation to the QuEChERS method.^{3,4} The method uses acetonitrile extraction, followed by the salting out of water from the sample using anhydrous magnesium sulphate (MgSO₄), sodium chloride (NaCl) and buffering citrate salts to induce liquid-liquid partitioning. A dispersive solid-phase extraction (dSPE) is conducted for clean up using a combination of primary secondary amine (PSA) to remove organic acids among other components and anhydrous MgSO₄ to reduce the remaining water in the extract. After mixing and centrifugation, the upper layer is ready for analysis. Gas chromatography-mass spectrometry (GC-MS) has been widely used in pesticide analysis for many years. Many pesticides are volatile or semi-volatile, which makes them GC amenable compounds. Previously the SamplQ EN buffered extraction kit and SamplQ EN dispersive SPE kit for general fruits and vegetables have demonstrated good performance for the extraction of a broad variety of semi-polar to polar pesticides analysed by GC-MS-MS.⁵ Because volatile and semi-volatile pesticides have been widely used for some time we evaluated the use of these

kits in extracting these classes of pesticide for analysis by GC-MS.⁶ For this investigation, an apple sample matrix was chosen because of its high water content. Sample preparation is a critical step in the pesticide extraction process. Food samples with a high content of water can result in an exothermic reaction when the partitioning salts are added directly to them. This can affect analyte recoveries, especially for volatile compounds, by the thermal denaturing of the pesticides. Preparations of homogenized pesticide free apple were fortified with 17 different known pesticides (Figure 1). Identification of all 17 pesticides by GC-MS was required to demonstrate successful extraction and analysis of the sample. To control the amount of water in the sample matrix and, therefore, limit damaging exothermic reactions, the EN kits contain anhydrous salts. As specified in the original QuEChERS methodology,¹ these salts are added to the sample after an organic solvent, binding the interaction between the salts and the water in the sample matrix.



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Our biggest worry



Fortunately...
Returns this
season are
very good

Study: Apples earn billions

Study emphasizes need for stable, legal workforce

By DAN WHEAT
Capital Press

WENATCHEE, Wash. — The Washington apple industry generated \$7 billion in total economic output in the 2010-11 sales season, according to a study recently concluded for the Washington Apple Commission.

That figure includes all levels of production, packing, processing, marketing and research, said the study by Globalwise Inc., of Vancouver, Wash., and Belrose Inc., of Pullman.

The industry accounted for over 59,560 jobs with a total payroll of about \$1.95 billion and with \$959 million of that coming directly from the industry, the study said.

The industry provided nearly \$59 million in tax revenues to state and local governments and \$57 million or more in federal tax revenues. Related business activities generated \$243.3 million more in federal revenues, according to the study.

Apples usually rank No. 1 among the state's top agricultural commodities as listed by the USDA National Agricultural Statistics Service each fall. The total farm gate value of Washington apples in 2010 was \$1.44 billion, according to NASS.

The farm gate value is only what goes to growers and does not include packing, storage, marketing and spinoffs that are included in the \$7 billion estimate, said Desmond O'Rourke, president of Belrose.



Dan Wheat/Capital Press

Adalberto Sanchez hauls a bin of Honeycrisp apples from an East Wenatchee, Wash., orchard with a tractor on Sept. 14. With harvest labor tight, a new Washington Apple Commission study highlights the industry's value to the economy.

"I wouldn't be surprised if the figure is \$10 billion this year (2011 crop) and for next year and the farm gate value around \$2 billion because the industry is doing so well," O'Rourke said.

The Globalwise-Belrose study, released Aug. 30, was done in anticipation of more labor shortages and to demonstrate why a stable, legal workforce is vital, said Todd Fryhover, president of the Washington Apple Commission in Wenatchee. Industry sources and the U.S. Department of Labor has estimated that about 70 percent of the seasonal workers involved in Washington's tree fruit harvest are illegal immigrants.

The commission is supportive of efforts to create a stable, legal workforce, Fryhover said.

Most of the Apple Com-

mission's work is export development and promotions.

Exports are a key element of the industry's economic prosperity, future prosperity and the prosperity of the state's economy, the study said.

A third, or 35 million, 40-pound boxes, of Washington apples typically are exported. The industry is threatened if exports falter.

If 5 million boxes of apples destined for export were switched to the domestic market, the income loss to growers would be about \$55 million with a loss of 925 jobs, \$37 million in wages, \$7.34 million in state and local tax revenues and \$9.5 million in federal tax revenues, the study said.

Twenty apple industry companies cooperated in the study by disclosing confidential business information that the authors kept confidential.

Washington state apple study

Washington's apple industry contributed more than \$7 billion to the state's economy in 2011*, according to a recent Washington Apple Commission study.

(In millions of dollars)

Processing: \$384.5 or 5.5%
Orchard production: \$1,372.6 or 19.5%
Marketing and research: \$40.7 or 0.6%



Total value: \$7.03 billion*

NOTE: Totals may not equal 100 percent due to rounding.

*Marketing year Sept. 2010-Aug. 2011.

Source: Washington Apple Commission

Capital Press graphic

1997



2001



Sunday, October 03, 1999

Engulfed in debt, apple growers are bulldozing orchards and calling it quits

Lynda V. Mapes
The Seattle Times



April 16, 2001
Tri-City Herald

Losing Ground: Farmers fighting battles on many fronts

By Mike Lee

The rich fields of Eastern Washington will bear fruit this year just like they have for decades. Weather will hurt some crops and help others. Farmers will complain about prices. Politicians will wring their hands over trade policies. And lobbyists will bemoan the loss of the family farm.

But underneath the humdrum stuff that spins the world of agribusiness, the very essence of American farming is changing, its bulk shrinking, its power ebbing.

Some say it's time to give up farming as a national occupation.

Sunday, October 11, 1998

Apple growers taking huge financial hit

by Lynda V. Mapes
The Seattle Times

Slow drain of rural jobs is hard to reverse

Wednesday, June 21, 2000

By BILL VIRGIN
SEATTLE POST-INTELLIGENCER REPORTER



Challenges to Agriculture

PROFITABILITY

CAN WE DO ANYTHING ABOUT IT??

Sure!

We can figure out who to blame!

domestic/foreign competitors

government regulators

marketers

retailers

consumers

ourselves

.....return to top



TWO BOOKS: TWO HYPOTHESES

The End of Agriculture in the American Portfolio

Stephen Blank, 1999

average net return to agriculture negative since 1994

“farmers could do better just depositing their money in the bank”

food production will shift to low cost producers

The Lexus and the Olive Tree

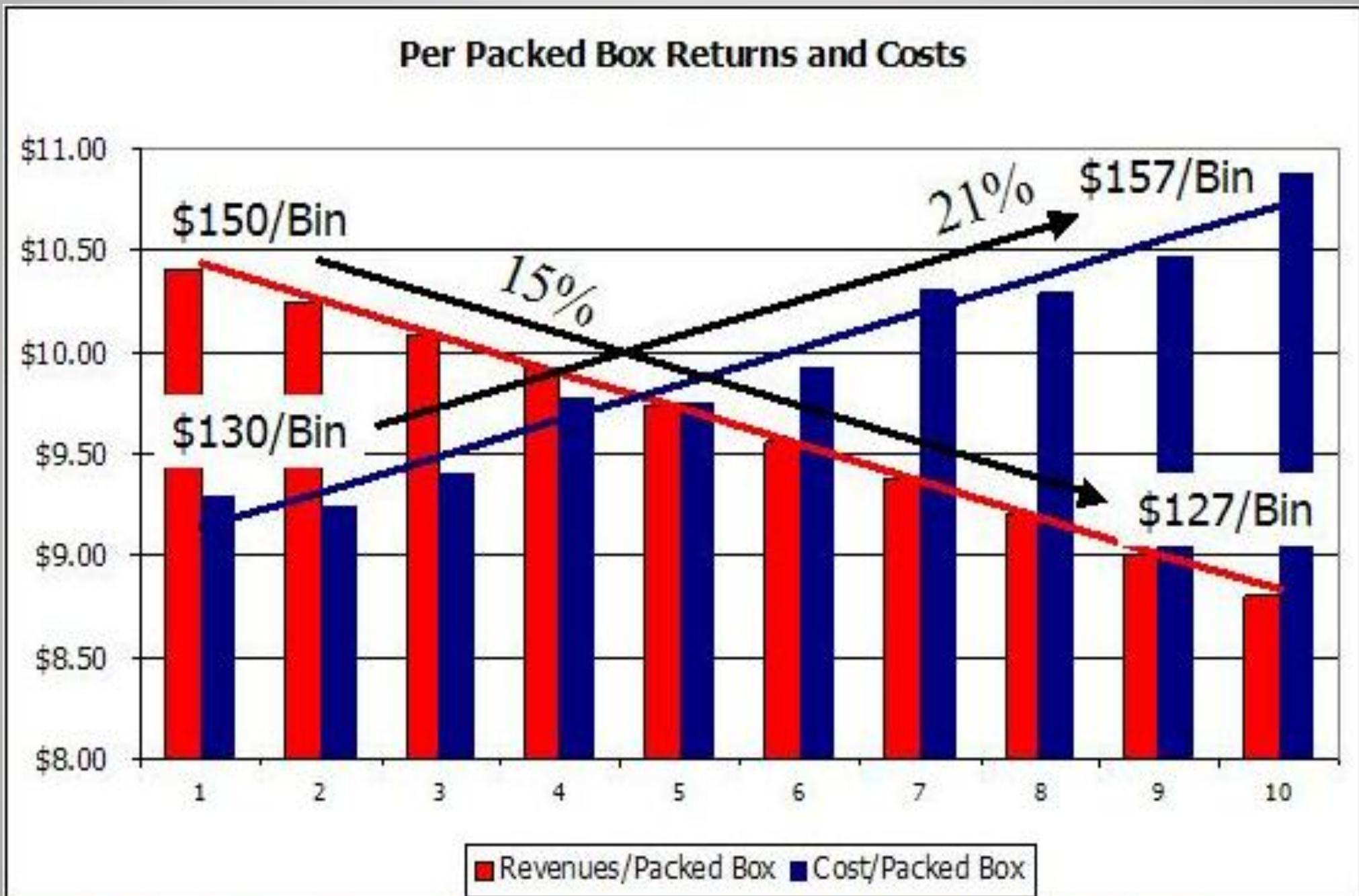
Thomas Friedman, 1999

“Technology created globalization and it is technology that will enable the US to compete globally”

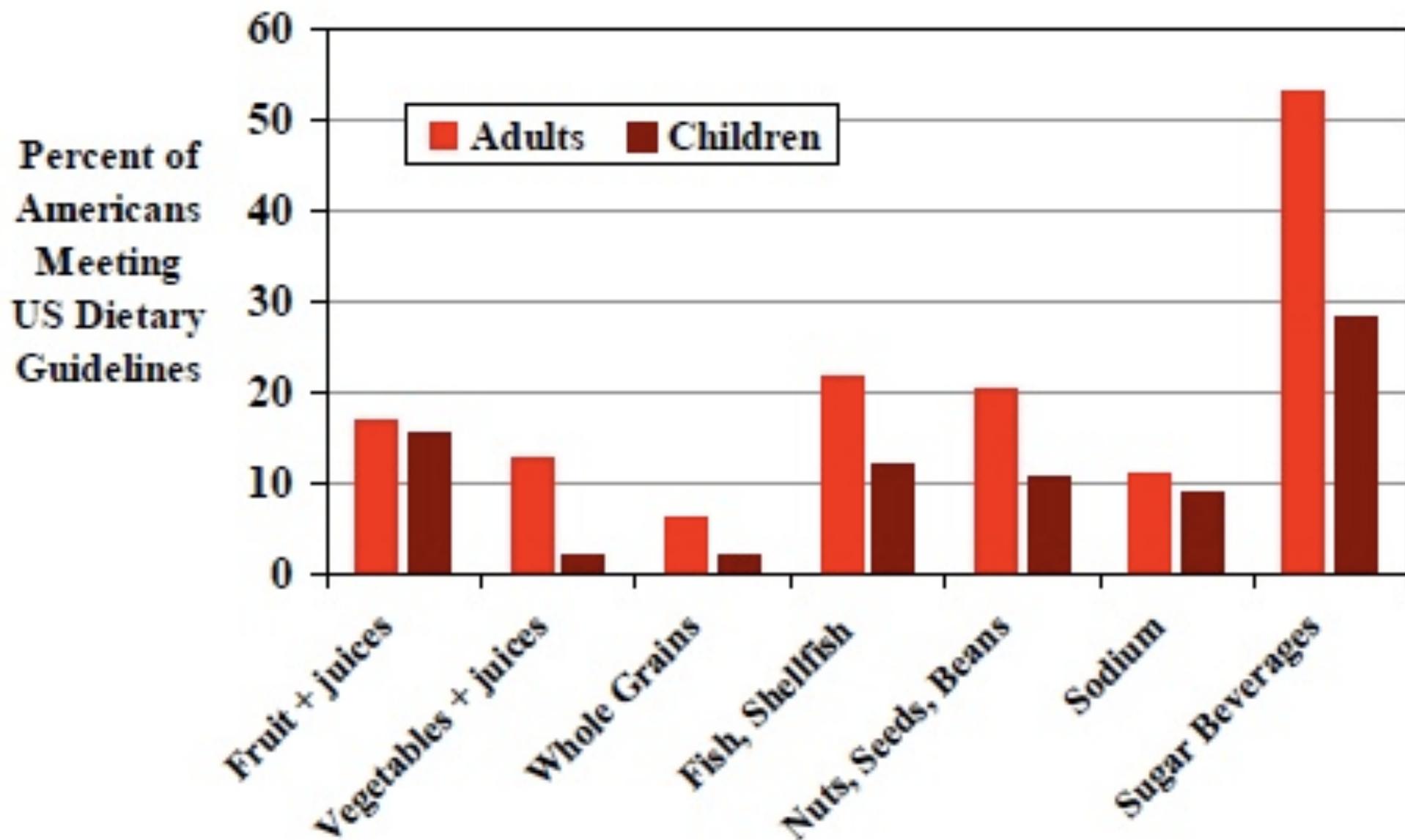
.....*which is right?*

Increased production and handling costs challenge grower returns over the next ten years

Clark Seavert, Oregon State Univ



Percent of Americans Meeting Diet Guidelines



Based on NHANES 2005-06; Mozaffarian et al., in preparation

THE TECHNOLOGY ROADMAP FOR TREE FRUIT PRODUCTION

RESEARCH PRIORITIES TO ENHANCE TREE FRUIT PRODUCTION THROUGH TECHNOLOGICAL INNOVATION



STEERING GROUP

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mcferson@treefruitresearch.com

Fran Pierce
WSU Ctr for Precision Ag Sys
509-786-9212

fjpierce@wsu.edu

Roadmap Elements

Defines the **problem** -- increased global competition in traditional US markets

Identifies key **technical barriers**
escalating production costs
increased demands for fruit quality

Describes essential **R&E areas**

Sets specific **R&E priorities** to overcome technical barriers

The Other Washington



House Committee on Appropriations Report 2003 (108-193)

"T
Initiate a new,
national
strategy for
tree fruit R&D
e

*With help from USApple, Northwest Horticultural Council,
Sens. Murray and Cantwell, and Reps. Walsh, Hinchey, Nethercutt*

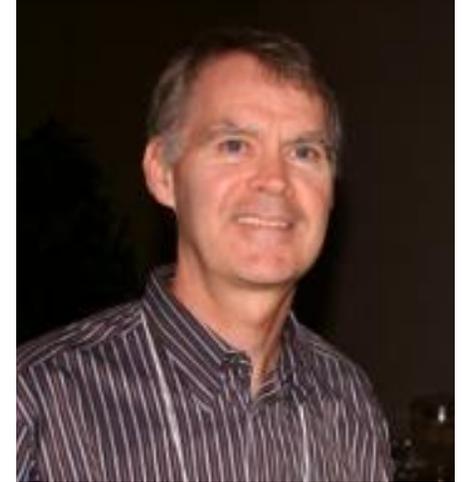
Roadmap Leaders



Fran Pierce
WSU



Phil Baugher
Adams County Nursery



Jim Cranney
USApple



Herb Aldwinkle
Cornell Univ



Dariusz Swietlik
USDA-ARS



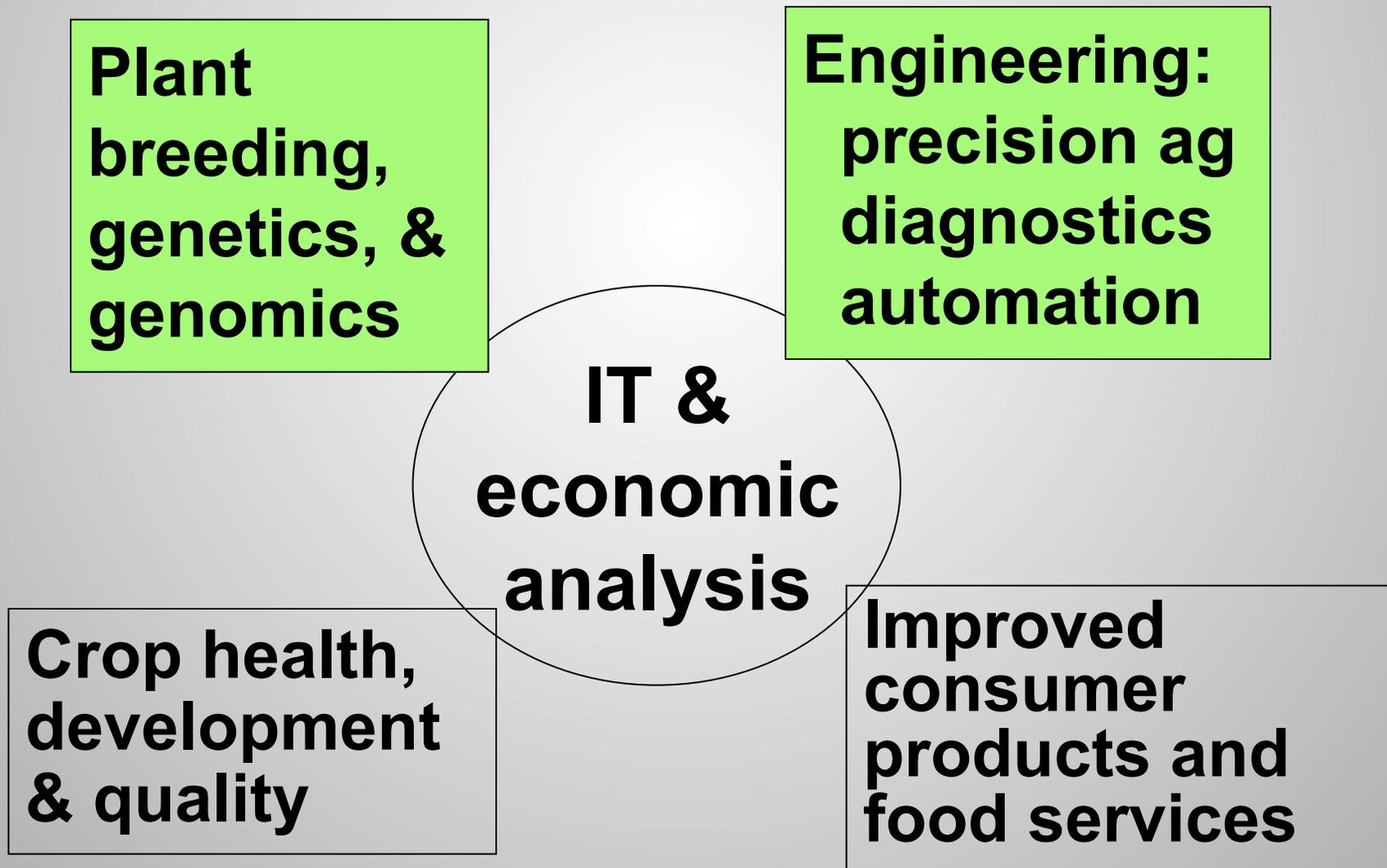
Clark Seavert
OSU

National Tree Fruit Technology Roadmap



National Tree Fruit Technology Roadmap (2003)

To be profitable in a globally competitive marketplace, the U.S. tree fruit industry must deliver the highest quality fruit and reduce production costs 30% by 2010



Specialty Crop Competitiveness Act 2004

Food, Conservation, and Energy Act 2008

Specialty crops are “fruits and vegetables, tree nuts, dried fruits, horticulture, and nursery crops (including floriculture).” Eligible plants must be intensively cultivated and used by people for food, medicinal purposes, and/or aesthetic gratification to be considered specialty crops. Processed products shall constitute greater than 50% of the specialty crop by weight, exclusive of added water.



Vision and Mission

Who We Are

NGWI is a nationwide coalition of grape and grape products sectors representing grape growers, processors, wineries, and representatives of academic institutions and cooperative extension organizations committed to improving our industry.

NGWI gains strength by building upon the expertise and experience inherent in each of the groups from which its members are drawn.

Our Vision

Our vision is to enable the United States grape and wine industry to be the world leader in consumer value and sustainability and contribute to the quality of life in rural communities.

We are working to triple the industry's economic impact by the year 2020, to \$150 billion annually. This projected figure is based on a conservative estimate of the current annual economic impact of approximately \$50 billion annually.

In order to improve wine and grape production in the United States, NGWI created an integrated plan based on specific needs for technology development and strong outreach education programs that will provide technology to grape producers, processors and wineries.





National Berry Crops Initiative

[▶ About NBCI](#)[▶ Resources](#)[▶ Draft Plan](#)[▶ News](#)

Board of Directors

- David Bell, Wild Blueberry Commission
- Henry Bierlink, Washington Red Raspberry Commission
- Bill Cline, North Carolina State University
- Sue Harrell, Florida Strawberry Growers Association
- Joe DeVerna, Ocean Spray Cranberries, Inc
- Jere Downing, Cranberry Institute
- Ron Fujii, Oregon Blueberry Commission
- Philip Gütt, Northwest Center for Small Fruits Research; Oregon Raspberry & Blackberry Commission; Oregon Strawberry Commission
- Jeff LaFleur, Cape Cod Cranberry Growers' Association
- Ervin Lineberger, North American Bramble Growers Association
- Tom Lochner, Wisconsin Cranberry Growers Association
- Cecil Martinez, California Strawberry Commission
- Phil Neary, Sunny Valley International
- Nate Nourse, New England Vegetable & Berry Growers Assoc.
- Dave Ralls, Oregon Strawberry Commission
- Rick Tomlinson, California Strawberry Commission
- Dave Trinka, Michigan Blueberry Growers Association
- Debby Wechsler, North Carolina Strawberry Association

[Contact us concerning NBCI](#)

[Contact webmaster concerning this site](#)

Updated March 18, 2008

Introduction:

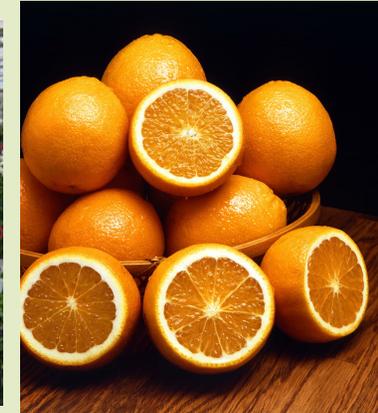


The National Berry Crops Initiative (NBCI) is a partnership of industry, academia and government formed to develop a strategic plan for the continued growth and sustainability of berry crop production in the United States. Berry crops include, but are not limited to: strawberry, brambles (raspberry, blackberry, others), blueberry, cranberry (including lingonberry) and Ribes (currant and

gooseberry). A steering committee was assembled in Spring 2005 to draft the strategic plan that could be presented nationally to farmers, academia and state and federal agencies for their consideration, suggestions, and approval. The Board of Directors was selected in 2007.

This website has been developed to help continue the cooperation of the berry crops organizations and, as they work together, to put this strategic plan into effect to encourage the growth of the berry crops as successful, sustainable crops for farmers and as healthful, nutritious, and flavorful choices for the American diet.

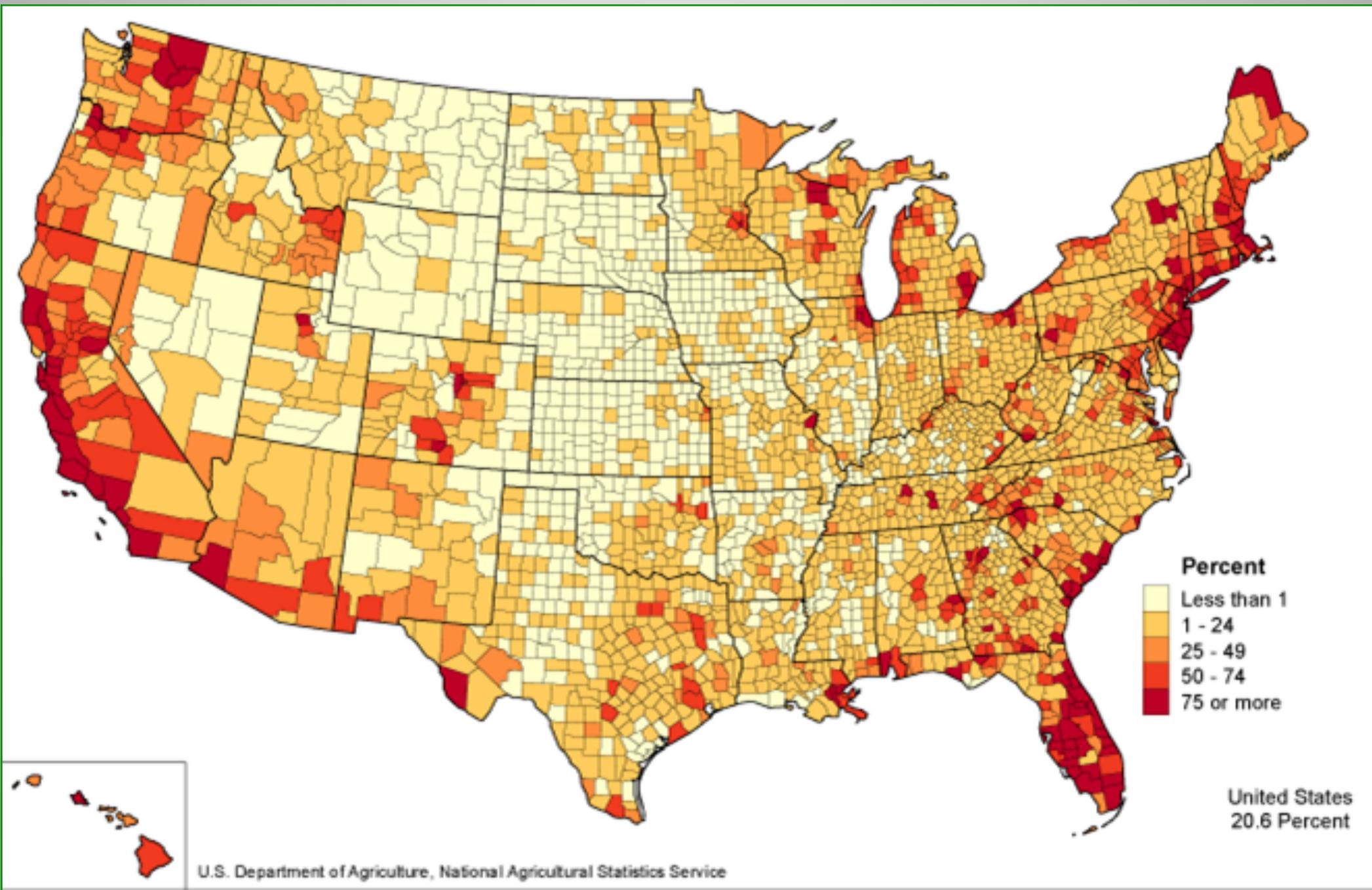
Fruits, Nuts, Herbs & Ornamentals



Vegetables



Specialty Crop Production



National Research Initiative

Competitive Grants Program

FY 2005 Request for Applications

U.S. Department of Agriculture, Cooperative State Research,
Education, and Extension Service

Rosaceous plants, such as pome fruits, stone fruits, strawberry, brambles and related ornamentals. Its commercially valuable members include fruit-producing (peach/nectarine, apricot, plum, sweet and sour cherry, apples, raspberries, blackberries, and strawberries), nut producing (almond), lumber producing (black cherry) and ornamental species (rose, flowering cherry, quince, and pear).

THE \$4 MILLION SURPRISE: NRI AWARDEES 2005

PD	co-PDs / Institution(s)	Title
Albert Abbott Clemson U	Vance Baird; Doreen Main; Greg Reighard; Clemson U.; Bryon Sosinski, NCSU	Completion of the Peach Genome Database: A Reference Genome for Rosaceae
Amy Iezzoni Michigan State U	Esther van der Knapp, OSU; Wayne Loescher, Dechun Wang, MSU	Genomic Resources to Improve Fruit Size and Quality Traits in Cherry
Cameron Peace UC-Davis	Carlos Crisosto, Tom Gradziel, UC Davis ; Ann Callahan, ARS-Kearneysville	Candidate Genes for Fruit Softening in Prunus
Gayle Volk ARS-Ft Collins	Christopher Richards, ARS-Ft Collins	Genetic Diversity of Wild Apple Accessions in the National Plant Germplasm System
James Hancock Michigan State U	Kim Lewers, USDA-ARS; Steve van Nocker, Dechun Wang; MSU	Identifying the Genes Associated with Day-neutrality in strawberries using a QTL approach.
Janet Slovin ARS=Beltsville	Pablo Rabinowitz, TIGR	Increasing The Diversity of ESTs for Fragaria
John Norelli ARS-Kearneysville	Herb Aldwinckle, Cornell U; Carole Bassett, ARS-Kearneysville; Robert Farrell, PSU	Genomic Response of Apple to Fire Blight
Schuyler Korban U Illinois	Jonathan Beever, Univ Illinois	High-Resolution Physical Mapping of the Apple Genome by BAC Fingerprinting
Tom Davis U New Hampshire	Kevin Folta, U Florida; Phillip San Miguel, Purdue	Gene Pair Haplotypes and Sequence Samples from Strawberry (Rosaceae): Multi-purpose, Transferable Resources for Genomics and Variety Improvement
Tia-Lynn Ashman Pittsburgh U	Kim Lewers, ARS-Beltsville	Gender Determination, the Key to Germplasm Utilization in Strawberry: Genetic Mapping and Colinearity with Peach, the Rosaceae Model System
Wenhao Dai NDSU	James Walla, NDSU	Development of Segregating Populations for Molecular and Genetic Analyses of X-Disease in Chokecherry (Prunus virginiana)
Zhao-Bang Zeng NCSU		Algorithms and Programs for Gene Expression QTL Analysis



Mark Nicholson Testifies on Farm Bill

On Wednesday, USApple Board member Mark Nicholson testified before the House Agriculture Subcommittee on Horticulture and Organic Agriculture regarding the impact of the 2008 Farm Bill. Nicholson stressed that apple growers “strongly advocate programs that help grow demand for our products, and build long-term [OBJ] competitiveness and sustainability for our industry.” He described Farm Bill benefits for apples and other specialty crops, including Specialty Crop Block Grants, the Fruit and Vegetable Program, the Specialty Crop Research Initiative and the Market Access Program.

2008 Farm Bill

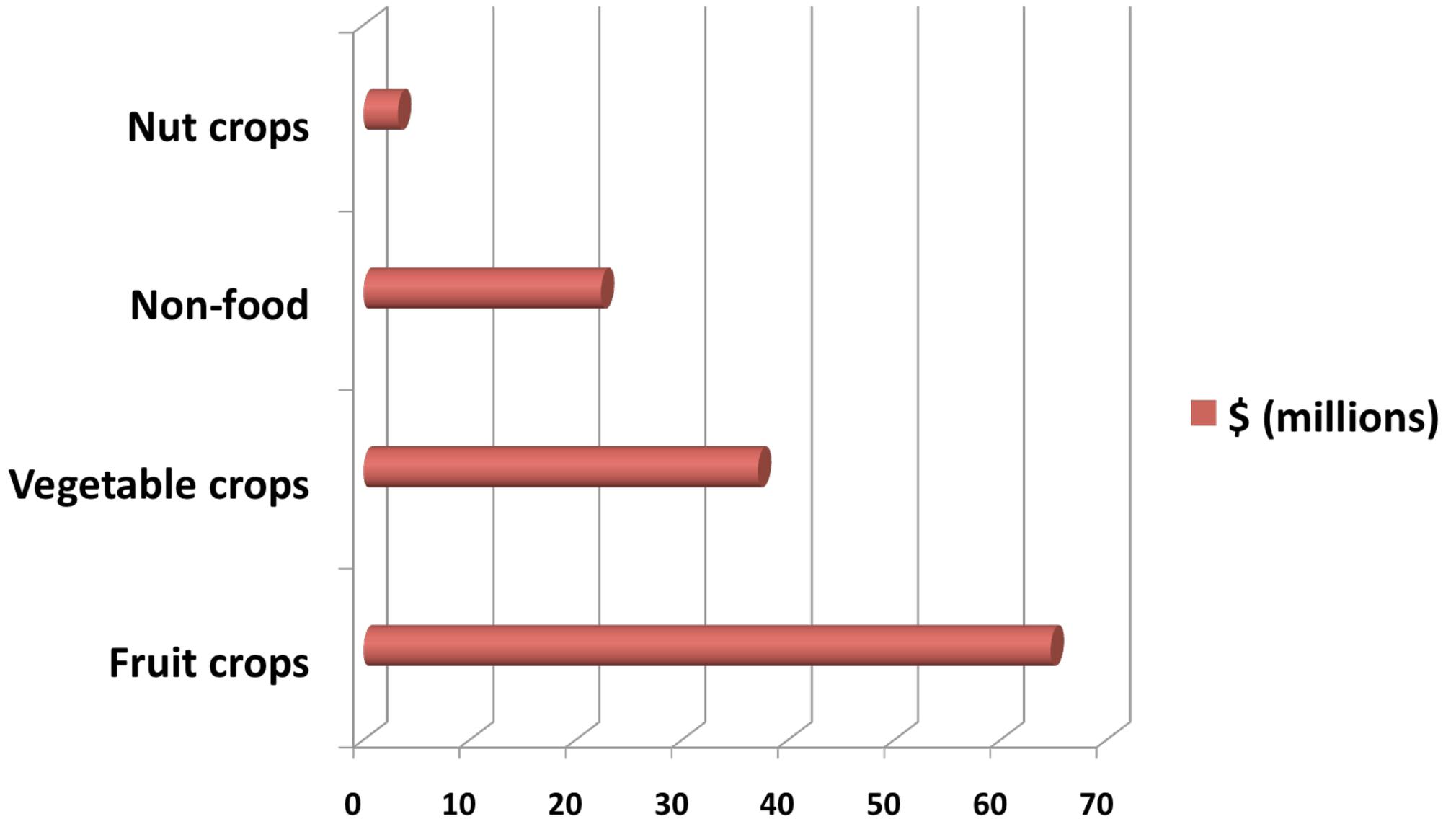
- **International Market Access (\$1.1 billion)**
 - ✓ Market Access Program
 - ✓ Technical Assistance for Specialty Crops
- **Nutrition Investment (\$1.1 billion)**
 - ✓ Expands Fresh Fruit & Vegetable Snack Program to all 50 states
 - ✓ Provides a free fresh fruit and vegetable snack to >3M children
- **Specialty Crop Block Grant Program (\$466 million)**
 - ✓ State targeted programs addressing infrastructure needs
 - ✓ Prioritizes marketing, food safety, quality, handling, labor
- **Pest and Disease Programs (\$377 million)**
 - ✓ Prioritize pest and disease threats to production of specialty crops
 - ✓ Develop action plans and targets federal resources to emergencies
- **Specialty Crop Research Initiative (\$230 million)**
 - ✓ Specialty Crop Research Initiative: Plant breeding, production efficiency, precision ag, product quality

Specialty Crop Research Initiative

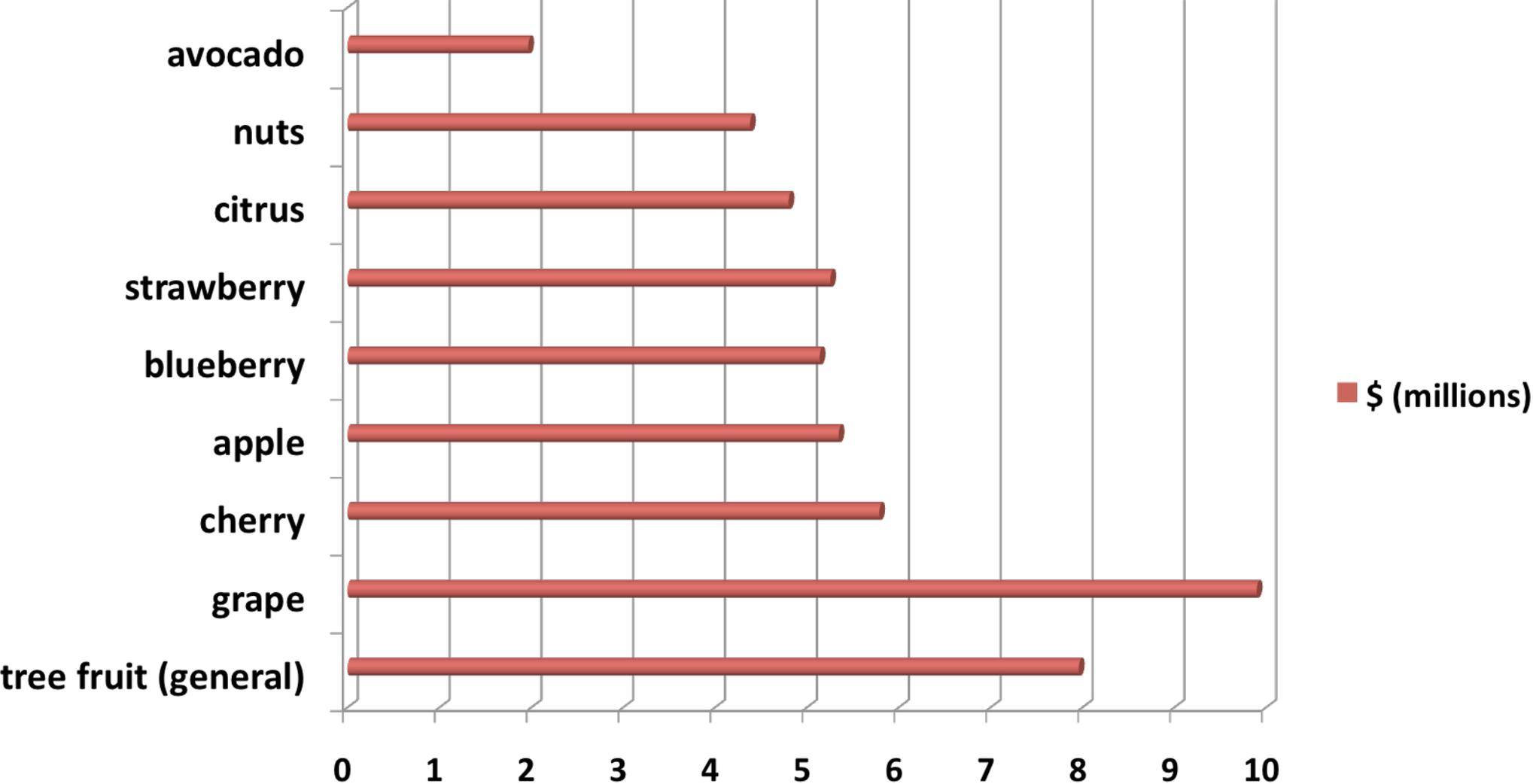
- \$230 million over 5 yrs
- competitive basis
- matching funding (1:1)
- significant extension component
- transdisciplinary
- stakeholder priorities
 - plant genomics genetics, and breeding
 - precision agriculture
 - production efficiency
 - product quality



SCRI Investment in Major Crop Groups 2008-2010



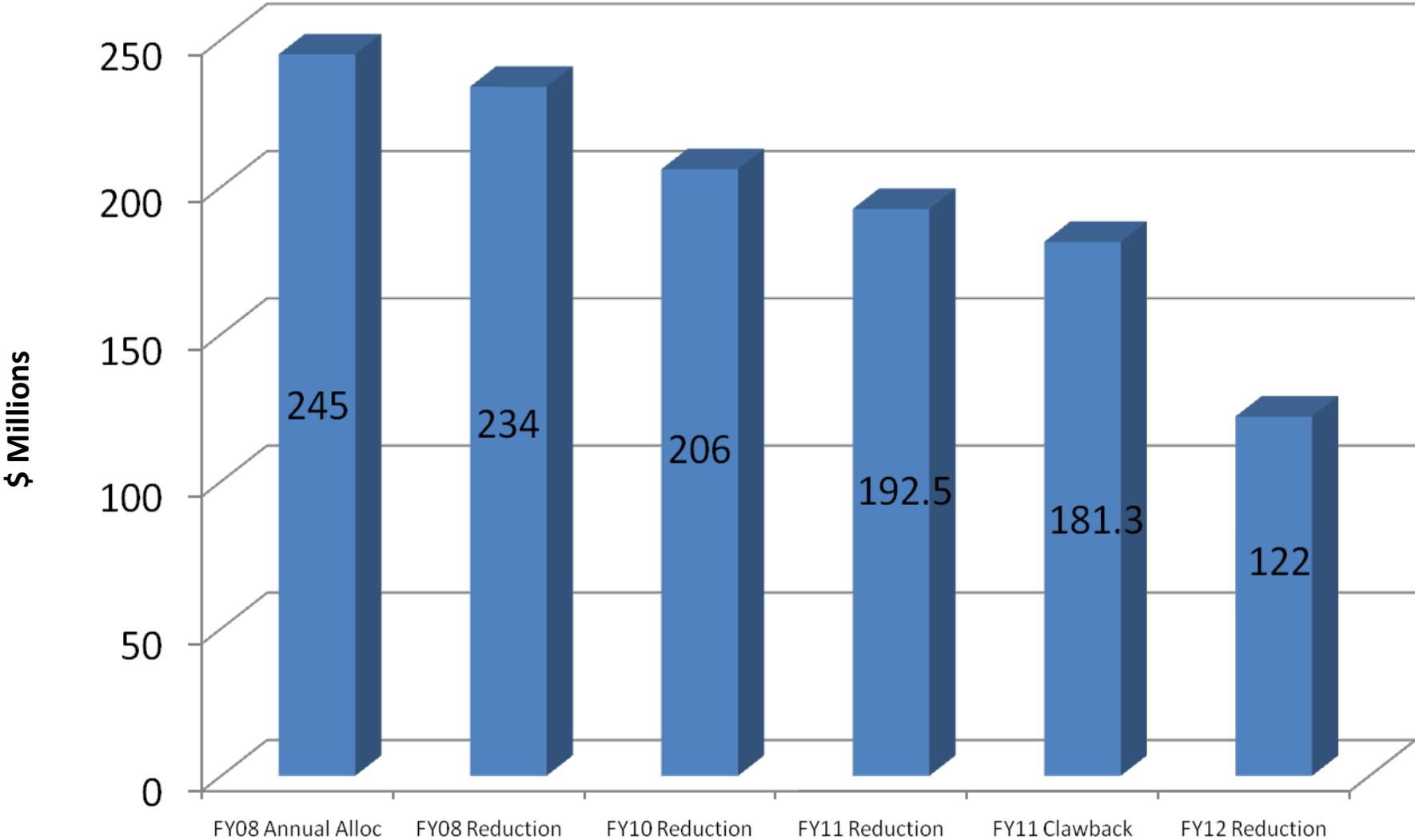
SCRI Investment in Fruit & Nut Crops 2008-2010



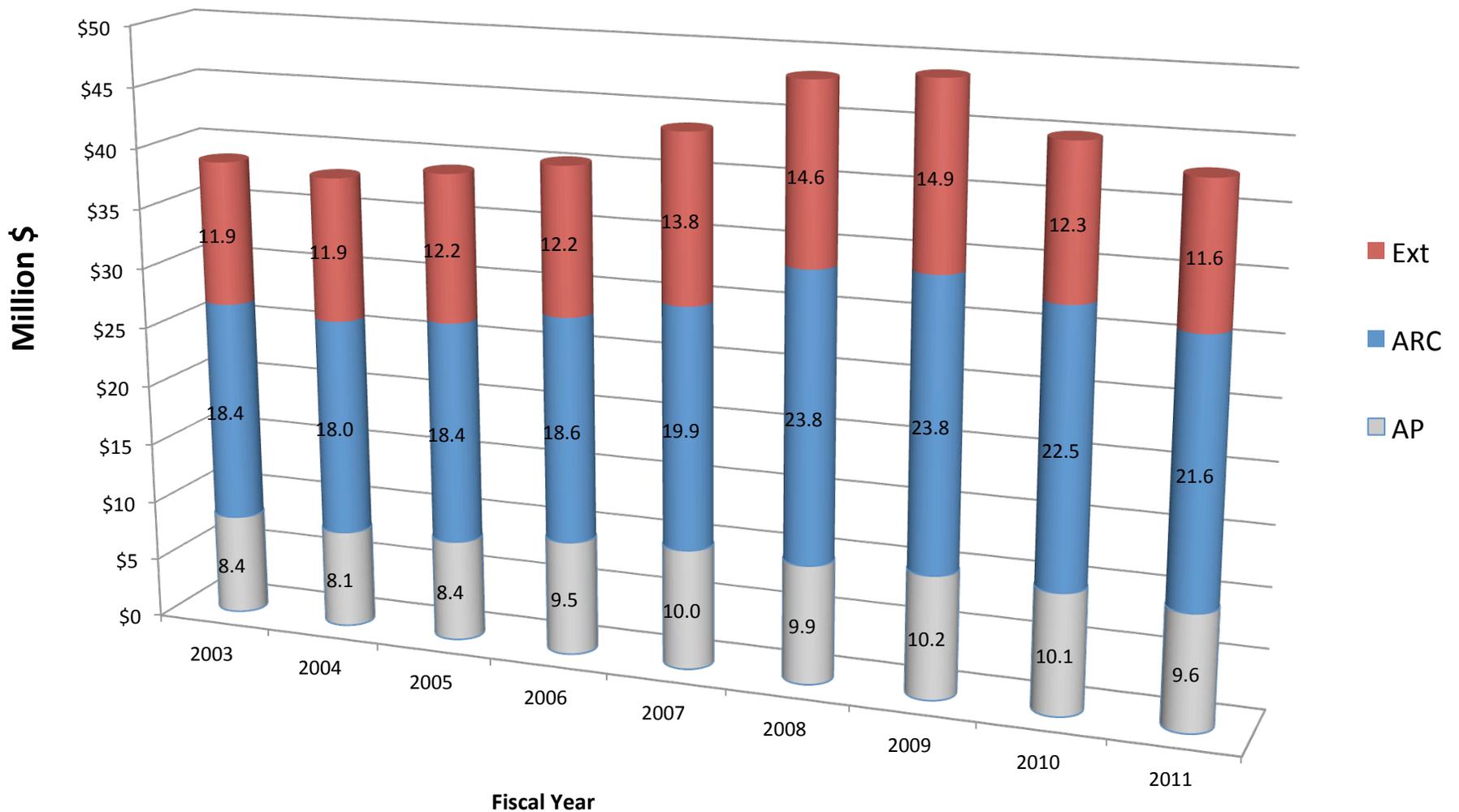
A group of approximately 15 people, mostly men, are standing in a field. They are dressed in casual work attire, including plaid shirts, polo shirts, and shorts. Some are wearing baseball caps. The background shows a line of trees and a clear sky. A large white oval with a black border is superimposed on the upper right portion of the image, containing the text "Happy Stakeholders".

**Happy
Stakeholders**

WSU Has Lost Over 50% of its State Allocation in Four Years



Total State Allocations for CAHNRS & Extension Trended Up from 2005 through 2009...but then...



Five-Year Trend of CAHNRS/Extension Expenditures by Category (\$M)

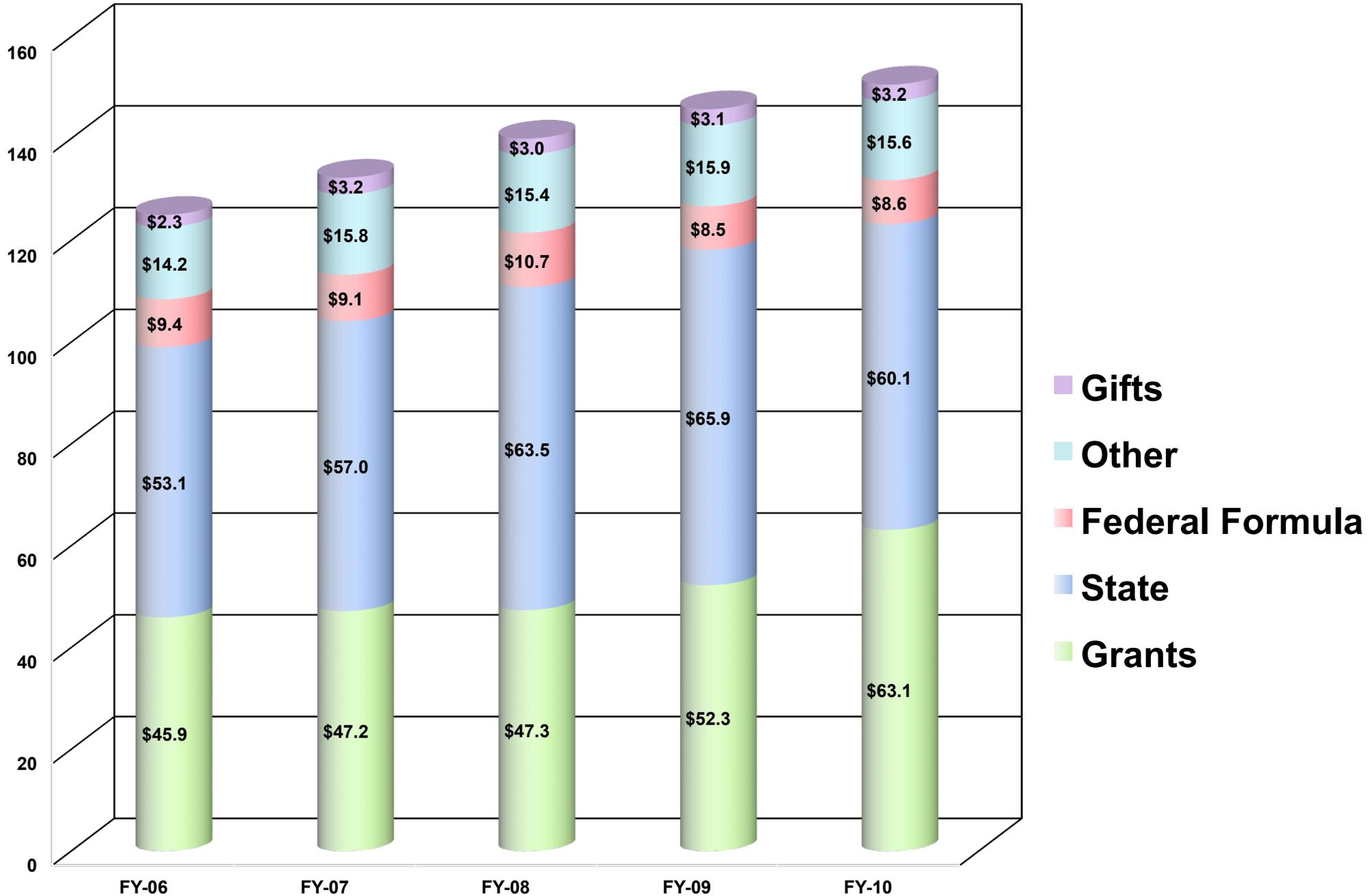
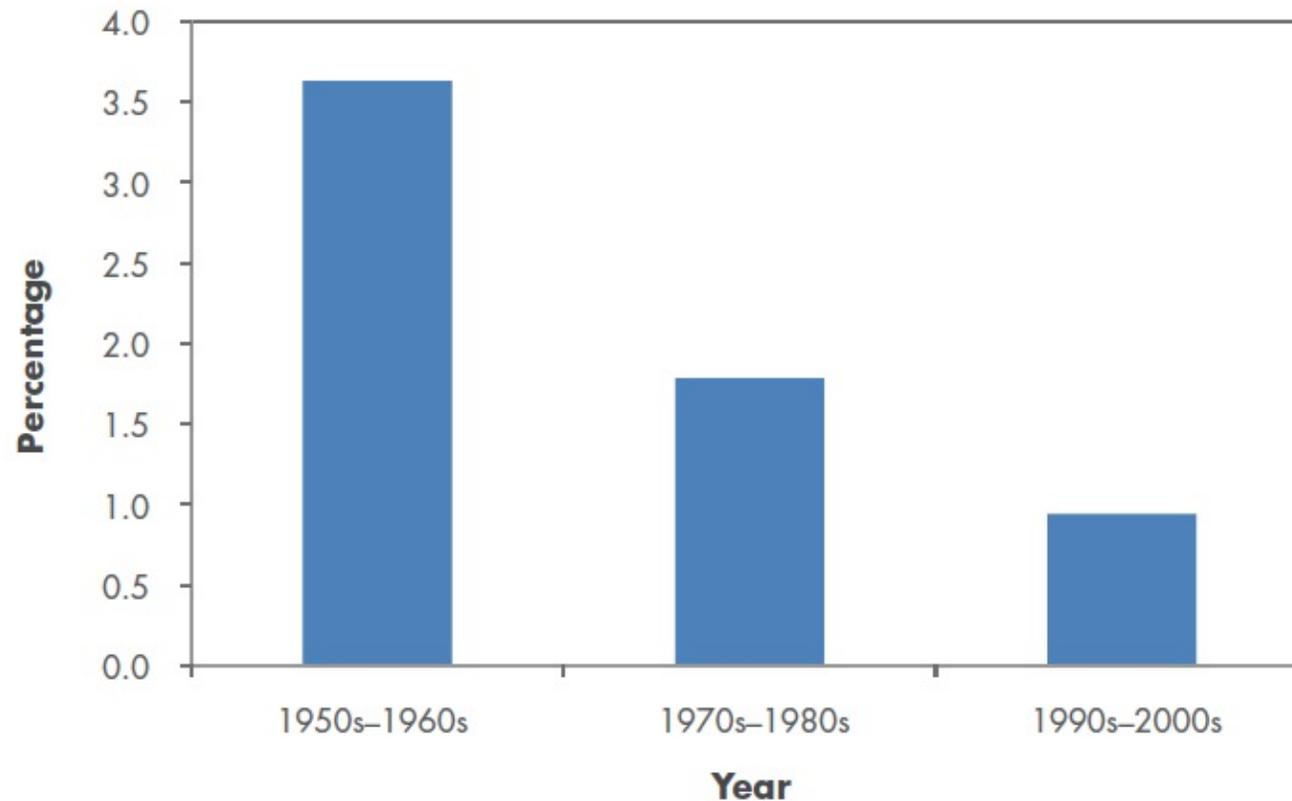


Figure 2: Agricultural Research Spending Slowdown



SOURCE: Public agricultural R&D series (excluding forestry) is from USDA sources cited in J. M. Alston, M. A. Andersen, J. S. James, and P. G. Pardey, *Persistence Pays: US Agricultural Productivity Growth and the Benefits from Public R&D Spending* (New York: Springer, 2010), appendix III; and for more recent years, from USDA Current Research Information System, unpublished annual data files, 1970–2009.

NOTES: Public agricultural R&D includes SAES and USDA intramural spending, exclusive of forestry research. The series was deflated using an agricultural R&D deflator from P. G. Pardey, M. A. Andersen, and C. Chan-Kang, "A US Public Agricultural R&D Price Deflator, 1890–2009" (Department of Applied Economics staff paper, University of Minnesota, St. Paul, MN, forthcoming 2011). Average annual growth rates are calculated using the exponential growth rate method (which assumes continuous growth) described in World Bank, "Statistical Manual-Growth Rates," <http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/EXTDECSTAMAN/0,,contentMDK:20878490~menuPK:2648303~pagePK:64168445~piPK:64168309~theSitePK:2077967~isCURL:Y,00.html> (accessed May 27, 2011).

The Washington Tree Fruit Investment



the **CAMPAIGN** *for*
WASHINGTON STATE
UNIVERSITY

BECAUSE THE WORLD NEEDS BIG IDEAS



Building a Public-Private Partnership

The WTFRC Investment in WSU

A Solid Foundation

- Over an 80 year partnership between WSU and the Washington tree fruit industry
- A history of delivering science based results
- Research located strategically in the growing region
- Industry already funding research projects with WSU



Leadership Sets the Tone



President Floyd affirms WSU commitment to agriculture

Dean Bernardo strengthens commitment to tree fruit

Industry invests \$500k in Sunrise Research Orchard

WSU CAMPAIGN FOR TREE FRUIT

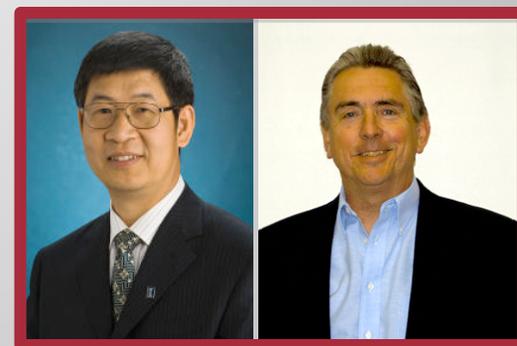
Leaving a Legacy by Investing for the Future

WSU Has Recruited the Best and Brightest



Genetics, Genomics and Breeding

Ag Economics



Horticulture Extension

IPM

Engineering

Building a Public-Private Partnership

The WTFRC Investment in WSU

A Current Snapshot

- Despite a 52% reduction in state funding, WSU stays invested in tree fruit research
- 2.7 extension faculty serving 220,000 production acres
- WSU makes strategic hires in the past 10 years to create trajectory of success
- WSU President and CAHNRS Dean prioritize production agriculture



Building a Public-Private Partnership

The WTFRC Investment in WSU

The Challenge

- State resources diminishing
- Delivery of science-based information critical
- WSU tree fruit research and extension underresourced



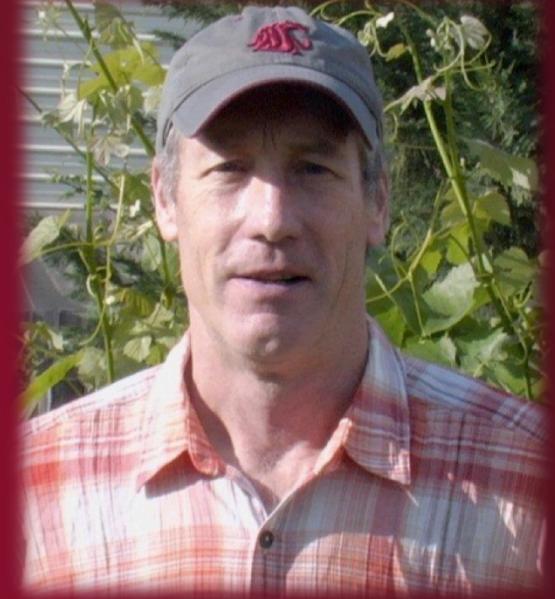
Strategy and Goal Development



Dan Bernardo
VP Agriculture
& Extension



Jay Brunner
Director TFREC
Faculty Lead



Jim McFerson
WTFRC Manager
Industry Lead

Over 60 feasibility visits in 3 Months

Four Themes Emerge

Building a Public-Private Partnership

The WTFRC Investment in WSU

Engaging the Industry

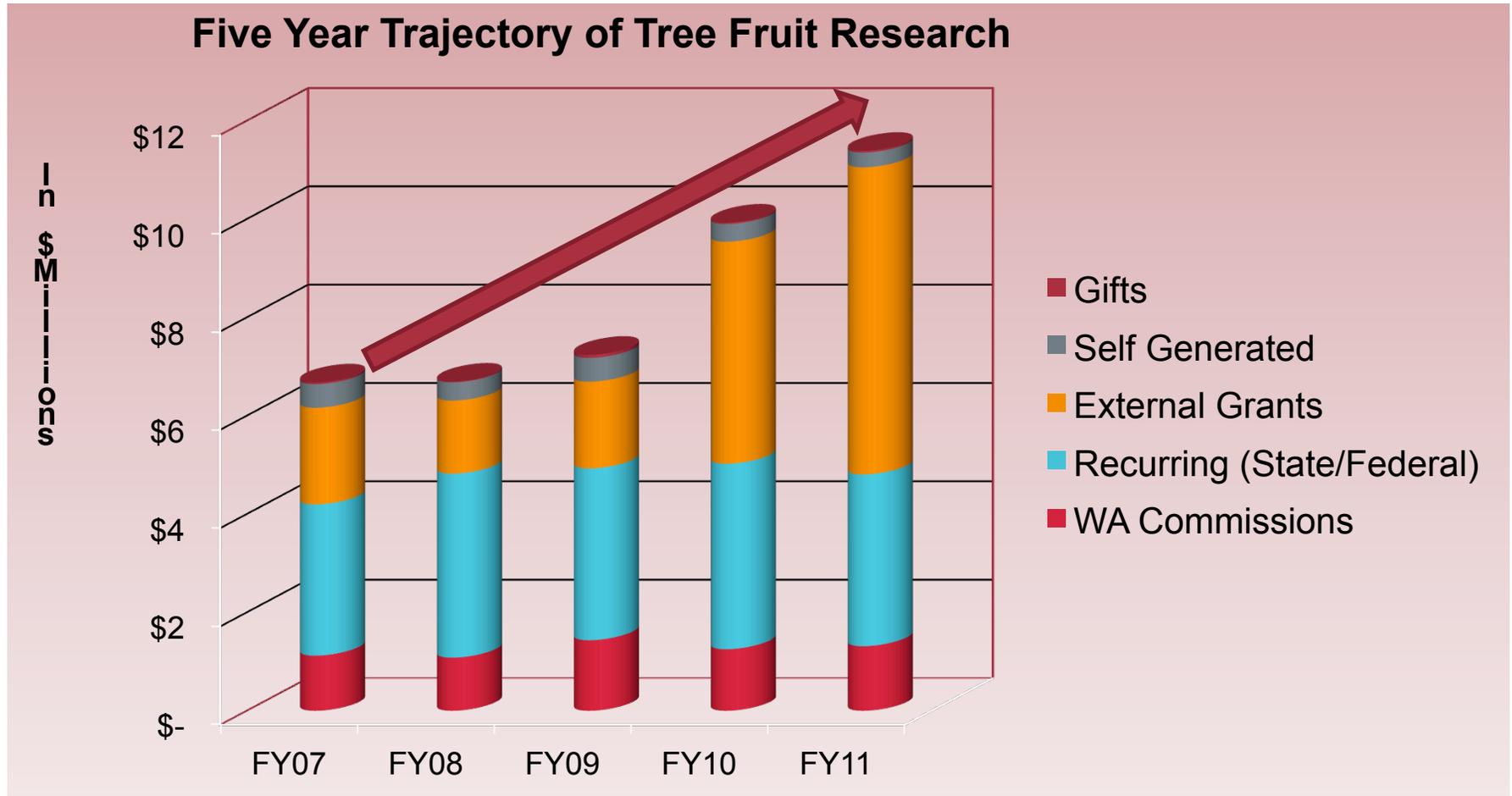
- Fairness is perceived as an assessment
- WTFRC is the preferred organization -- already collects assessments
- Special project assessment goal: \$32 million from apple, pear, cherry, and stone fruit
- Investment will continue the trajectory created over the past ten years



Building a Public-Private Partnership

The WTFRC Investment in WSU

CONTINUING THE TRAJECTORY



Building a Public-Private Partnership

The WTFRC Investment in WSU

Developing the Priorities

- Enlisted 10 industry principals (large and small) to form a leadership team
- Collaborative priority setting process between WSU and leadership team establish three foci
 - Endowed Chairs (\$12M)
 - Information and Technology Transfer (\$12M)
 - Research Orchard Operations (\$8M)
- Investment focused where industry meets WSU: Wenatchee and Prosser R&E Centers



The Leadership Team



Bruce
Allen



Harold
Austin



Tom
Butler



Ray
Fuller



Sean
Gilbert



Alan
Groff



Orlin
Knutson



West
Mathison



Stuart
McDougall



Warren
Morgan

Building a Public-Private Partnership

The WTFRC Investment in WSU

Marketing the Tree Fruit Campaign

- WSU developed informational materials
- Performed over 250 visits in support of the tree fruit campaign, focusing on potential impact of investment
- WSU leadership and industry leadership jointly visible throughout campaign
- Consistent messaging throughout campaign



The Results



20 Sep 2012: Gift announcement

Apple and pear growers invest \$27 million

Key Ingredients for Success

University

- Leadership
- Commitment

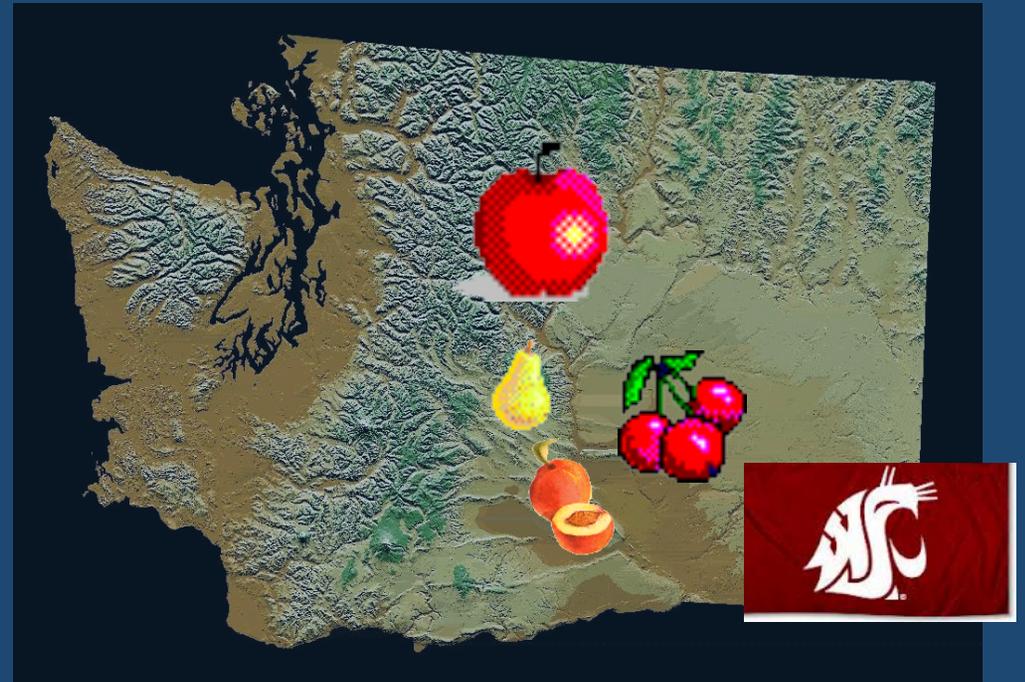
Industry Leadership

- Leadership
- Commitment

WSU Development Team

On-Going Stewardship

- Expand WSU Capacity
- Gift Use Agreements
- Endowment Advisory Committee



Thanks

Eat more fruit!!

