Research Center Administrators Society

Program Proceedings

2007

January 28 - 31

South Padre Island, Texas

The 2007 Winter Program Proceedings
of the
Research Center Administrators Society
South Padre Island, Texas
January 28-31, 2007

This Society is affiliated with the Southern Association of Agricultural Scientists and has membership from each of the member states. The Executive Committee is composed of one representative from each state, the current officers and the immediate past President. These are the voting members although any participant can attend meetings.

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2007-2008

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Dennis Onks	Proceedings Editor

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'An Overview of the USDA Agricultural Research Service Southern Plains Area'

Dr. Dan UpChruch, Area Director,
USDA ARS Southern Plains Area,
College Station, Texas

Agricultural Research: Knowledge to Grow On

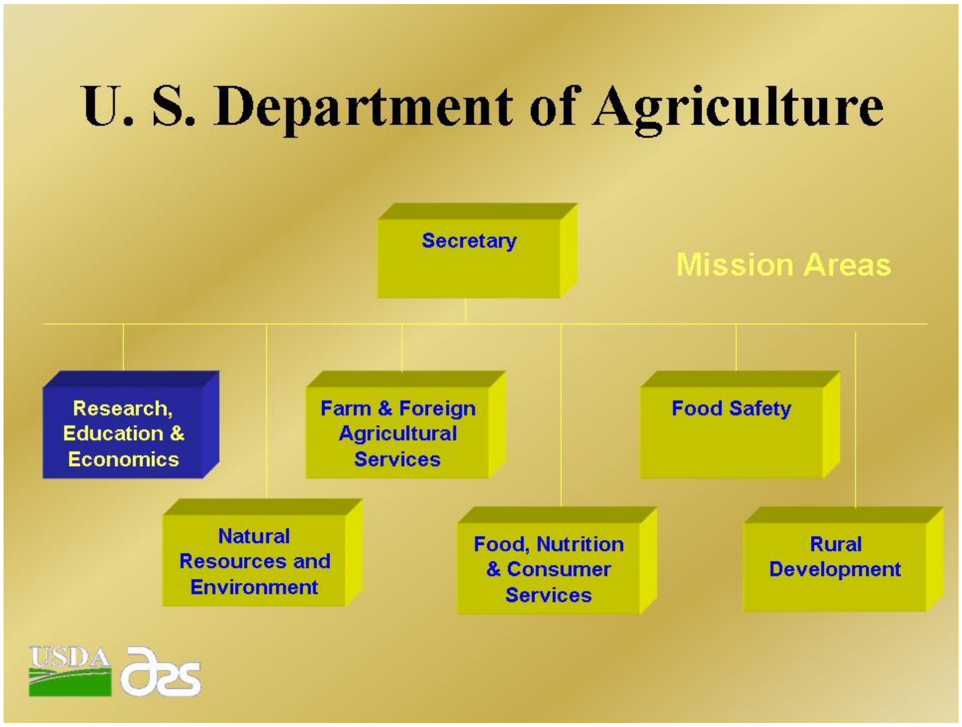
Dan R. Upchurch
SPA Area Director

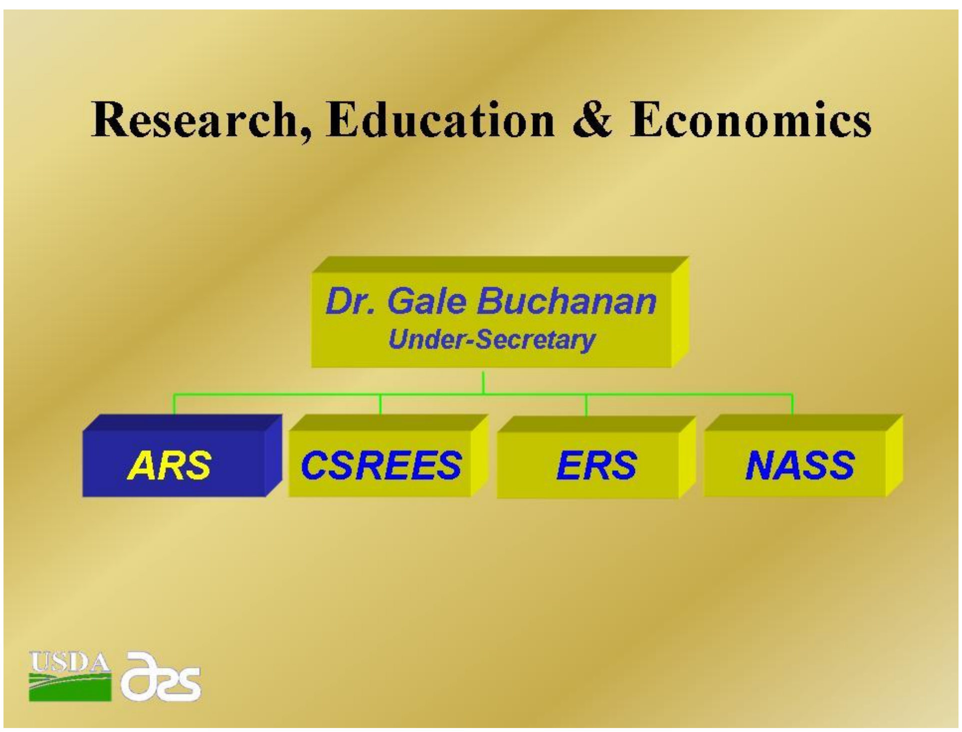
South Padre Island, Texas
January 29, 2007

USDA ARS

Hatch Act

The Hatch Act was federal legislation in 1887 that created the State Agricultural Experiment Station System (SAES). This act authorized the use of federal funds for creation of an Agricultural Experiment Station within each land-grant university and annual grants to each state for agricultural research. William Hatch, a representative from Missouri, saw this effort as an opportunity to make U.S. agriculture more competitive in world markets.


U. S. Department of Agriculture
Secretary
Mission Areas
Research, Education & Economics
Farm & Foreign Agricultural Services
Food Safety
Natural Resources and Environment
Food, Nutrition & Consumer Services
Rural Development
USDA ARS


Research, Education & Economics
Dr. Gale Buchanan
Under-Secretary
ARS
CSREES
ERS
NASS
USDA ARS

ARS Mission

Our mission is to conduct research to develop and transfer solutions to agricultural problems of high national priority and provide information access and dissemination to

- Ensure high-quality, safe food and other products
- Assess the nutritional needs of Americans
- Sustain a competitive agricultural economy
- Provide economic opportunities for rural citizens, communities, and society as a whole
- Enhance the natural resources base and the environment

ARS Responsibilities

✓ Provide initiative and leadership in agricultural research

✓ Conduct research in support of federal action and regulatory agencies

✓ Provide expertise to meet national food, food safety, and environmental emergencies

✓ Serve as an agricultural science resource to the executive and legislative branches

Profile of the Agricultural Research Service

- Intramural Research
- Farm to table research scope
- 21 National programs
- Nearly 1,000 in-house research projects
- Nearly 10,000 employees
- 2,500 scientists (including post docs)
- 100+ laboratory locations
- $1.130 billion annual budget
- Partnerships with universities and industry

ARS National Programs

21 national research program areas spread across these four broad categories:

Animal Production and Protection

Plant Production and Protection

Natural Resources and Sustainable Agricultural Systems

Nutrition, Food Safety and Quality

Benefits of National Programs

- Coordination
- Communication
- Empowerment

Southern Plains Area

SPA - Who are We?

- Texas, Oklahoma, Arkansas, New Mexico, Panama
- 38 laboratories, at 19 locations
- $109 million FY06 Appropriation
- ~ $10 million in temporary and outside funds
- ~240 career scientists, with ~660 support personnel
- ~ 90 in-house projects, plus ~ 250 extramural, cooperative projects
- Current research programs in all 21 National Programs areas
- Operates the ARS Air Force
- Supports the largest ARS research facility

Areawide Pest Management for Wheat

ARS collaborates with university partners and wheat producers to evaluate and demonstrate non-chemical pest management with emphasis on control of the Russian wheat aphid and greenbug. Our project is utilizing crop diversification, host plant resistance, biological control, and field scouting.

The Ogallala Aquifer Initiative

A multi-location, multi-tasked project assembled to address the problems associated with the decline of the Ogallala Aquifer in western Kansas and the Texas High Plains.

Hot Rod Roller Gin

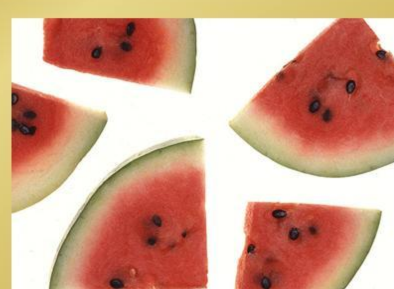
Design improvements result in "hot rod roller gin" with processing rates four times faster than non-modified equipment. This faster equipment allows for greater production quantity while preserving high fiber quality.

Nutrition for Health Maintenance

ARS Human Nutrition research centers conduct scientific investigations designed to provide Americans with a clear understanding of the role of nutrition in maintaining a healthy, active life.

New and Improved Plant Materials

ARS breeds plant materials for:
•Pest resistance
•Drought tolerance
•Expanded production areas
•Greater yields
•Improved nutritional value
•Potential for biomass



Technology for Making Food Safer

ARS research provides:

- Enhanced microbiological safety of meat products
- Alternatives to antibiotic use
- Reduced negative environmental effects of food animal production
- Improved animal well-being
- Protection of animals from pests and disease

Science to Make Borders Safer

Arundo donax has rapid, dense growth that makes securing the U.S./Mexico border dangerously impossible for the Department of Homeland Security. ARS program will use imaging technology to locate, and biocontrol to eliminate this weed.

Alternative Energy Sources

ARS is looking at wind and wind-diesel hybrid systems to provide electricity for rural uses. Forages are now being looked at for their potential for greater energy properties, such as higher biomass yield. Additionally, we are looking at sorghum, barley, and peanuts for bioenergy traits.

Indian Mustard in Bioenergy Research

Bioenergy research involving Indian mustard have found: potential as a biofumigant, positive role in nutrient recycling, reduced sulfur amounts in its biodiesel

Where Is Agricultural Research Heading?

Scientific Revolutions

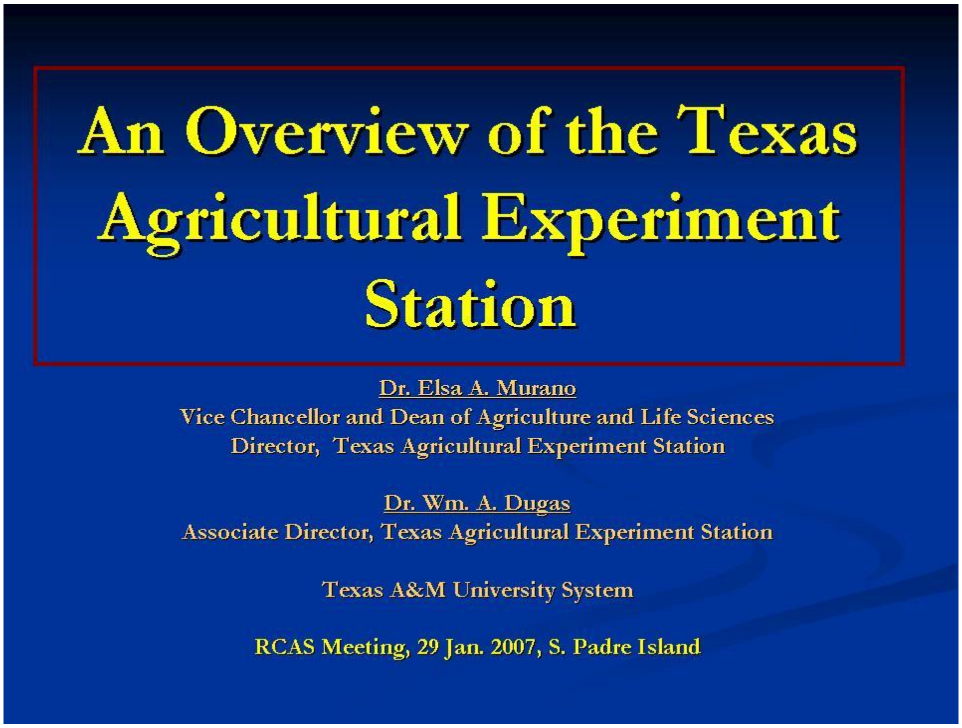
- Molecular Biology
- Computing
- New Mathematical Theories

Science

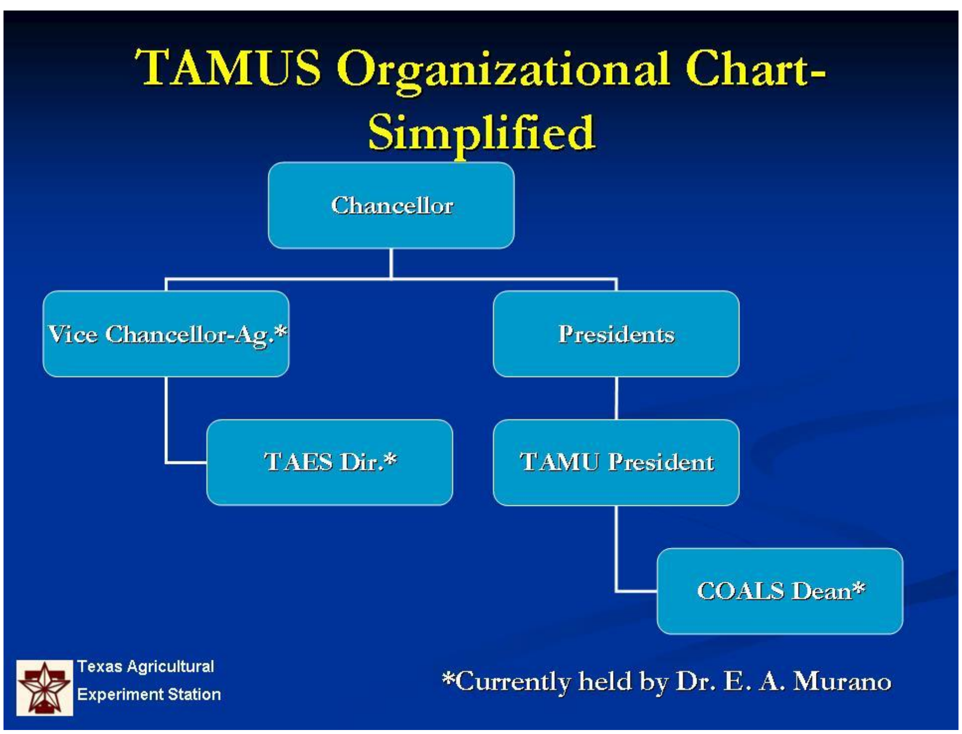
- Revolution created TOOLS
- Applying the tools is the challenge
- Requires unique resources
- Requires innovation

'An Overview of the Texas Agricultural Experiment Station'

Dr. Bill Dugas, Associate Director,
Texas Agricultural Experiment Station,
College Station, Texas



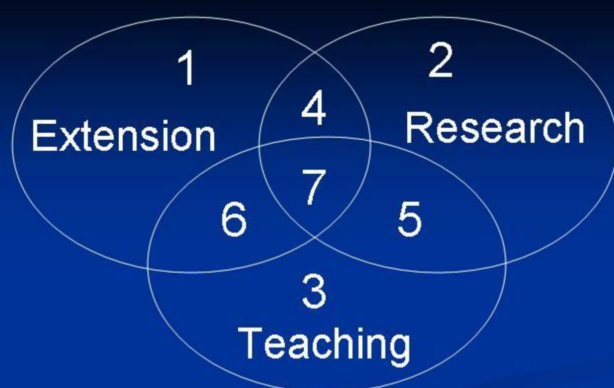

Texas A&M System -Agencies
Texas Agricultural Experiment Station*
Texas Engineering Experiment Station
Texas Forest Service*
Texas Cooperative Extension*
Texas Engineering Extension Service
Texas Veterinary Medical Diagnostic Laboratory*
Texas Transportation Institute
TEXAS A&M SYSTEM
Texas Agricultural Experiment Station


TAMUS Organizational Chart-Simplified
Chancellor
Vice Chancellor-Ag.*
Presidents
TAES Dir.*
TAMU President
COALS Dean*
*Currently held by Dr. E. A. Murano
Texas Agricultural Experiment Station

Mission

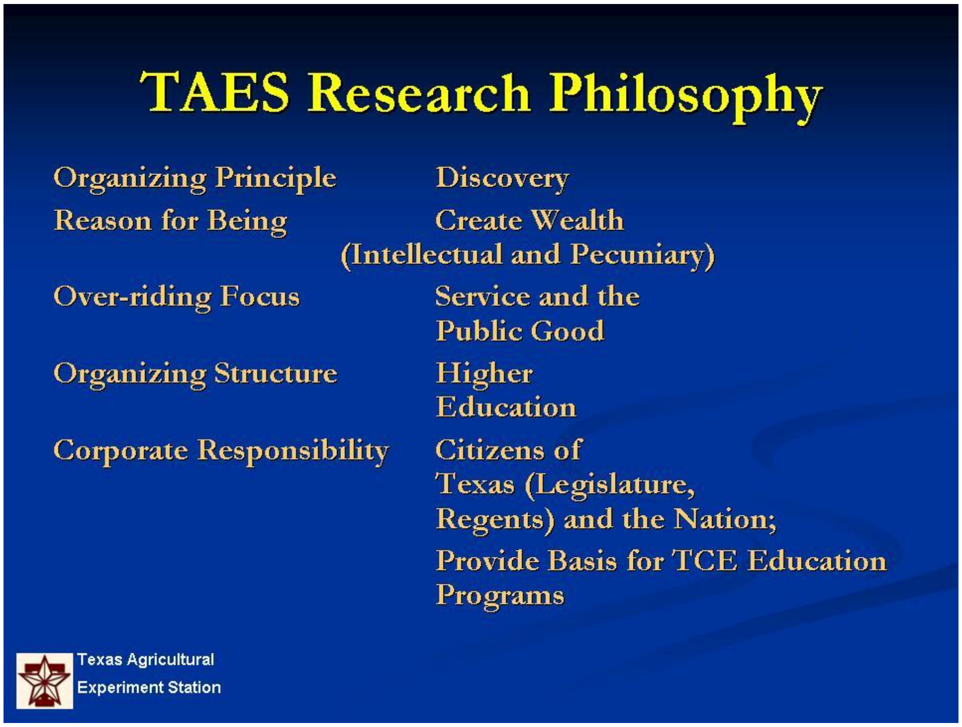
- Conduct basic and translational research for the benefit of consumers and the agriculture industry to:
  - Improve public health and well-being.
  - Enhance competitiveness and prosperity of agricultural industries and communities.
  - Improve environmental quality and preserve our natural resources.

Texas Agricultural Experiment Station

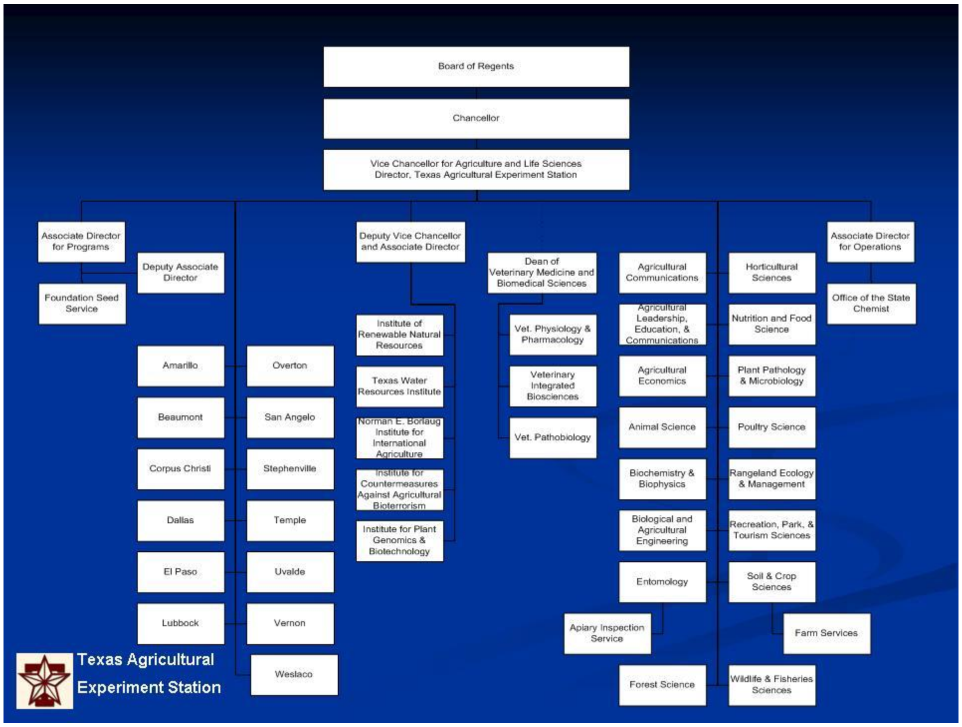


1. Extension
2. Disciplinary research
3. UG teaching
4. Problem-solving research
5. Graduate training
6. Continuing education
7. Integrated problem-solving outreach

Texas Agricultural Experiment Station


TAES Research Philosophy
Organizing Principle
Discovery
Reason for Being
Create Wealth
(Intellectual and Pecuniary)
Over-riding Focus
Service and the
Public Good
Organizing Structure
Higher
Education
Corporate Responsibility
Citizens of
Texas (Legislature,
Regents) and the Nation;
Provide Basis for TCE Education
Programs
Texas Agricultural
Experiment Station


TAES Research Locations
Research and Extension Locations
Chillicothe-Vernon
Stephenville
Amarillo
Dallas
Lubbock
El Paso
Overton
College
Station
Beaumont
San Angelo
Temple
Uvalde
Corpus Christi
Weslaco
Texas Agricultural
Experiment Station
Also have ca. 10 "stations"



TAES Human Resources

- Faculty and staff in 15 Academic Departments in COALS and 4 in CVM&BS at TAMU
- Faculty and staff at 13 Agricultural Research and Extension Centers
- Faculty and staff in Institutes, Centers, and Laboratories (primarily on TAMU)
- Staff who manage Feed and Fertilizer Regulatory and Apiary Inspection Services (TAMU)

Texas Agricultural Experiment Station

Personnel

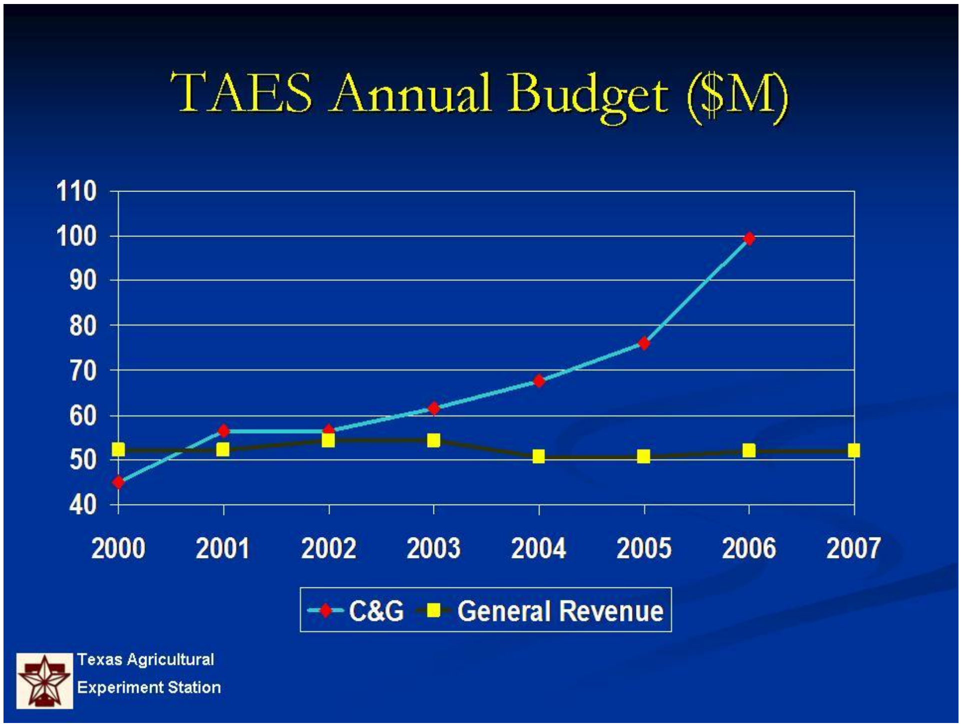
	FTEs
Faculty	221
Staff	311
Wages / Grads	1240
Total	1772

Texas Agricultural Experiment Station

Joint Faculty with Other Institutions/Agencies

- West Texas A&M
- TAMU Corpus Christi
- TAMU Kingsville
- TAMU Commerce
- Texas Tech*
- Tarleton State
- Texas Forest Service
- Texas Engineering Experiment Station

Texas Agricultural Experiment Station



Scope of TAES Research

- Production Agriculture Systems (varieties; soil, water and pest management; planning)
- Policy
- Food and Food Systems (food safety, foods for health)
- Life Sciences (animal and plant genomics)
- Biological Engineering
- Renewable Natural Resources
- Environment

Texas Agricultural
Experiment Station

Selected TAES Superlatives

90 percent of all commercial grain sorghum hybrids sold today have some germplasm in their parentage that traces back to the TAES sorghum breeding program

TAES scientists maintain the largest and most characterized library collection of bacterial samples in the state. It is extensively used for determining water contamination sources and developing effective pollution control strategies

TAES scientists lead in the release of 5 small grains varieties that were grown in 2005 on 1.6 million acres and accounted for 50% of High Plains production and about one-third of Texas' total wheat acreage

TAES scientists developed feeding and harvesting protocol that increased shrimp growth rates by 33%

Texas Agricultural
Experiment Station

TAES-Weslaco

- Annual appropriated budget: \$2.7M/yr
- C&G acquired (fy04 thru fy06): \$1M/yr
- Disciplines (ca. 9 faculty and ca. 45 staff FTEs)
  - Sugar Cane breeding and biotechnology
  - Citrus biotechnology
  - Vegetable breeding and IPM
  - Vegetable physiology and pathology
  - Ornamental horticulture
  - Soil Science/Irrigation
- Joint programs and Director with TAMU-K Citrus Center (breeding, plant pathology, entomology, nutraceuticals)
- Co-located with Texas Coop. Extension District 12 HQ
- Adjacent to and cooperates with ARS Lab (KdlGARC)
- Sizeable infrastructure (land, buildings, equipment, etc.)

Texas Agricultural
Experiment Station

Selected TAES –Weslaco Superlatives

- Birthplace of several new plant varieties, including the sweet 1015 onion (which now makes up one-third of the total acreage of a $66 million industry), and the Rio Red grapefruit (which is credited with saving the industry in Texas after the 1989 freeze, and which constitutes over 80% of the Texas grapefruit production - annual value estimated approx. $70 million).
- Has the only transgenic citrus in the field in the US, and has developed patented technologies for transforming sugarcane to produce high value proteins for pharmaceutical and other uses.

Texas Agricultural Experiment Station

2007 Programmatic Goals

Science Roadmap Update

TAES IP/Commercialization Plan

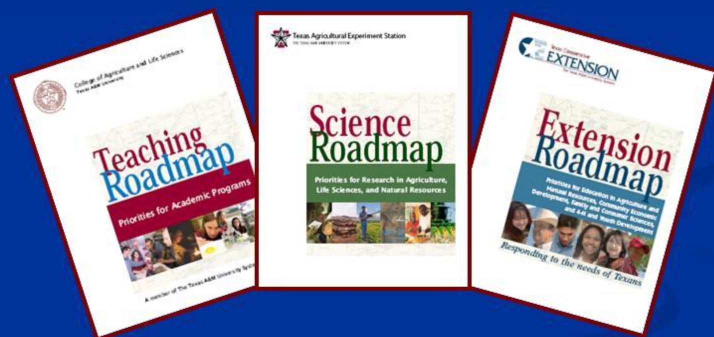
Bioenergy Strategic Plan

Assessment (Impact) of State Initiatives & Selected Programs

Texas Agricultural Experiment Station

Focusing Our Activities

Roadmaps for Teaching, Research, Extension.



Texas Agricultural Experiment Station

Proposed Exceptional Items

Item (In Priority Order)	$M for Biennium
Bio-Energy – Agriculture/ Engineering Alliance	8.0
A Food Solution for the Obesity/Health Crisis in Texas	5.0
Innovative Approaches for Improving Urban Plant Water Use Efficiency	3.0

Texas Agricultural Experiment Station

We developed Four Imperatives to help us focus in carrying out our purpose

A. Develop and enhance priority science-based programs.

B. Enhance the recognition of the value and excellence of our programs.

C. Increase budgetary resources for our programs.

D. Manage our human and other resources effectively and efficiently.

Texas Agricultural Experiment Station

Imperative A: Develop and enhance priority science-based programs.

- In 2007 we will:
  - Update our three roadmaps (teaching, science, extension).
  - Collect and approve unit strategic plans, to be used in FY08 as the primary performance assessment.

Texas A&M Agriculture Unit Strategic Plan

User's Guide

Current Website Link:
http://eit-data.tamu.edu/ImperativeA/slog/index.asp

If you have questions regarding the strategic plan, please contact:
Chris Boleman, ct-boleman@tamu.edu
Rey Santos, EIT, j-santos@tamu.edu
Margaret Hale, m-hale@tamu.edu
Gene Nelson, AGN@ag.tamu.edu

Texas Agricultural Experiment Station

Imperative B: Enhance the recognition of the value and excellence of our programs.

- In 2006 we:
  - Conducted a strategic positioning initiative, which produced conceptual ideas on how to improve the branding and marketing of TAES.
  - Purchased a content management system to enhance the experience for visitors of our web sites through improved linkages to information and through a user-led updating system.

Texas Agricultural
Experiment Station

Imperative B: Enhance the recognition of the value and excellence of our programs.

- In 2007 we will:
  - Hire a Director of Marketing and Communications to evaluate how to implement the branding and marketing concepts and assess our capabilities.
  - Finalize our evaluation of possible TAES name change, and utilize marketing concepts developed through our positioning initiave.
  - Finalize web system and launch new TAES website.

Texas Agricultural
Experiment Station

Imperative C: Increase budgetary resources for our programs.

- In 2006 we:
  - Received $50M by TAMUS for our new Headquarters building!
  - Were allocated 255 acres north of F&B road by TAMU for an agricultural and environmental life sciences park.
  - Established a partnership with NASA and Wyle Foods, including installation of new food processing equipment at our research facility in TAMU research park.

Texas Agricultural
Experiment Station

Imperative C: Increase budgetary resources for our programs.

- In 2006 we:
  - Received $1.3M through TDA to establish a new enology program in Dept. of Nutrition & Food Science, and enhance viticulture research activities.
  - Obtained gift of $2.5M from Monsanto for new Borlaug-Monsanto Chair in Plant Breeding and International Crop Improvement.

Texas Agricultural
Experiment Station

Imperative C: Increase budgetary resources for our programs.

- In 2007 we will:
  - Engage in aggressive fund raising campaign to finalize plans for the Headquarters building and other priorities.
  - Work through the 80th legislative session to:
    - Secure funds for pay raises for all TAES faculty.
    - Fund TAES programmatic exceptional items.

Texas Agricultural
Experiment Station

Imperative D: Manage our human and other resources effectively and efficiently.

- In 2005 and 2006 we conducted reviews of research programs in:
  - 13 Institutes and Centers at TAMU,
  - 13 off-campus TAES programs,
  - 14 academic departments at TAMU
- These results will provide basis for development of strategic plans with accountability metrics by all units.

Texas Agricultural
Experiment Station

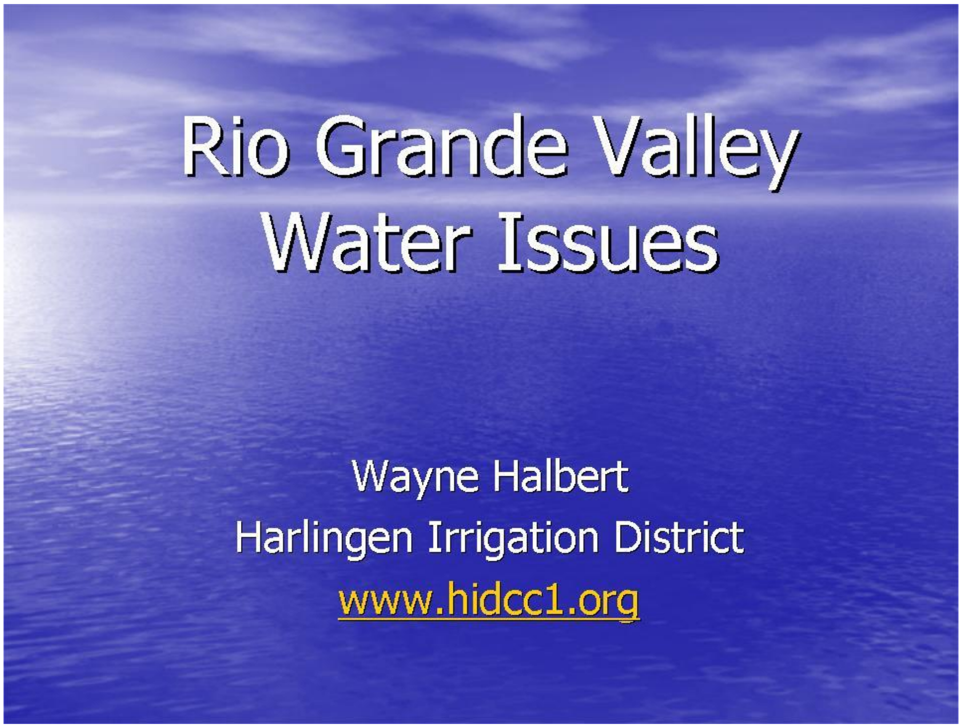
Summary

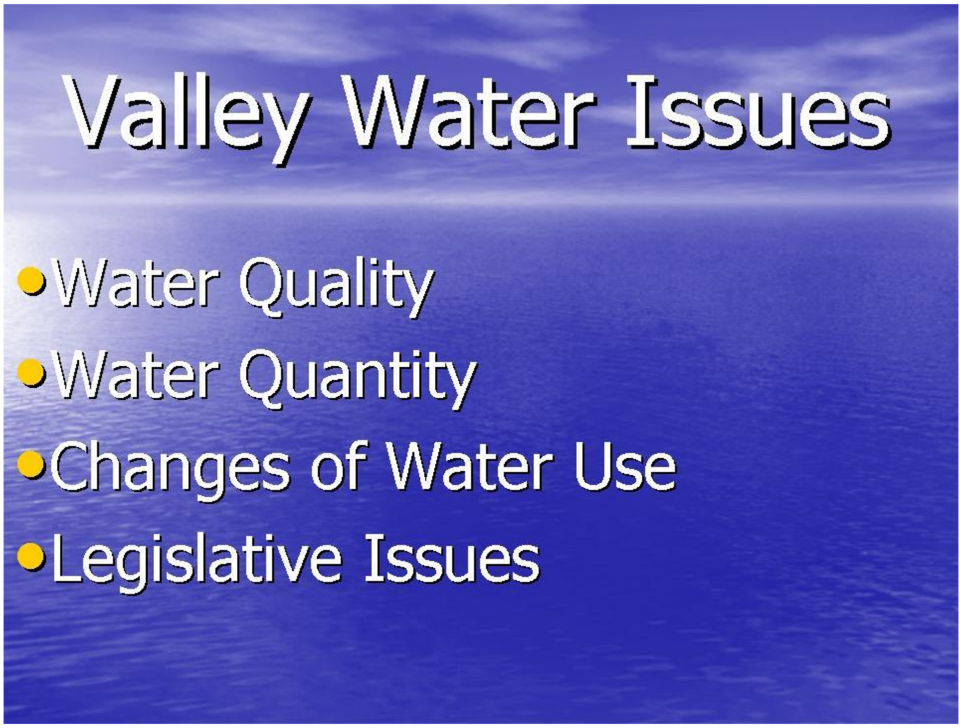
- Only public, state-wide agency in Texas dedicated to research in the agricultural, environmental, and life sciences.
- State agency (Article III – Higher Education), but receives no tuition or tuition-related fees.
- Faculty have significant external linkages.
- Budget is leveraged about 2:1 (soft:hard) and this ratio is increasing.
- TAES research expenditures are number 1 among TAMUS universities and agencies.
- We are in middle of implementing internal management process to focus research efforts and to increase unit-level accountability.

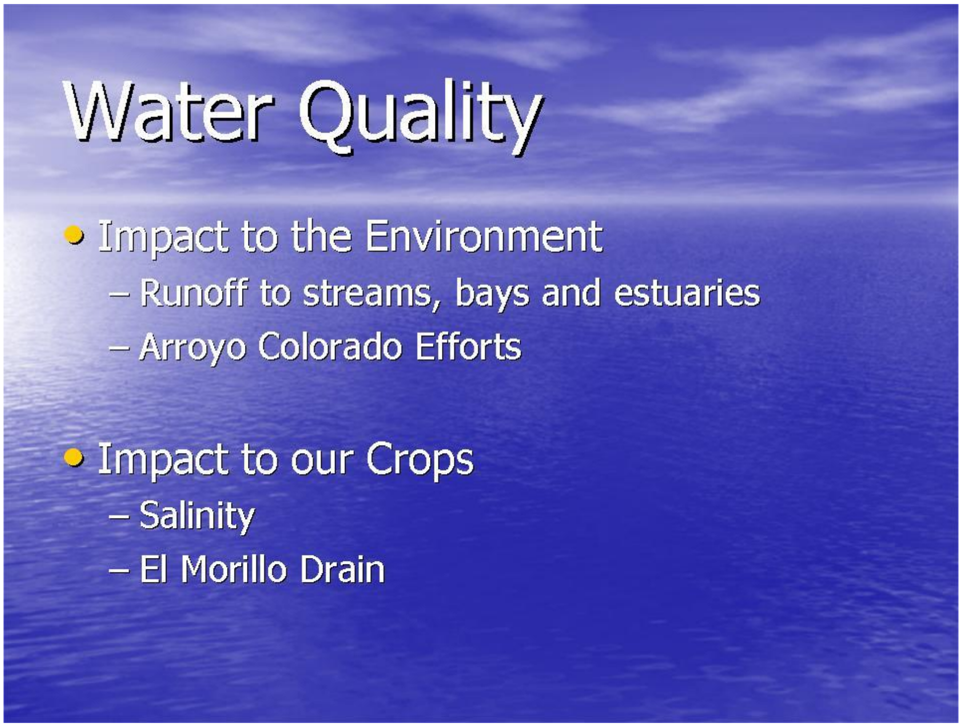
Texas Agricultural
Experiment Station

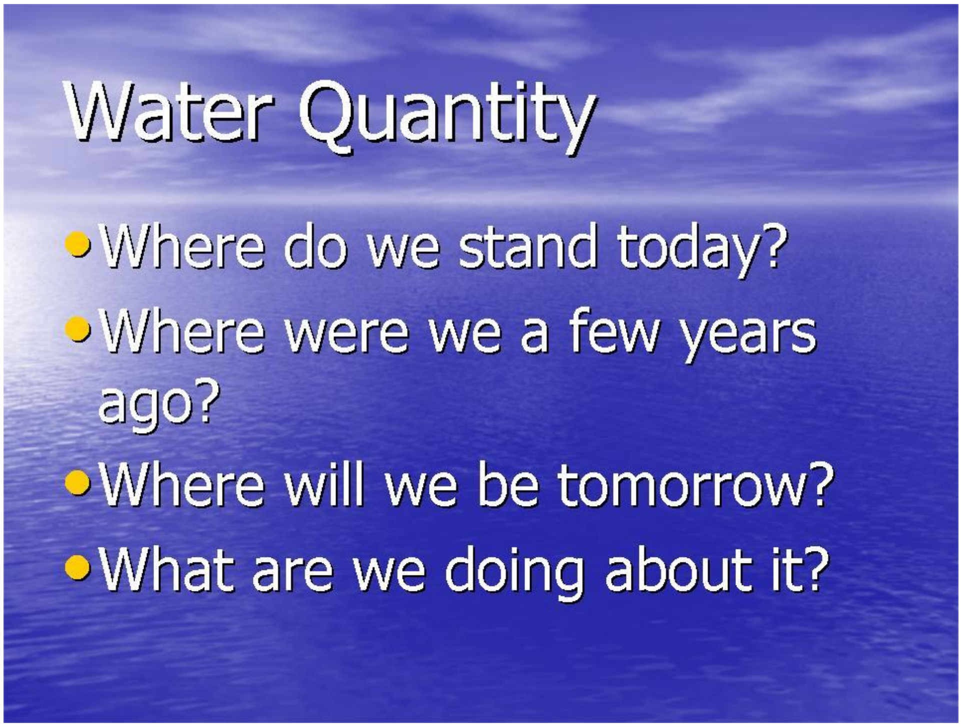
'Water and Agriculture in the Lower Rio Grande Valley'

Wayne Halbert, General Manager,
Harlingen Irrigation District,
Harlingen, Texas






Water Quality
• Impact to the Environment
– Runoff to streams, bays and estuaries
– Arroyo Colorado Efforts
• Impact to our Crops
– Salinity
– El Morillo Drain


Water Quantity
• Where do we stand today?
• Where were we a few years ago?
• Where will we be tomorrow?
• What are we doing about it?

Water Allocations Today

- US Storage at Amistad & Falcon at 75%
- Probable Full Allocations for Two Years
- Mexico Water Debt Day to Day Battle

Few Years Back

- Farmers
  - On Strict Allocations
  - Paying Exorbitant Prices for Water
  - Dealing With Problematic Metering Devices
  - Planting Crops by Water Needs
  - Leaving Land Fallow
- Districts
  - Financial Distress
  - Water Conservation Conscious

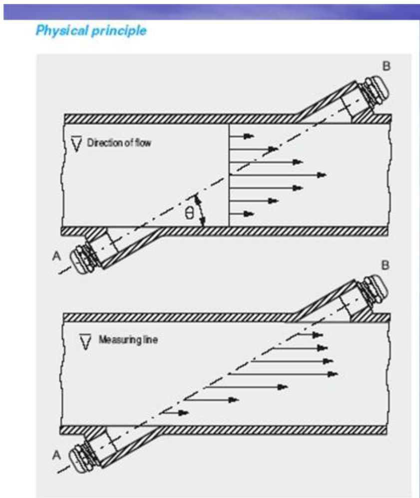
Outlook for the Future?

- Mexico Water Debt Will Return
- Water Suppliers Must Adapt
- Water Conservation a Must

What Can We Do?

- Districts Looking for Funding
  - North American Development Bank
    $26 Million
  - Federal Legislation
    $43 Million (Old – 19 Projects)
    Feds Almost $10 Million in Debt
    $47 Million (New – 19 Projects)
    Failed to be Authorized


McCROMETER
FLOW
06/28/2004



Siemens

Transit Time

Meter

Lower Rio Grande Valley
Agriculture Water Conservation
Demonstration Initiative
(ADI)
$3.75 Million


Maximization of On-Farm Surface Water Use Efficiency by Integration of On-Farm Application and District Delivery Systems


Sponsored by
Texas Water Development Board

Principal Participants

- Harlingen Irrigation District
- Delta Lake Irrigation District
- Texas A&M Kingsville
- Texas A&M Extension Service
- Rio Farms
- Texas Citrus Mutual
- TSS&WCB
- USDA-NRCS

District
Meter Calibration
Facilities


Cal-Poly Irrigation and Training
Research Center


California Edison Center

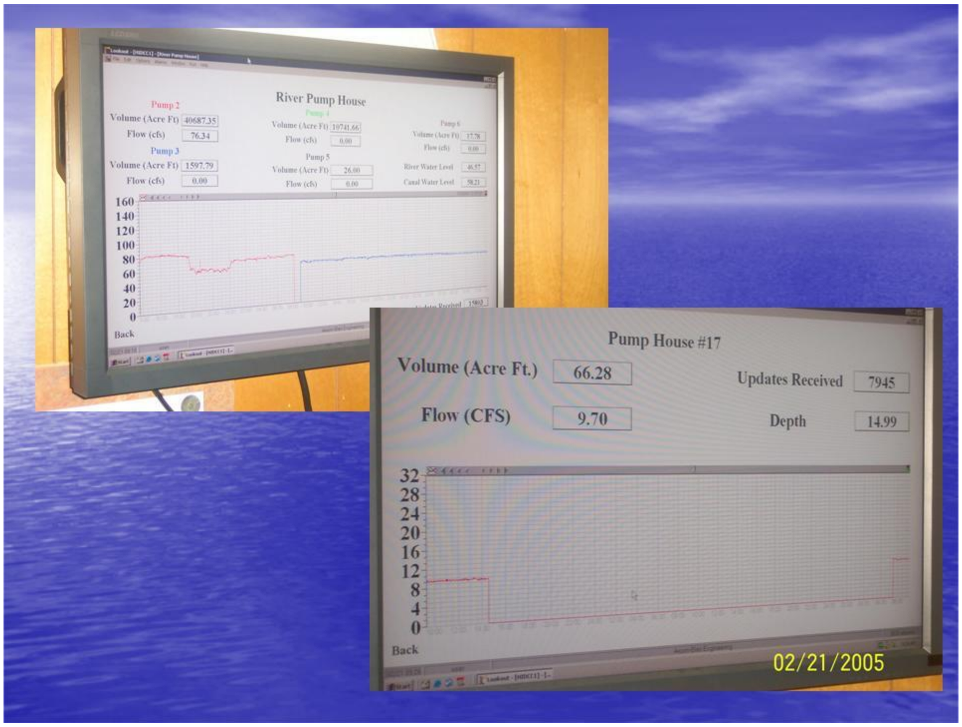
On-Farm Measurement

Data Collection

District Dispatch

And

Irrigation Delivery Scheduling



District Facilities & Policies Required to Support On-Farm Water Conservation

- Development of standards for district implementation of conservation evaluations.
- Development of template for district policy regarding encouragement of constituency water conservation practices.

Economic Evaluation of Demonstrated Technologies

Texas A&M Farm Assist Program

Steven L. Klose
Assistant Professor and Extension Economist
Department of Agricultural Economics
Texas A&M University

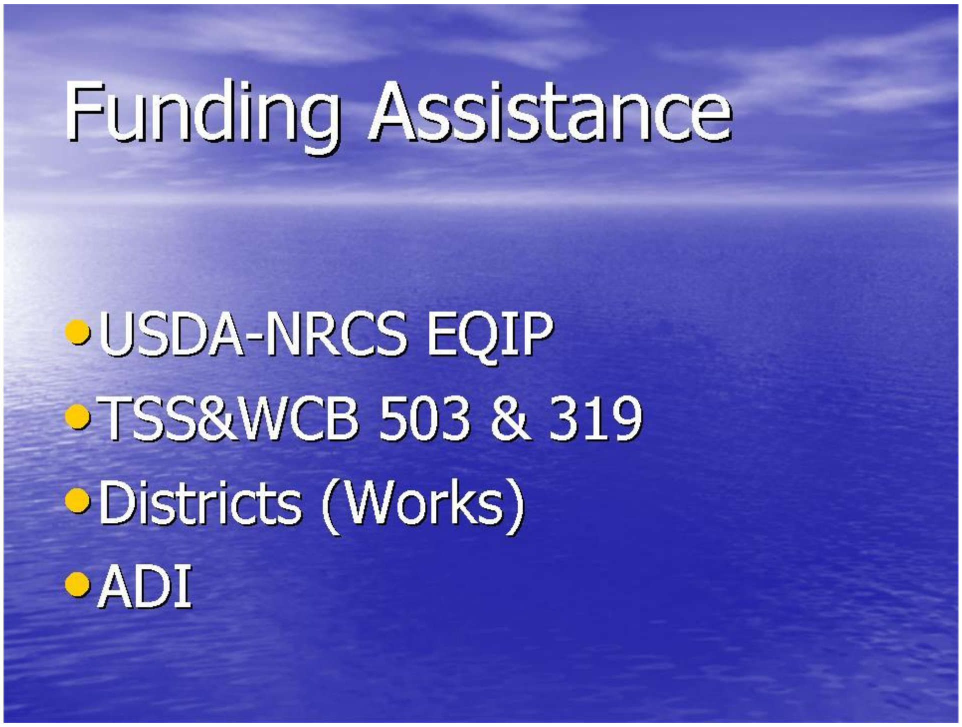
Internet Based Information

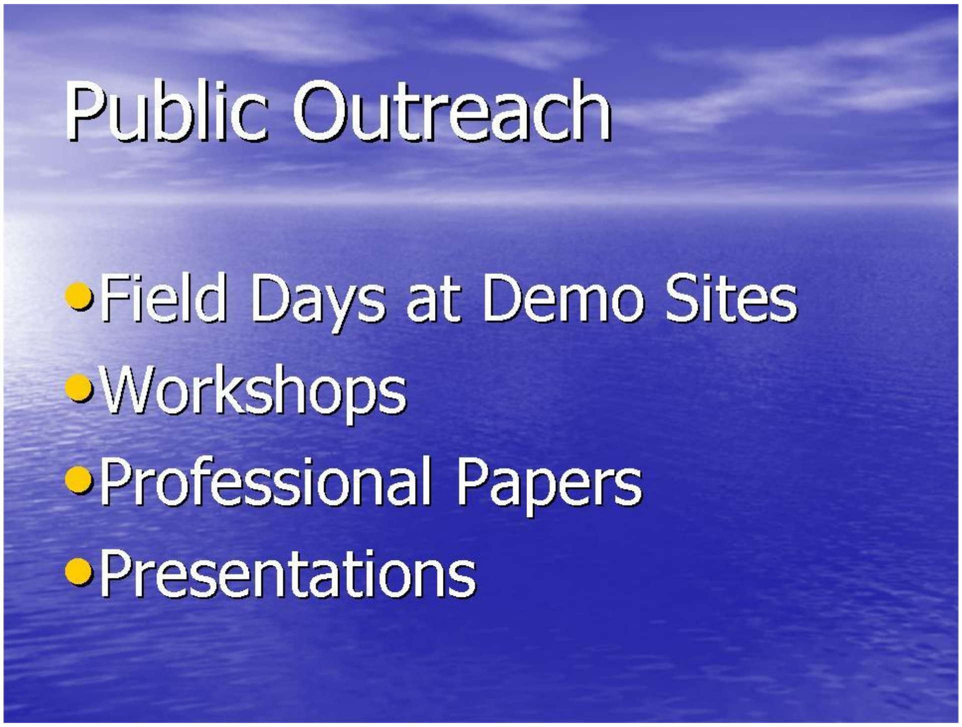
- Real time flow information.
- Weather information.
- Water user accounting system.

Demonstration Projects

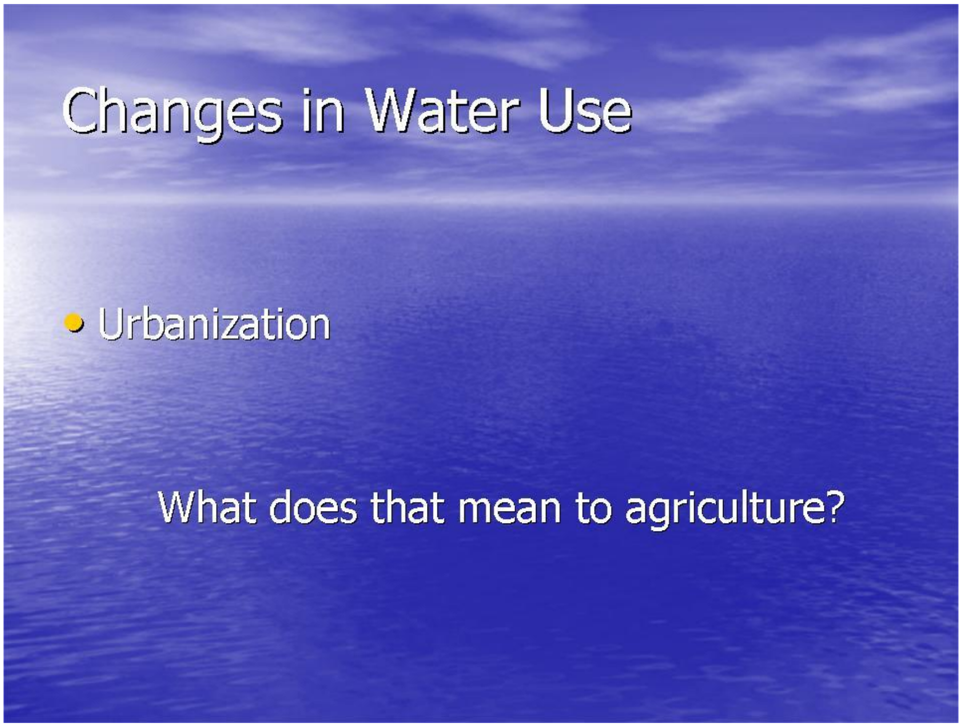
- Drip and Flood on Multi-year Crops
- Drip and Furrow Flood on Annual Crops
- Surge, Automated & Precision Surface Irrigation
- Center Pivot & Line Sprinkler Demo Sites
- Automated & Manual On-farm Metering
- Variable Speed Pump Control

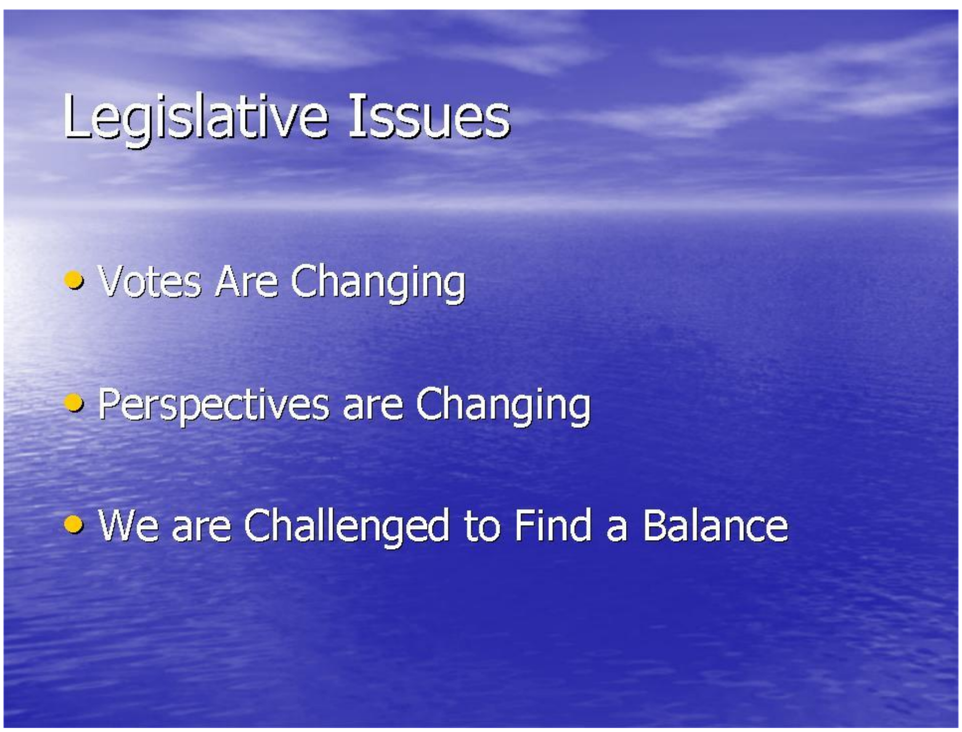
Irrigation Methods


Funding Assistance
• USDA-NRCS EQIP
• TSS&WCB 503 & 319
• Districts (Works)
• ADI


Public Outreach
•Field Days at Demo Sites
•Workshops
•Professional Papers
•Presentations


Contact Information
Tom McLemore
Project Manager
Office 423-7015
Cell 367-6599
tmclemore@hidcc1.org
www.hidcc1.org

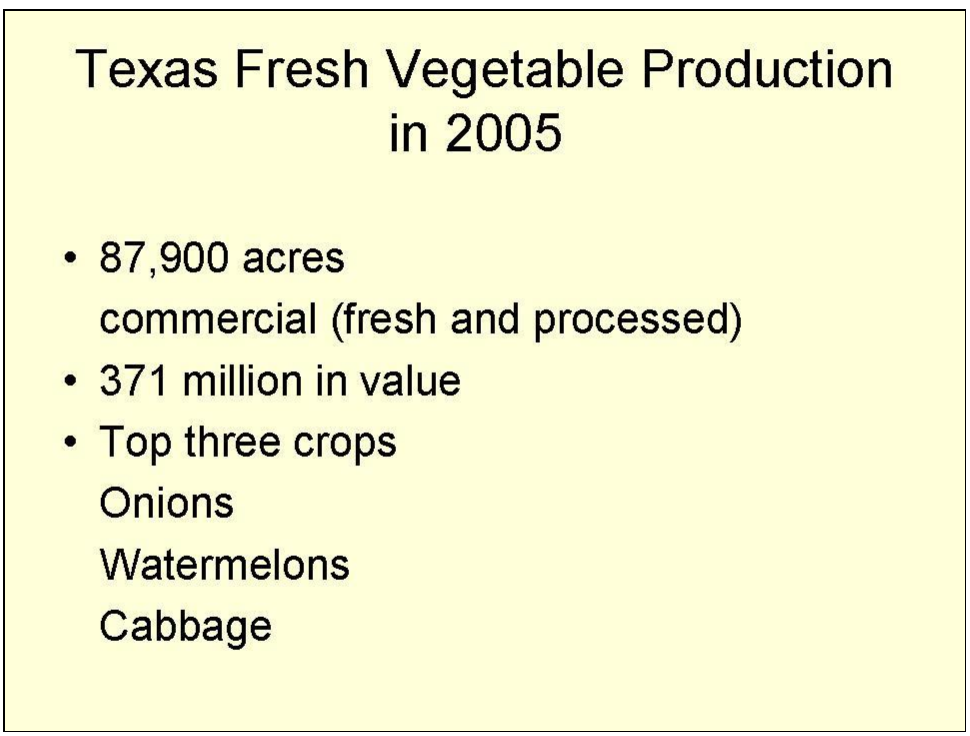

Changes in Water Use
Urbanization
What does that mean to agriculture?


Legislative Issues
Votes Are Changing
Perspectives are Changing
We are Challenged to Find a Balance


Thank You!
www.hidcc1.org

'The Rio Grande Valley Citrus and Vegetable Industries'

Mr. Ray Prewett,
President, Texas Citrus Mutual / Executive Vice-President, Texas Vegetable Association, Mission, Texas



Texas Produce Imports

In 2005, Texas imported some 76,577 semitrailer loads of fresh produce (40-44,000 lbs. per load).

At same time, Nogales brought in 93,298 loads.

Texas Citrus Issues
$140 million industry

- Keeping diseases out of Texas
  - Citrus Greening
  - Citrus Canker
  - Urbanization

Citrus Acreage

Grapefruit, Rio Red:	18,291
Oranges, Marrs, Navels:	8,429
Total citrus, grapefruit, Oranges, tangerines, lemons:	28,295

Grapefruit Production

Fresh Grapefruit in million cartons 2005-06

- 4.9 US
- .9 Export
- .04 Local
- .3 Gift

Orange Production

Fresh Oranges in million cartons 2005-06

1.9 US

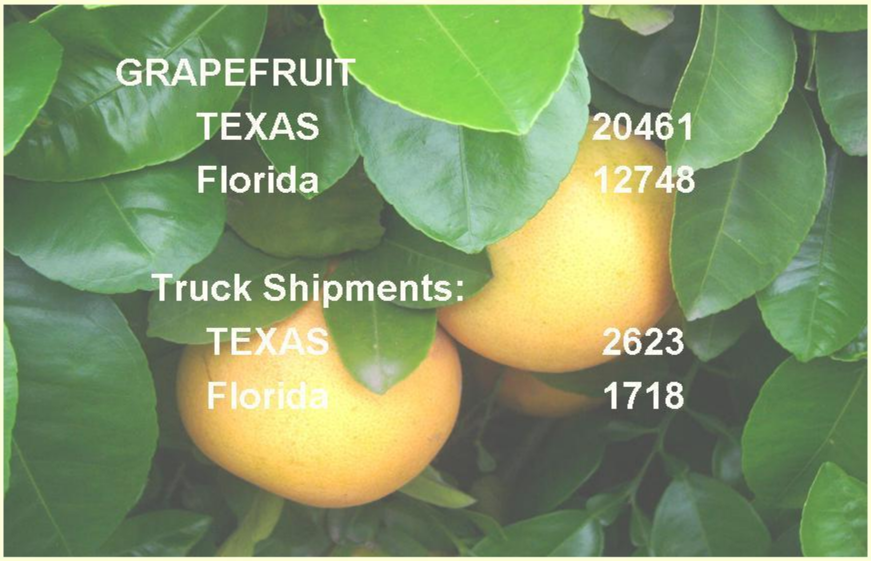
.05 Local

.06 Gift

History of Valley Citrus

- First grove planted in 1893
- In 1907 W.A. Fitch planted commercial grove near Mercedes
- In 1914 John Shary bought 16,000 acres and planted white grapefruit
- First commercial shipment in 1920 in onion crates
- Lloyd, Sr. and Elmer Bentsen were major developers of citrus & used Pride O Texas trademark
- Texas A&M Kingsville Citrus known for developing the very popular Rio Red variety released in 1984
- Data shows that Texas Red Grapefruit is consistently the sweetest, highest ratio fruit produced anywhere in world

CARLOT SHIPMENTS OF GRAPEFRUIT IN 1946



Value Texas Vegetables 2005

- 5th out of 50 states
- 87,900 acres (fresh and Processed)
- $371 million farm gate value
- Top crops
  - Onions
  - Watermelons
  - Cabbage

Texas' Rank by Vegetable Crops 2005

- Cantaloupes 3rd
- Carrots 3rd
- Honeydew 3rd
- Spinach 3rd
- Watermelons 3rd
- Chile peppers 4th
- Onions 4th

Rank….continued

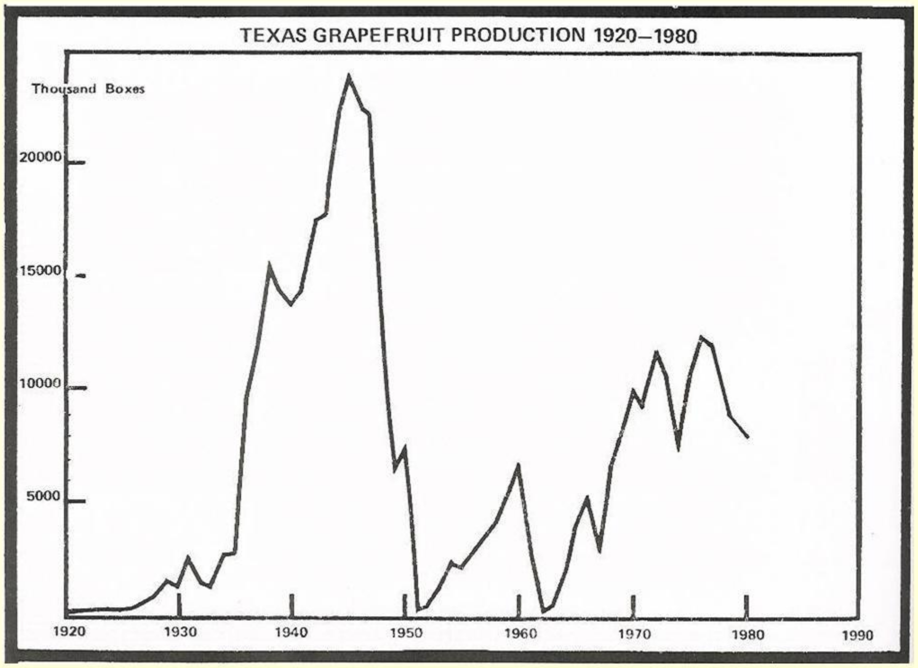
- Cabbage 5th
- Bell Peppers 8th
- Sweet potatoes 8th
- Cucumbers 10th
- Potatoes 14th
- Tomatoes 16th
- Sweet Corn 23rd

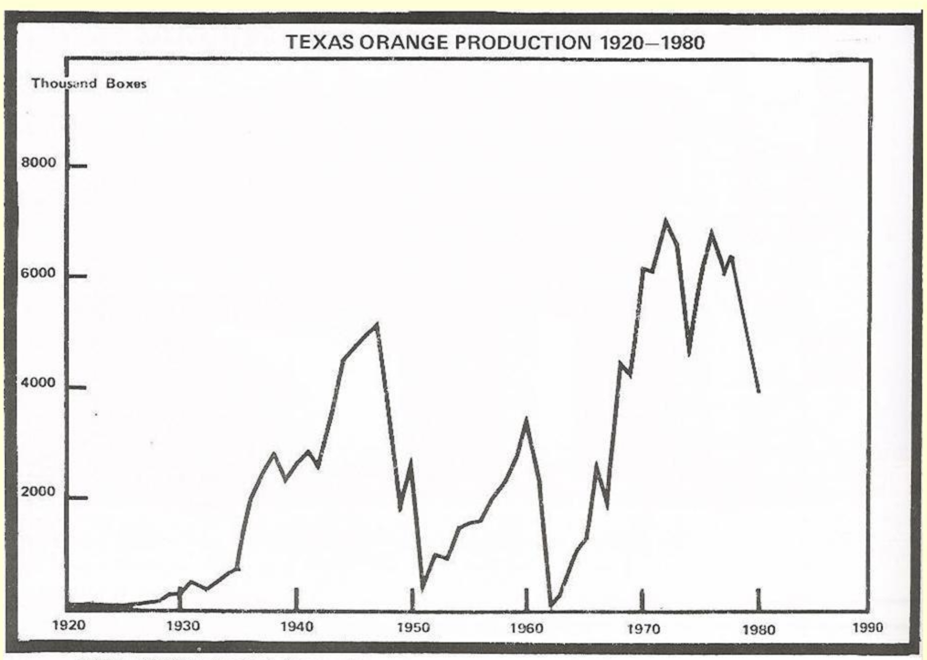
RGV CARLOT SHIPMENTS OF FRUITS AND VEGETABLES IN 1953 - 54

Grapefruit	52
Cabbage	2774
Cantaloupe	1920
Carrots	4294
Lettuce	2026
Onions (dry)	704
Parsley	135
Peppers	722
Tomatoes	4409
Mixed Vegetables	6261

TRUCK SHIPMENTS OF FRUITS AND VEGETABLES IN 1973-74

Grapefruit	9149
Oranges	4170
Cabbage	3800
Cantaloupes	1211
Carrots	525
Greens	235
Honeydews	496
Lettuce	923
Onions, Dry	4426
Peppers	715
Tomatoes	149
Watermelons	764





1979–1980 Indicated Amounts

Water Challenges in RGV

- Region M (8 counties from Brownsville up river to Eagle Pass)
- Planning period 2010-2060
- Population to increase by 142% to 3.8 million
- 2060 water needs
  - 981,748 acre-ft for agriculture, 16% decline due to urbanization
  - 560,780 acre-ft for municipal, 124% increase

Top Strategies

- Cities: acquire water by contract, purchase or transfer by urbanization
- Agriculture: conveyance system improvements for capital cost of $131 million

Immigration Issue

- Recognized that 70% of US agricultural workforce is not properly documented
- Need following reforms:
  - Immediate need: legal path for 12 million here
  - Guest worker program tailored to ag needs
  - Daily commuter program for ag from Brownsville to San Diego

Future of Texas Fruits and Vegetables

- Close to large population centers
- Increased consumption for health reasons
- Citrus has good opportunity to benefit from Florida's problems
- Vegetable production has declined due to challenges partly due to lower yields, pressure from imports and quality problems for some crops. Texas vegetables have new opportunities with more labor than some areas, lower transportation costs to key markets and ability to source product from Mexico

Thank You

- Any questions?

‘**INIFAP, A Science and Technology Research Organization’**

Dr. Francisco Javier Padilla Ramirez, Area Director,
Rio Bravo, Mexico

Abstract

The National Institute of Forestry, Agriculture and Livestock Research (INIFAP), develops research and transfer technology through Research Stations and lands of cooperative producers, coordinated by eight Regional Research Centers throughout the Mexican territory.

The INIFAP Northeast Regional Research Center includes four Mexican States (Nuevo Leon, Tamaulipas, San Luis Potosi and Coahuila). The Northeast Region has a total of 357,516 km² (18.2% of the Mexican territory); 73% of this area is dedicated to livestock, 8.8% to forestry, 8.5% to agriculture and 9.1% to other uses. Besides, seventy five percent of the area dedicated to agriculture is under rainfed conditions.

Ninety percent of the Northeast Region possesses a subtropic-arid and semiarid climate, but the rest of this Region (10%), has a tropic-humid and subhumid climate (the Huasteca, located south of the State of Tamaulipas and east of the State of San Luis Potosi). Rainfall in the Northeast Region is very limited (200-700 mm), although over the sierra Huasteca, rainfall is above 2,000 mm. The total human population in the Northeast Region is 11 million (7.3% of the national).

Topography of the Northeast Region includes plain land, altough altitude varies from cero to more than 3,000 m above sea level, on the sierra Madre Oriental. The diversity of soils and climates influences a vegetation that goes from desert shrubs and grazing land, to tropical forest.

There are great opportunities for activities related to agriculture, livestock and forestry in the Northeast Region, due to nearby big important cities like Monterrey, Nuevo Leon; Nuevo Laredo, Tamaulipas; Tampico, Tamaulipas; San Luis Potosi, San Luis Potosi; Saltillo, Coahuila; Reynosa, Tamaulipas; and Matamoros, Tamaulipas; cities that have enough industrial development to process farm products.

The Northeast Region contributes to the Mexican food production with the following farm products: Serrano Pepper (90.4%), Okra (80.8%), Soybean (52.3%), Sorghum (37.2%), Orange (31.8%), Pecan Nut (22.7%), Dry Pepper (21.4%), Safflower (16.7%), Onion (16.6%), Cantaloupe (16.0%), Apple (12.3%), Sugar Cane (12.2%), Tomato (11.1%), Potato (7.7%), Goat (31%), Sheep (14.9), Beef Cattle (11.1%), Sabila (81.6%), Lechuguilla (60.0%), Mezquite (1,016,000 ha), Cactus (the State of San Luis Potosi, has the most diversity of cactus than any other Mexican State).

The Northeast Region has to the north, a border of more than 1,000 km with the United States of America, and to de east, more than 600 km of coast with the Gulf of Mexico; this represents great opportunities to export farm products.

The INIFAP Northeast Regional Research Center, develops research and transfer technology through five Research Stations: 1) Rio Bravo (Tamaulipas), 2) Sur de Tamaulipas (Tamaulipas), 3) San Luis (San Luis Potosí), 4) General Teran (Nuevo Leon), 5) Saltillo (Coahuila); five Experimental Sites: 1) Las Adjuntas (Tamaulipas), 2) Aldama (Tamaulipas), 3) Ebano (San Luis Potosi), 4) Río Verde (San Luis Potosi), 5) Zaragoza (Coahuila); and two Business Sites: 1) El Tablero (Tamaulipas), 2) Huichihuayan (San Luis Potosi). Besides, the Northeast Regional Research Center, has a total of 274 employees (95 Researchers, 169 Technicians and 10 dedicated to the Management).

The INIFAP Northeast Regional Research Center, has a total of 128 Research Projects (11 related with Forestry, 89 with Agriculture and 28 with Livestock); these 128 Research Projects are located in Tamaulipas (55), San Luis Potosi (30), Coahuila (26) and Nuevo Leon (17). Summarizing, the number of Research Projects committed to work with different crops o cattle are the following: Sorghum, 17; Beef Cattle, 11; Maize, 10; Soybean, 10; Orange, 9; Foarage, 7; Hot Pepper, 6; Tomato, 6; Potato, 6; Goat, 6; Common Beans, 5; Sugar Cane, 4; Safflower, 4; Sheep, 4; Cactus, 4; Pecan Nut, 3; Conifers, 3; Tropical Fruits, 3; Apple, 2; Oats, 2; Cotton, 1; Rice, 1; Canola, 1; Wheat, 1; Mezquite, 1; Oregano, 1.

INIFAP

National Institute of Forestry, Agriculture and Livestock Research

NATIONAL

- HISTORY AND EVOLUTION
- VISION
- MISSION
- ORGANIZATION
- HUMAN RESOURCES
- RESEARCH AGENDA

REGIONAL

- NORTH-EAST REGION RESEARCH CENTER (CIRNE)
- SCIENTIFIC LEADERSHIP
- RELEVANT ACHIVEMENTS

USDA SAGARPA

ARS INIFAP

A science and technology research organization

INIF-INIA-INIP

"Looking for the PRC status

- **Created on August 23,1985 as a Deconcentrated Organization within the Agriculture and Water Resources Ministry (SAGARPA).**
- **On October 2, 2001, its legal status changed to that of Public Decentralized Organization, self governing and empowered to own property.**
- **On June 16, 2003, INIFAP is accepted as a Public Research Center in accordance with the provisions of the Science and Technology Act.**

]

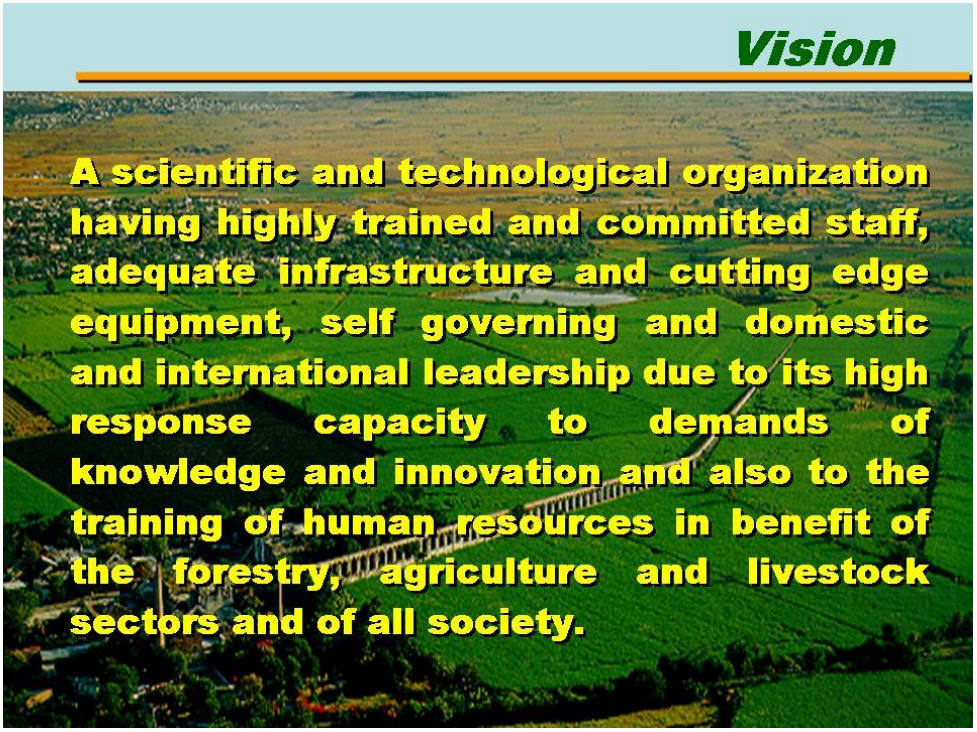
Advantages "PRC"

- Greater administrative flexibility through annual goals and results commitments stated in a Performance Agreement.
- Executive Board, plural and strengthened to achieve technical, operational and administrative autonomy.
- More flexibility to engage in agreements with domestic and international organizations from the Public and Private sectors; with demanding users offering knowledge and technology.

Advantages "PRC"

- Belong to a Public Research Center network, to be able to benefits provided by the Science and Technology Act.
- Empowered to manage funds in trusts, which facilitates project funding and operation.
- External assessment through a Users Committee.

More flexibility means more responsibility:
a greater commitment

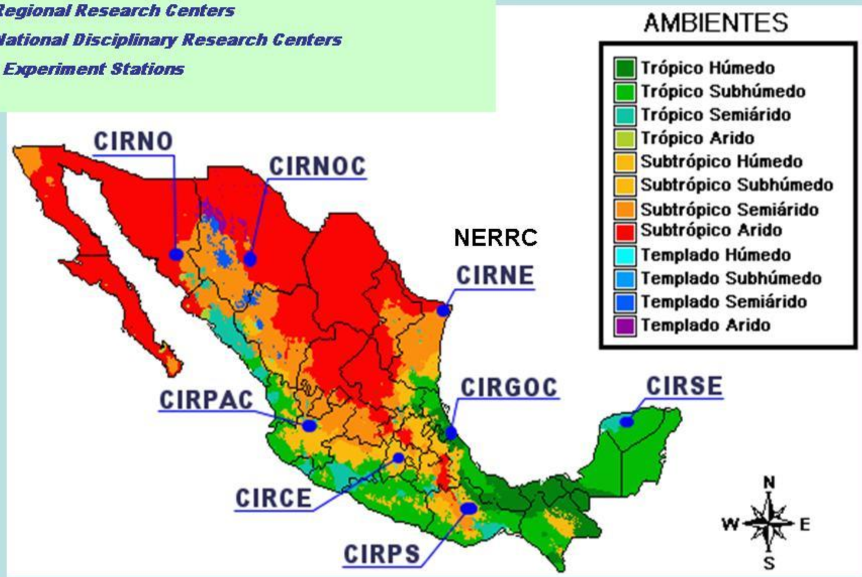

Vision
A scientific and technological organization having highly trained and committed staff, adequate infrastructure and cutting edge equipment, self governing and domestic and international leadership due to its high response capacity to demands of knowledge and innovation and also to the training of human resources in benefit of the forestry, agriculture and livestock sectors and of all society.


Mission
TO CONTRIBUTE TO DEVELOP THE RURAL SUSTENTABILITY
To develop scientific knowledge and technological innovations, considering an eyeview that integreate from the primary producers until the final consumer to contribute the productive development in a equitative way, and sustainable for the forestry , agriculture and husbandry sectors for the benefits of the society
DEMANDS/AGRIFOOD CHAINS/NATURAL RESOURCES

Organization

Provides service to the whole country through:

- ***8 Regional Research Centers***
- ***5 National Disciplinary Research Centers***
- ***38 Experiment Stations***



Organization

FIVE NATIONAL DISCIPLINARY RESEARCH CENTERS

LIVESTOCK

- **Parasitology**
- **Microbiology**
- **Fisiology, Nutrition and Genetics**

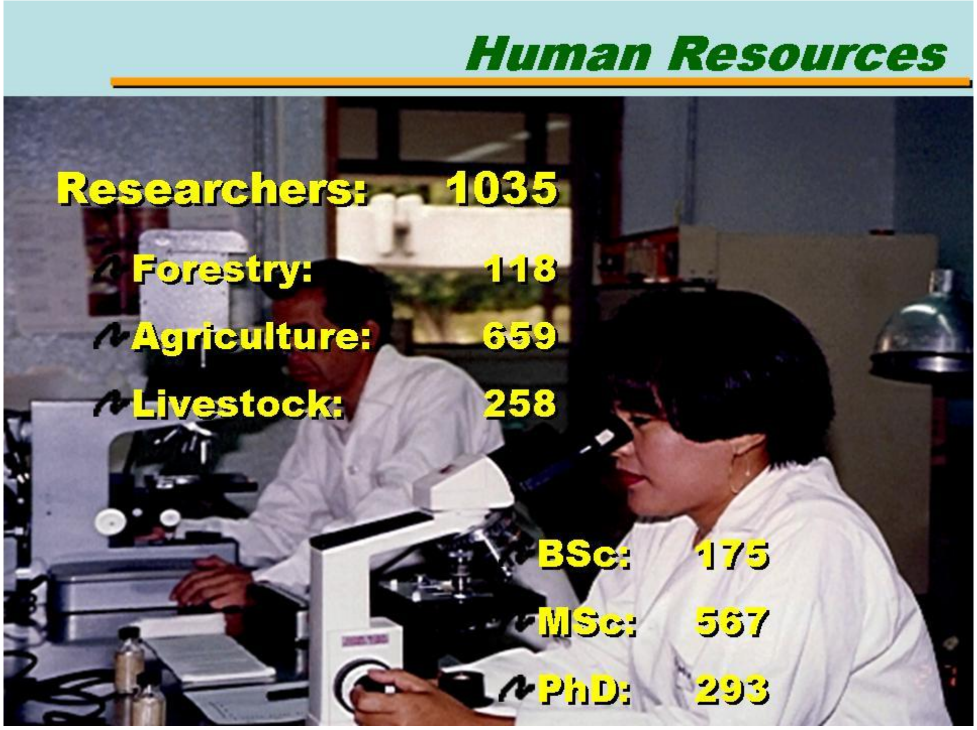
FORESTRY

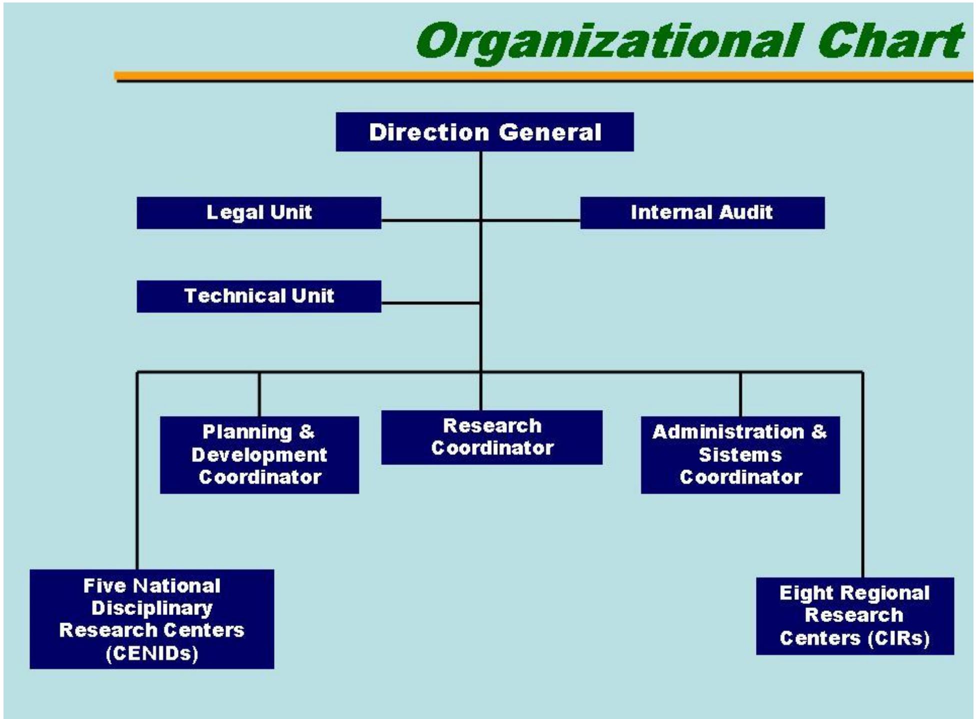
- **Conservation of forestry ecosistems**

AGRICULTURE

- **Water-soil-plant-atmosphere relationships**


Restructuring:
38 Experimental Stations.
5 National Disciplinary Research Centers.
23 Experimental sites.
3 bussinness sites
Rehabilitation:
strategic properties


Human Resources
Researchers: 1035
Forestry: 118
Agriculture: 659
Livestock: 258
BSc: 175
MSc: 567
PhD: 293


Organizational Chart
Direction General
Legal Unit
Internal Audit
Technical Unit
Planning & Development Coordinator
Research Coordinator
Administration & Sistems Coordinator
Five National Disciplinary Research Centers (CENIDs)
Eight Regional Research Centers (CIRs)


Research agenda
Society's demands equal to: Research Agenda
Approach "agrifoodchains"

Priority agrifoodchains

Staples
Beans, corn, wheat, rice, beef, milk, bovines, ovines, goats and swine).

Vegetables
Chilies, Potatoes y Tomatoes

Research agenda

Industrial crops
Sorghum, sugarcane, Coffee, Oats, barley, Agave, honey

Fruits
Banana & Plantain, Mango, Avocado Citrics, Nopal

Short, medium and long term

Forestry
Wood, wood pulp and Non wood products

New crops
With special empasis in the tropics

Research: approaches and strategies

Natural Resources use and conservation
Sustainable management strategies for a comprehensive use of natural resources

Technology transfer models
GGAVATT´S, Producer-Researcher, Others

Knowledge, innovative technology and information: demand

Genetic Resources and Biodiversity
Conservation, rescue and sustainable use

Quality and productivity
More efficient production systems to obtain profitably quality products
-protected agriculture

Short, medium and long term research

Water
Watershed management, efficiency, drought resistance in genetic materials

Agroindustrial processes
Postharvest, new product development to **add value** to forestry, agriculture and livestock products.

Research: approaches and strategies

Food safety

Good farming practices to avoid product contamination

Animal and public health

Zoonosis, Epidemiology, movement control, Bioterrorism

Knowledge, innovative technology and information: demand

Short, medium and long term research

Animal and plant health

Integrated pest and disease management, zoophytosanitary barriers, to lower costs and losses

Added value and competitivity

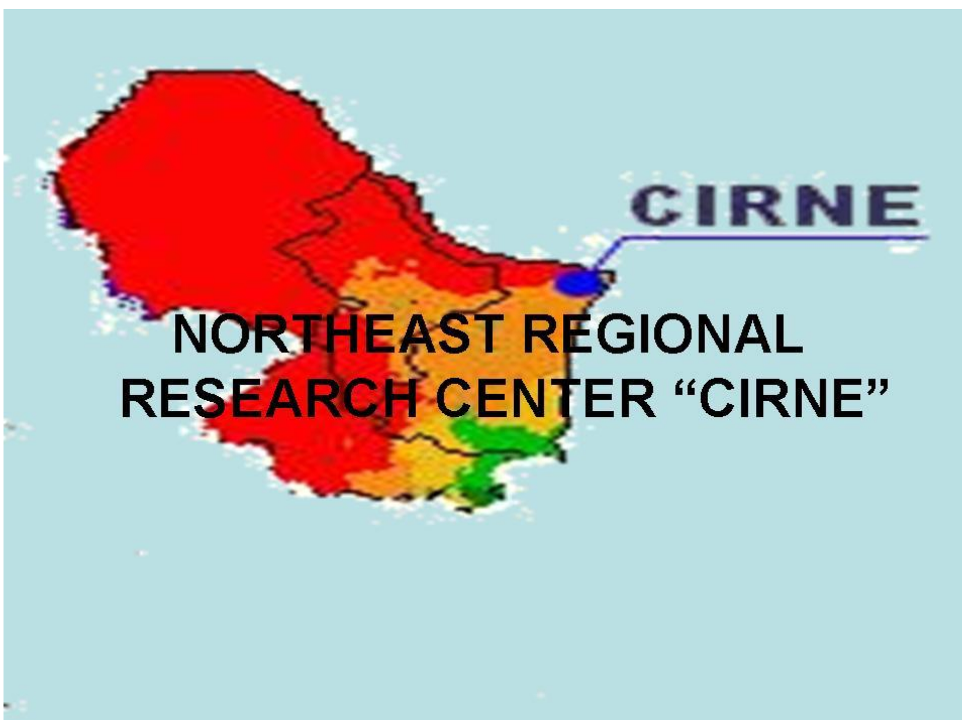
Decision making taking into account added value and profits

New crops:

Availabilty of non traditional species as an alternative for production reconversion and agroindustry

Expanded vision

Besides traditional agriculture, livestock and forestry, acquaculture, pisciculture, ecotourism, urban agriculture and environmental services are demanded.

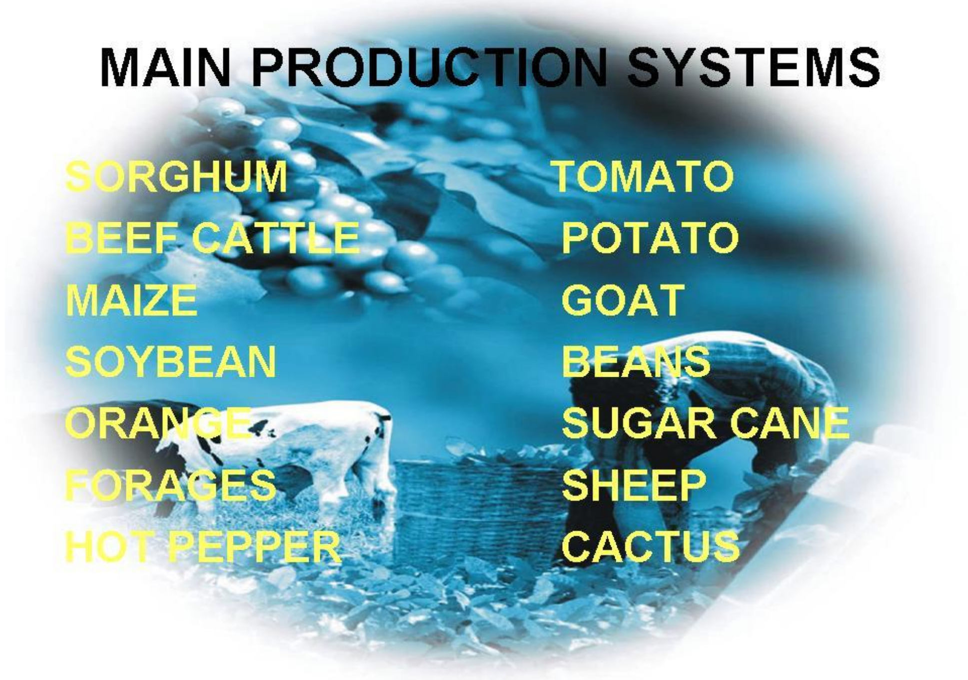


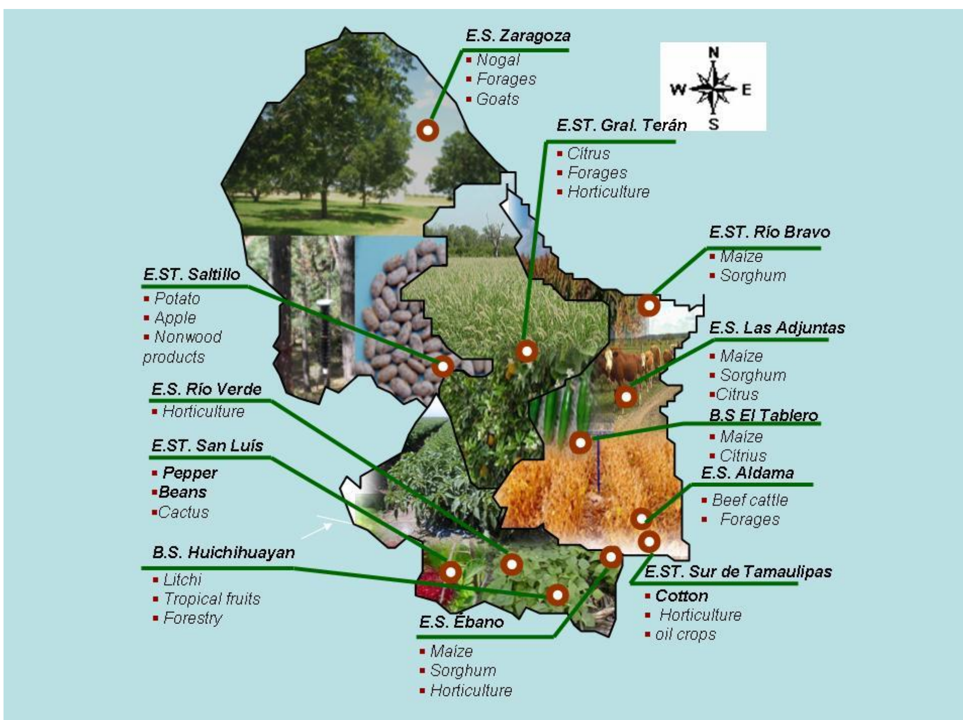

Organization
E.S. Zaragoza
N
W
E
S
AMBIENTES
Subtrópico Semiárido Templado
Subtrópico Semiárido Semicálido
Subtrópico Semiárido Cálido
Subtrópico Arido Templado
Subtrópico Arido Semicálido
Subtrópico Arido Cálido
Subtrópico Subhúmedo Cálido
Subtrópico Subhúmedo Semicálido
Subtrópico Subhúmedo Templado
Subtrópico Húmedo Cálido
Subtrópico Húmedo Semicálido
Trópico Arido Cálido
Trópico Húmedo Cálido
Trópico Subhúmedo Cálido
E.ST. Gral Terán
E.ST. Río Bravo
E.ST. Saltillo
E.S Las Adjuntas
B.S. Tablero
E.S. Aldama
E.S. Río Verde
E.ST. Sur de Tam
E.ST. San Luis
E.S. Ebano
B.S. Huichihuayan
E.ST= Experimental Station (5)
E.S= Experimental Site (5)
B.S= Bussinness site (2)


Human Resources CIRNE
Researchers: 93
BSc: 9
MSc: 46
PhD: 38


inifap
HUASTECA 300
CIRNE LEADERSHIP
SAN LUIS POTOSI
CACTUS
DRY PAPPER
GOATS
TAMAULIPAS
SORGUM
SOYBEAN
SERRANO PAPPER
FORAGES


CIRNE LEADERSHIP
COAHUILA
FORESTRY
NONWOOD PRODUCTS
POTATO
NOGAL
NUEVO LEON
CITRUS
MOLECULAR DIAGNOSIS
BIOFERTILIZATION


MAIN PRODUCTION SYSTEMS
SORGHUM
BEEF CATTLE
MAIZE
SOYBEAN
ORANGE
FORAGES
HOT PEPPER
TOMATO
POTATO
GOAT
BEANS
SUGAR CANE
SHEEP
CACTUS


E.S. Zaragoza
▪ Nogal
▪ Forages
▪ Goats
N
W
E
S
E.ST. Gral. Terán
▪ Citrus
▪ Forages
▪ Horticulture
E.ST. Río Bravo
▪ Maize
▪ Sorghum
E.ST. Saltillo
▪ Potato
▪ Apple
▪ Nonwood products
E.S. Las Adjuntas
▪ Maize
▪ Sorghum
▪Citrus
E.S. Río Verde
▪ Horticulture
B.S El Tablero
▪ Maize
▪ Citrius
E.ST. San Luis
▪ Pepper
▪Beans
▪Cactus
E.S. Aldama
▪ Beef cattle
▪ Forages
B.S. Huichihuayan
▪ Litchi
▪ Tropical fruits
▪ Forestry
E.ST. Sur de Tamaulipas
▪ Cotton
▪ Horticulture
▪ oil crops
E.S. Ébano
▪ Maize
▪ Sorghum
▪ Horticulture

Relevant achievements

Systematic approach

Innovations (New technology)

Follow up to innovations (Validation)

Technologies adopted by at least 100 producers (Transference)

For the first time INIFAP has a systematic approach for goals and follow up

MODEL TO ACHIEVE THE MISSION

INNOVATION-VALIDATION-TRANSFERENCE

MEXICO: center of origin
(118 species, 70 genera and 39 families)

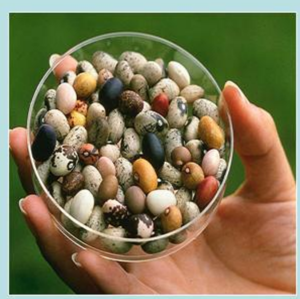
Amaranth
(*Amaranthus* spp.)

Tomato
(*Lycopersicon esculentum)*

INIFAP conserves more than 72,000 accessions from 213 species

Squash
(*Cucurbita* spp.)

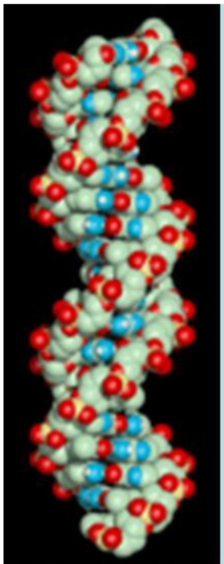
Cacao
(*Theobroma cacao*)

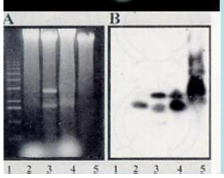


Beans
(*Phaseolus* spp.)

Chilies
(*Capsicum* spp.)

Maize
(*Zea mays*)





Development of a genetic fingerprint model for protection of Mexican varieties

PROBLEM

- Lack of modern identification and protection methodologies for varieties and hybrids released by INIFAP

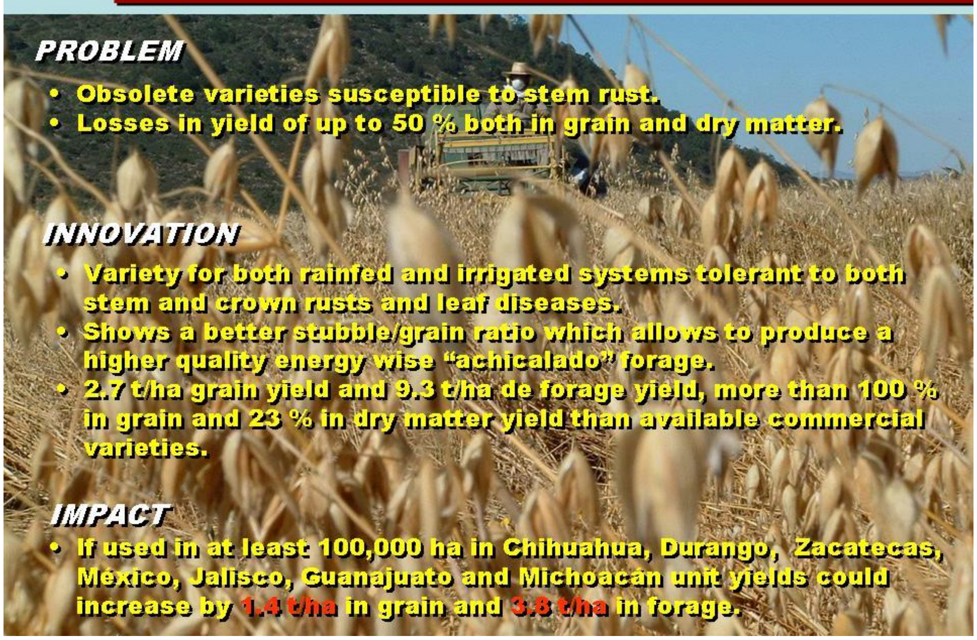
INNOVATION

- Setting up of a "genetic fingerprint" methodology through DNA molecular markers for different crops.

IMPACT

- This methodology will allow México to use a modern identification tool for improved genetic materials for protection against risk of theft.

Obsidiana: Oats variety for grain and forage production in México.



PROBLEM

- Obsolete varieties susceptible to stem rust.
- Losses in yield of up to 50 % both in grain and dry matter.

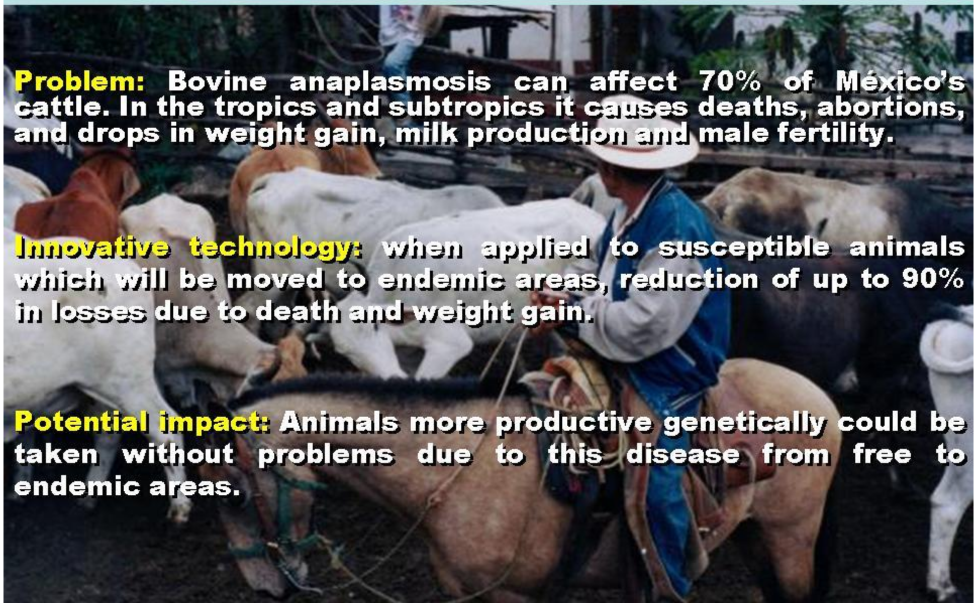
INNOVATION

- Variety for both rainfed and irrigated systems tolerant to both stem and crown rusts and leaf diseases.
- Shows a better stubble/grain ratio which allows to produce a higher quality energy wise "achicalado" forage.
- 2.7 t/ha grain yield and 9.3 t/ha de forage yield, more than 100 % in grain and 23 % in dry matter yield than available commercial varieties.

IMPACT

- If used in at least 100,000 ha in Chihuahua, Durango, Zacatecas, México, Jalisco, Guanajuato and Michoacán unit yields could increase by 1.4 t/ha in grain and 3.8 t/ha in forage.

Bovine anaplasmosis vaccine obtained with inactivated inmunogen

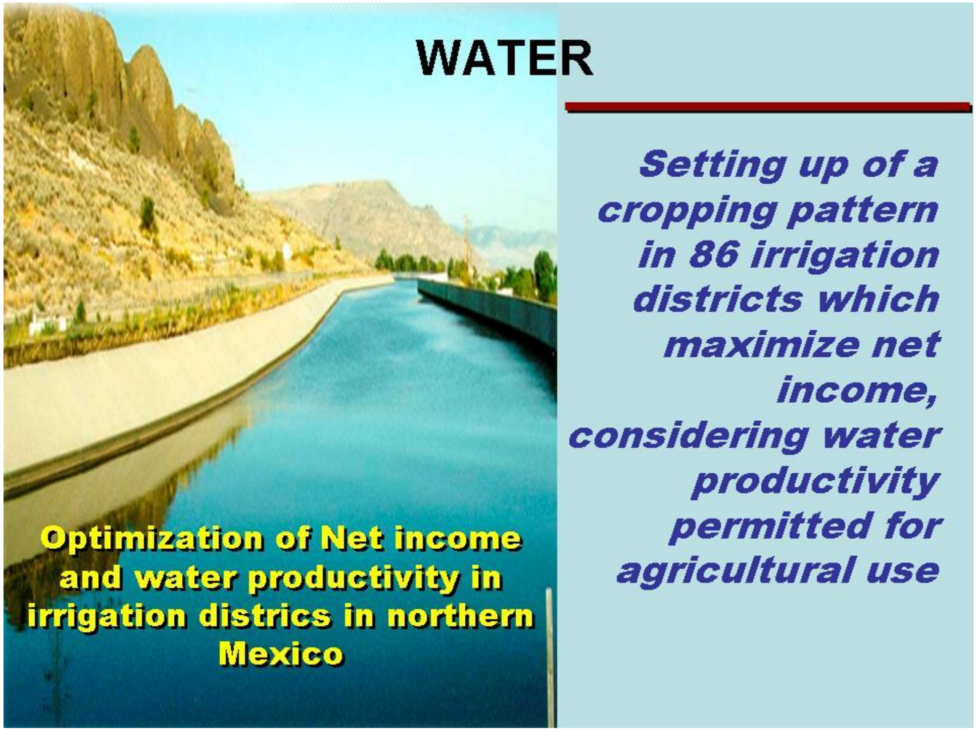


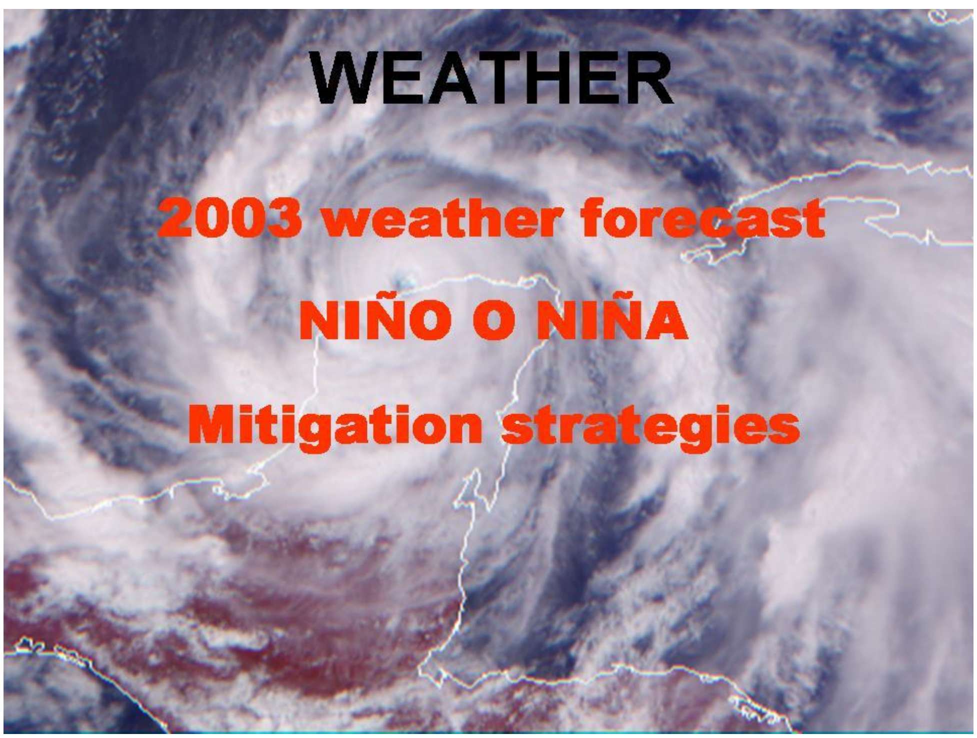
Problem: Bovine anaplasmosis can affect 70% of México's cattle. In the tropics and subtropics it causes deaths, abortions, and drops in weight gain, milk production and male fertility.

Innovative technology: when applied to susceptible animals which will be moved to endemic areas, reduction of up to 90% in losses due to death and weight gain.

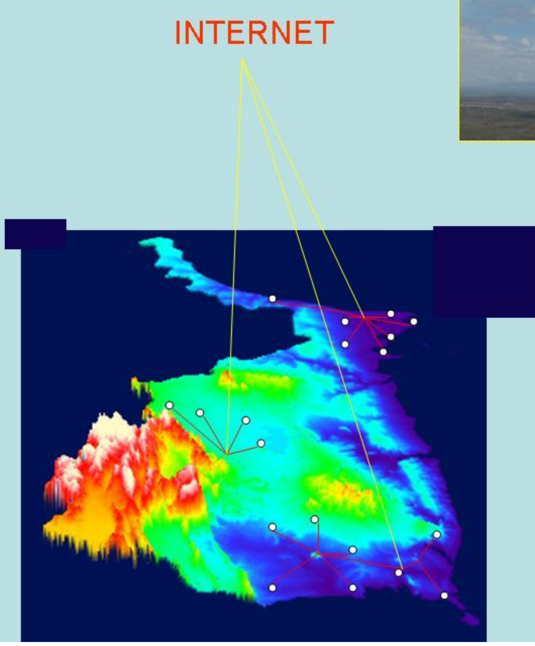
Potential impact: Animals more productive genetically could be taken without problems due to this disease from free to endemic areas.

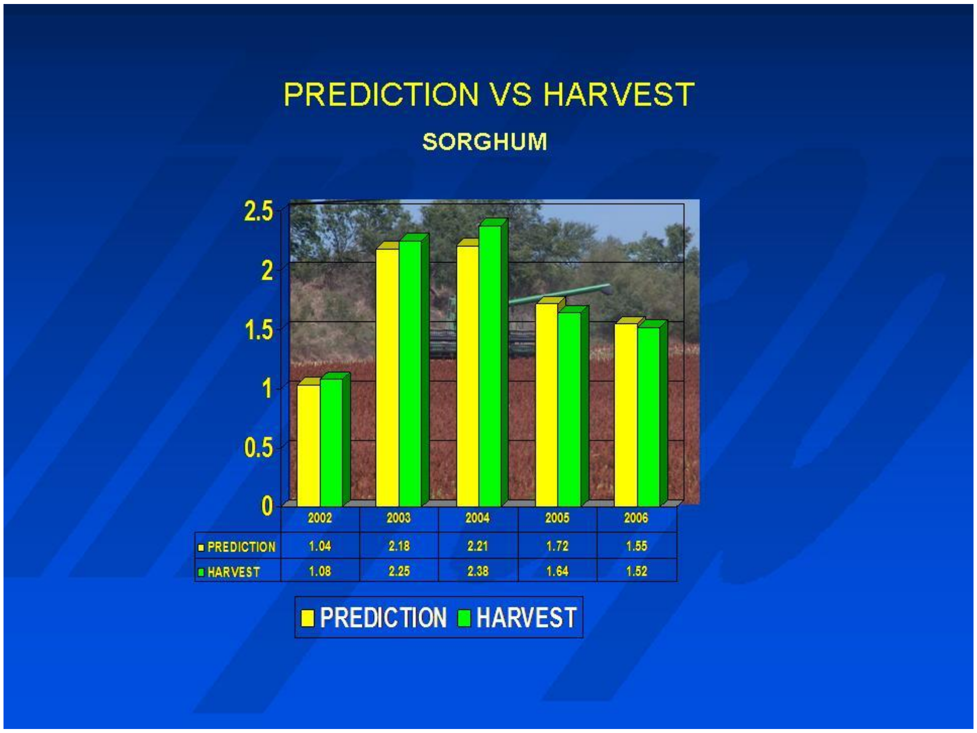
Special projects

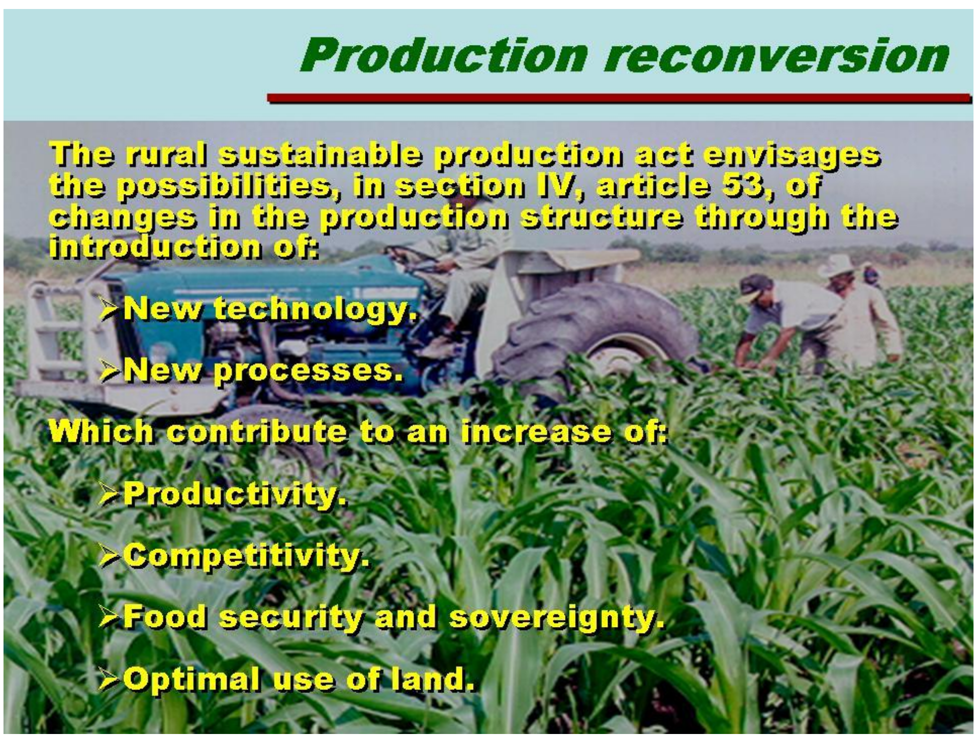

WATER
Setting up of a cropping pattern in 86 irrigation districts which maximize net income, considering water productivity permitted for agricultural use
Optimization of Net income and water productivity in irrigation districs in northern Mexico


WEATHER
2003 weather forecast
NIÑO O NIÑA
Mitigation strategies

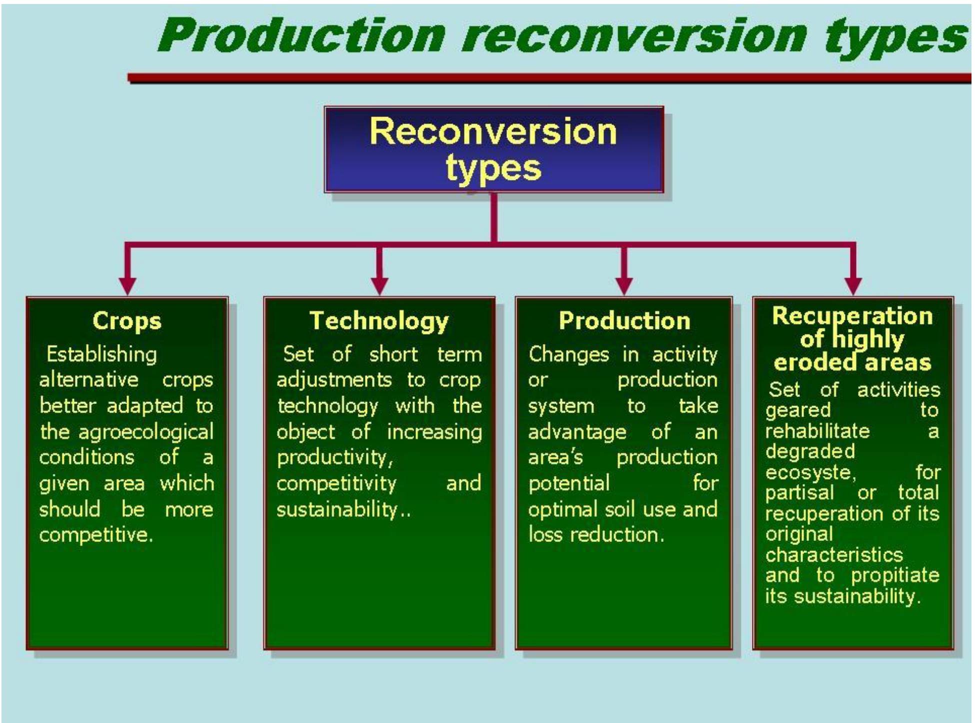
HARVEST PREDICTION

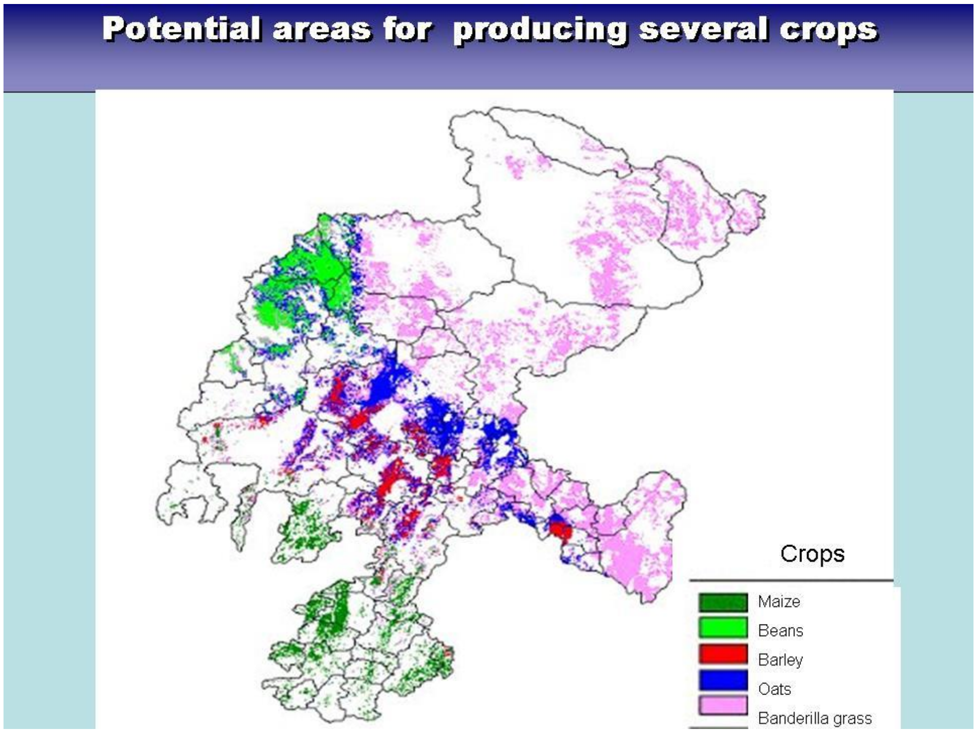



PREDICTION VS HARVEST
SORGHUM
2.5
2
1.5
1
0.5
0
2002
2003
2004
2005
2006
PREDICTION 1.04 2.18 2.21 1.72 1.55
HARVEST 1.08 2.25 2.38 1.64 1.52
PREDICTION HARVEST


Production reconversion
The rural sustainable production act envisages the possibilities, in section IV, article 53, of changes in the production structure through the introduction of:
➢New technology.
➢New processes.
Which contribute to an increase of:
➢Productivity.
➢Competitivity.
➢Food security and sovereignty.
➢Optimal use of land.


Production reconversion technical committee
Proposals and definition of terms of reference


Production reconversion types
Reconversion types
Crops
Establishing alternative crops better adapted to the agroecological conditions of a given area which should be more competitive.
Technology
Set of short term adjustments to crop technology with the object of increasing productivity, competitivity and sustainability..
Production
Changes in activity or production system to take advantage of an area's production potential for optimal soil use and loss reduction.
Recuperation of highly eroded areas
Set of activities geared to rehabilitate a degraded ecosyste, for partisal or total recuperation of its original characteristics and to propitiate its sustainability.



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Instituto Nacional de Investigaciones
Forestales, Agrícolas y Pecuarias

cirne
Centro de Investigación
Regional Noreste

Catálago de Productos y Servicios 2006

Centro de Investigación Regional Noreste

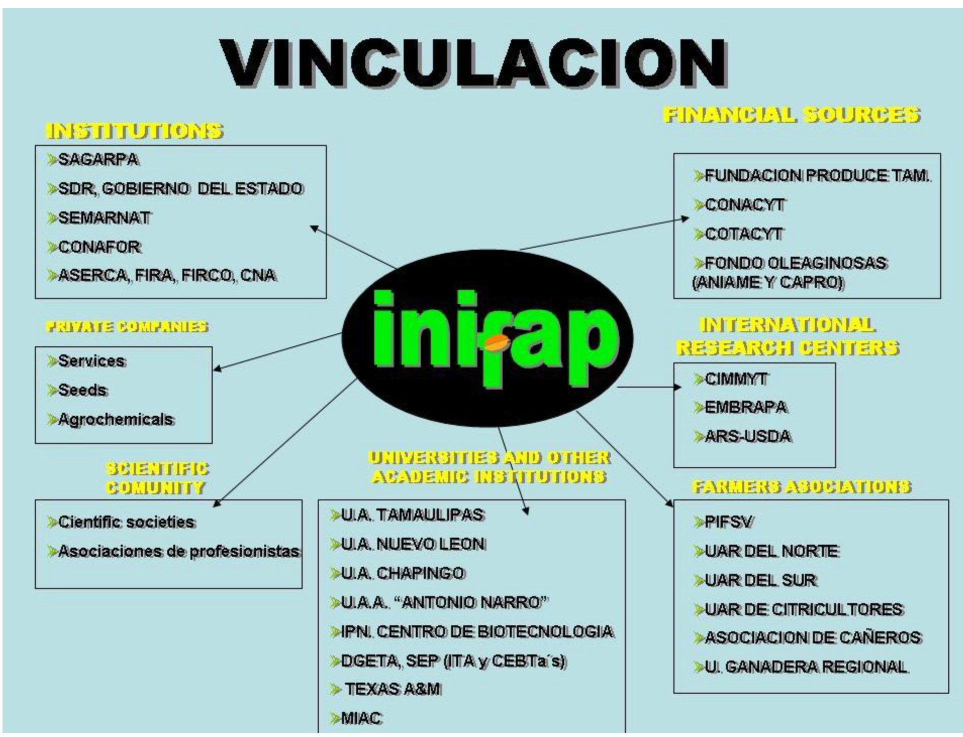
COMPILADOR:
JORGE ELIZONDO BARRÓN
DIRECTOR DE INVESTIGACIÓN DEL CIRNE

CATÁLOGO N°. 1 DICIEMBRE 2006


SERVICES
EVALUATION OF PLANT, AND ANIMAL PRODUCTIVITY
CAPACITATION, VALIDATION AND TECHNOLOGY TRANSFER
PRODUCTION AND DISTRIBUTION OF MATERIAL WITH HIGH POTENTIAL (PRODUCTION, QUALITY).
SEED PRODUCTION AND SALES


SUPPORT FOR THE TECHNOLOGY TRANSFER
DEMONSTRATIONS
Field´s day
Farmer´s land
CAPACITATION
Curses
Conferences
DIFUSION
Farmer´s day (Experimental Station)
Technical publications

TASKS

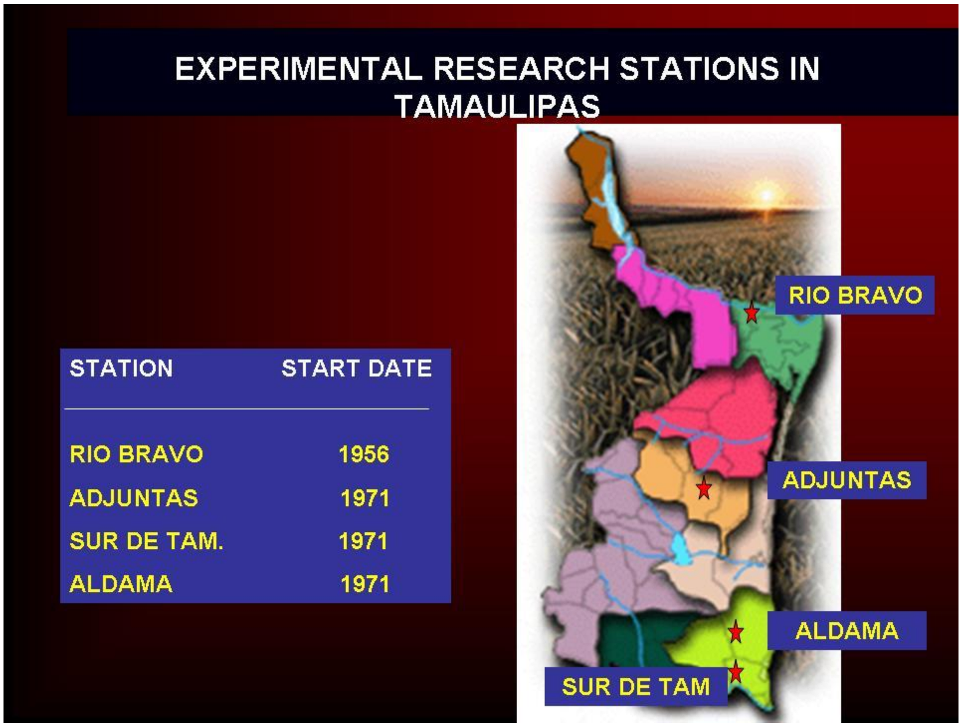

VINCULACION
INSTITUTIONS
SAGARPA
SDR, GOBIERNO DEL ESTADO
SEMARNAT
CONAFOR
ASERCA, FIRA, FIRCO, CNA
FINANCIAL SOURCES
FUNDACION PRODUCE TAM.
CONACYT
COTACYT
FONDO OLEAGINOSAS (ANIAME Y CAPRO)
PRIVATE COMPANIES
Services
Seeds
Agrochemicals
inifap
INTERNATIONAL RESEARCH CENTERS
CIMMYT
EMBRAPA
ARS-USDA
SCIENTIFIC COMUNITY
Cientific societies
Asociaciones de profesionistas
UNIVERSITIES AND OTHER ACADEMIC INSTITUTIONS
U.A. TAMAULIPAS
U.A. NUEVO LEON
U.A. CHAPINGO
U.A.A. "ANTONIO NARRO"
IPN. CENTRO DE BIOTECNOLOGIA
DGETA, SEP (ITA y CEBTa´s)
TEXAS A&M
MIAC
FARMERS ASOCIATIONS
PIFSV
UAR DEL NORTE
UAR DEL SUR
UAR DE CITRICULTORES
ASOCIACION DE CAÑEROS
U. GANADERA REGIONAL

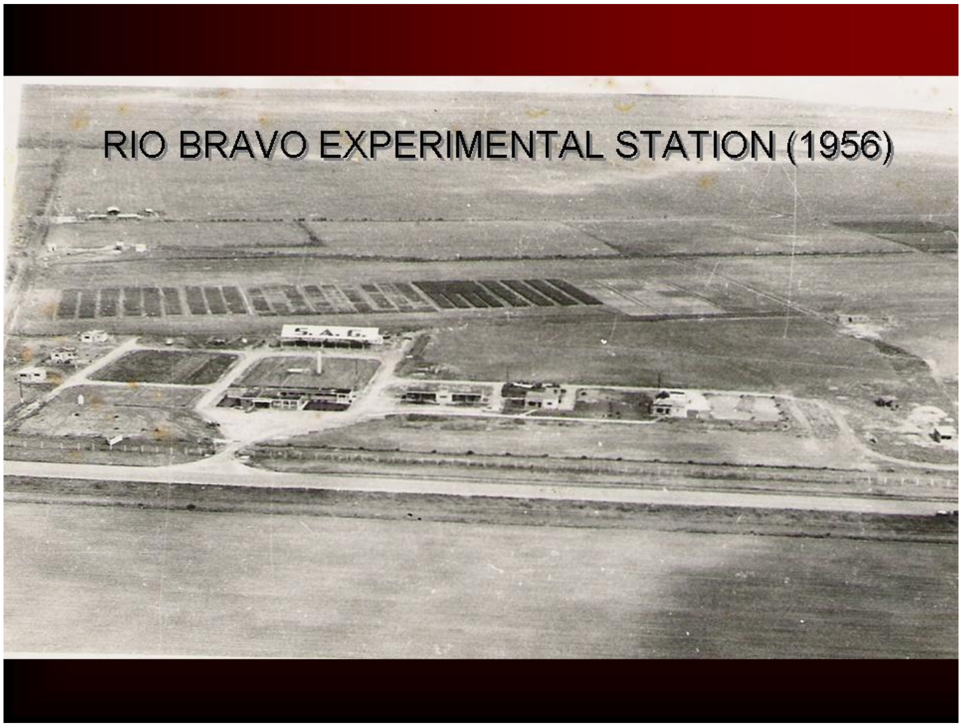

CHALLENGE
Improve plants and animals and also to mantain the environment in benefit of future generations

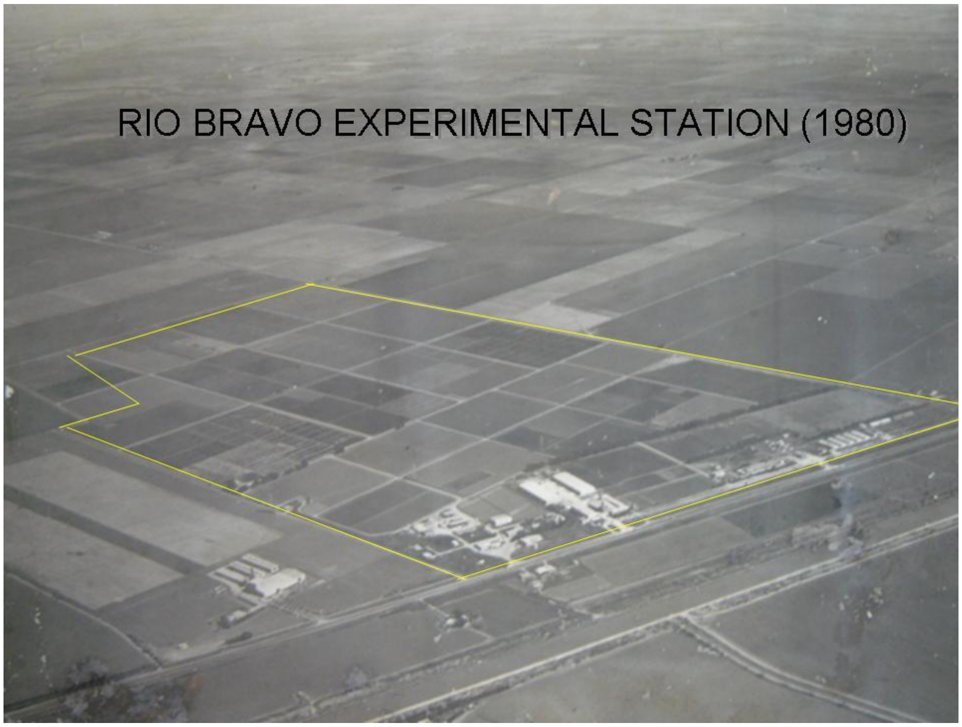

Thank you

'Rio Bravo Research Center: An Overview'

Dr. Noe Montes Garcia
INIFAP, Rio Bravo Research Center
Rio Bravo, Mexico



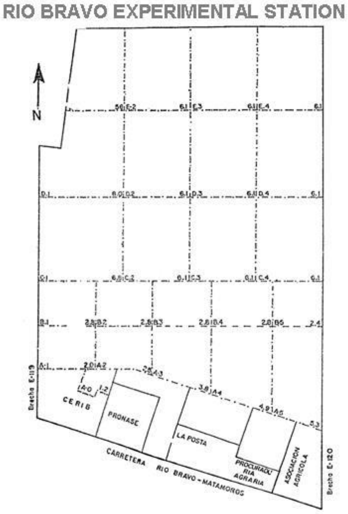

RIO BRAVO EXPERIMENTAL STATION (1956)
S.A.G.


RIO BRAVO EXPERIMENTAL STATION (1980)

RIO BRAVO EXPERIMENTAL STATION (2006)

DIAGRAM

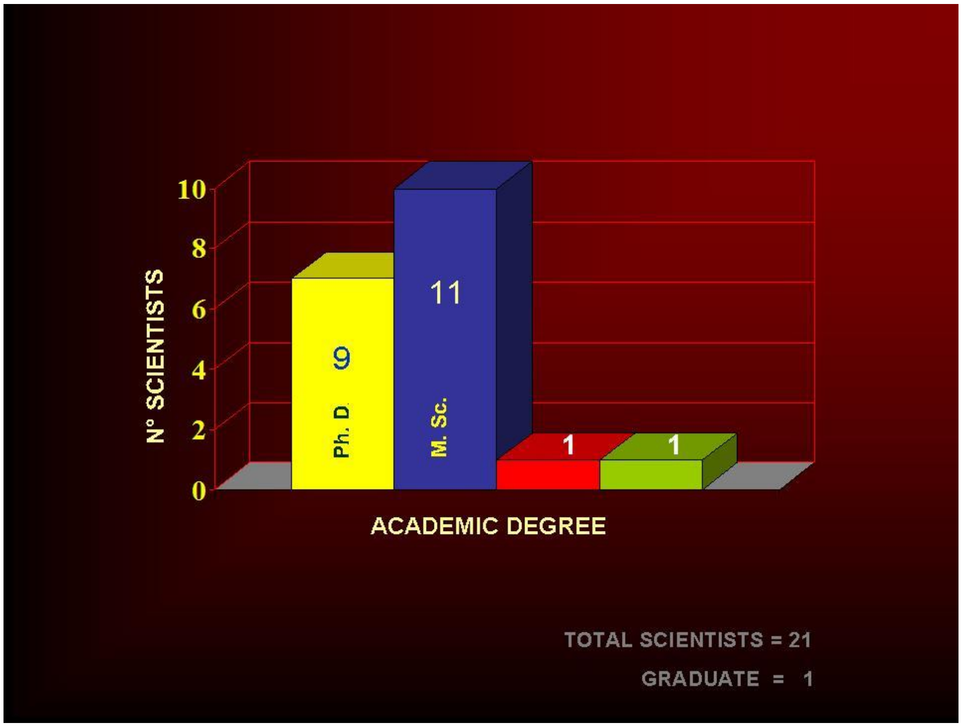
RIO BRAVO EXPERIMENTAL STATION



FIELD RESEARCH AREA = 104 HA

BUILDINGS AND GREEN AREAS = 20 HA

TOTAL = 124 HA



CROP-SYSTEM RESEARCH

GROUP	CROP
Cereals	Sorghum, corn, wheat
Fibers	Cotton
Legumes	Chickpea, soybean, beans, others
Oils	Sunflower, soybean, canola, others
Vegetables	Okra, watermelon, pepper, cantaloupe, squash, tomatoes
Animals	Cattle, sheep, others
Forages	Grass

MAJOR RESEARCH PROJECTS

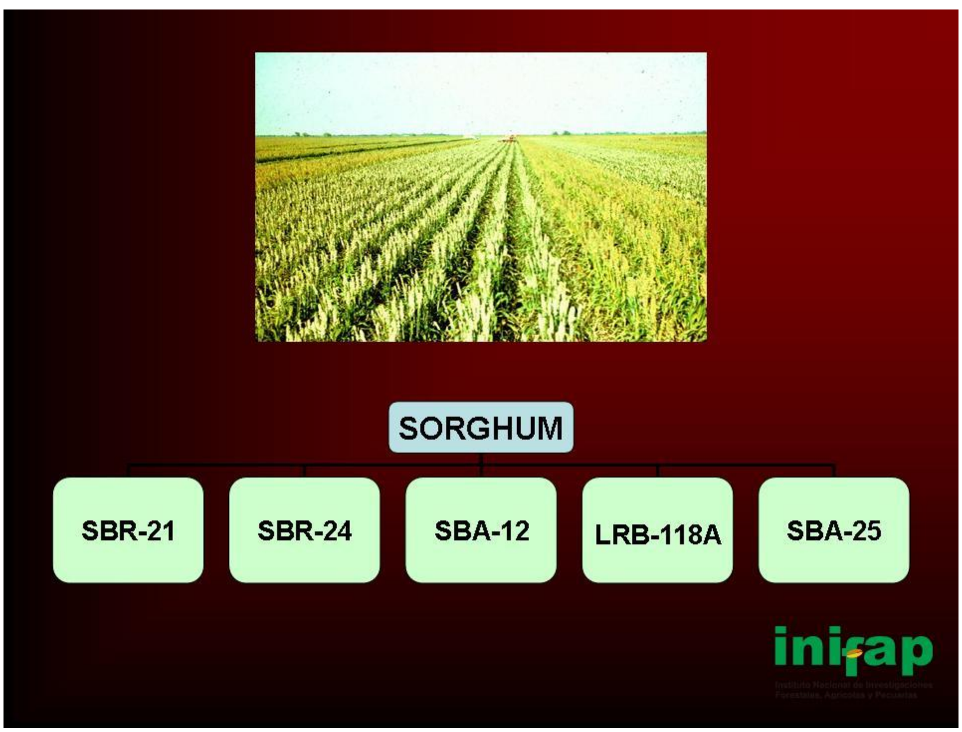
- Crop improvement
- Agronomy
- Water use and management
- Fertilizer and chemical substances management
- Pest and disease control
- Biological control
- Conservation of soil and water
- Biotechnology
- Remote signaling
- Technology transfer



GENERATE KNOWLEDGE AND TECHNICAL INNOVATIONS THAT CONTRIBUTE TO THE SUSTAINABLE DEVELOPMENT OF THE DIFFERENT PRODUCTIVE SYSTEMS, LOOKING FOR THE RATIONAL CONSUMPTION AND CONSERVATION OF THE NATURAL RESOURCES




PROMOTE THE TECHNOLOGY TRANSFER AMONG FARMERS TO IMPROVE THEIR INCOME AND CONTRIBUTE TO THE FORMATION OF HUMAN RESOURCES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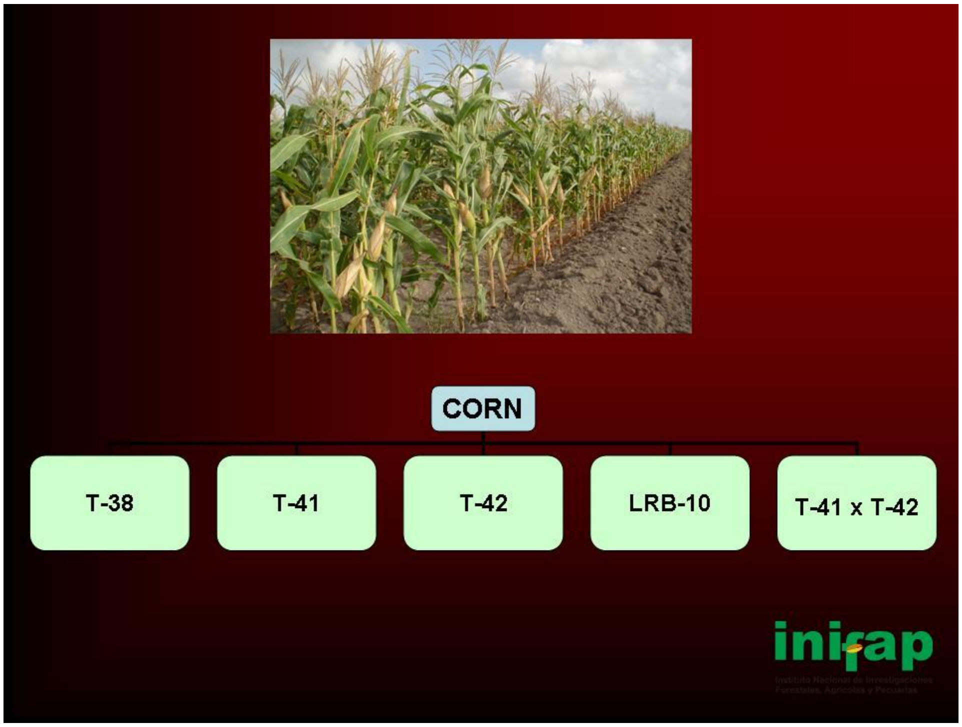
SBA-12
LRB-118A
SBA-25
inifap


CORN
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WHEAT
SAUTEÑA
inifap


MYCORHIZA
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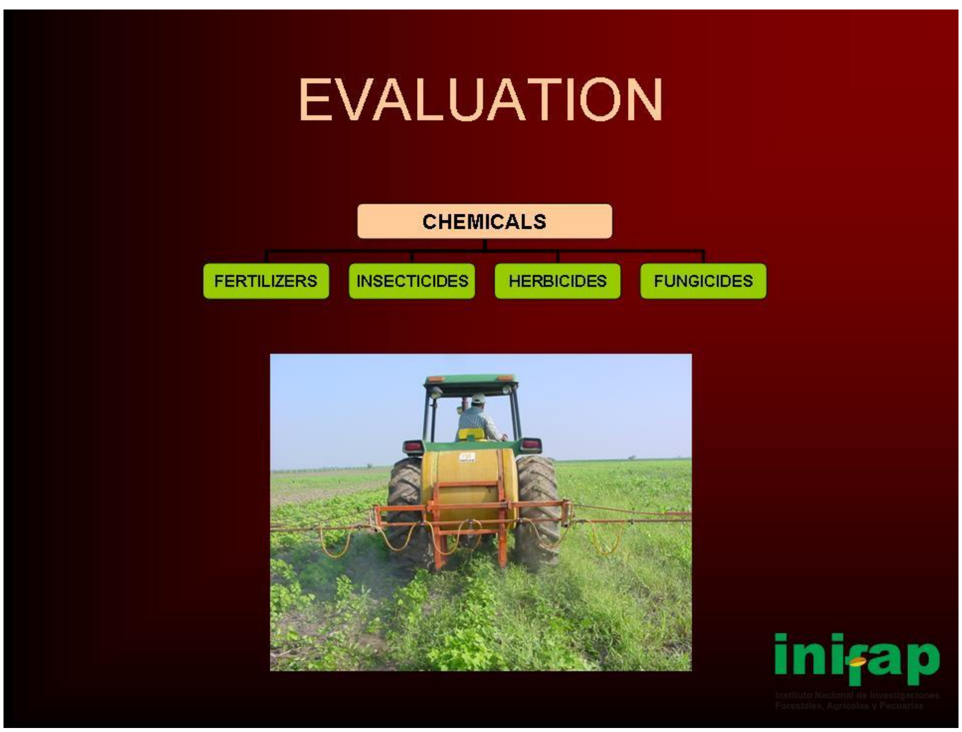
PRODUCTS
(PUBLICATIONS)
Tamaulipas
PRODUCE
TECNOLOGÍA PARA EL CAMPO
Trampas
Portainjertos
Biotecnología
Diagnóstico de producción 2004
inifap
EL SURCO
PONGA AL
CLIMA A
TRABAJAR
inifap
Centro de Investigación Regional del Noreste
Campo Experimental Río Bravo
DÍA DEL AGRICULTOR 2005
Publicación Especial No. 29
Junio de 2005
inifap
Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias


SERVICES
EVALUATIONS
CHEMICALS
VARIETIES
inifap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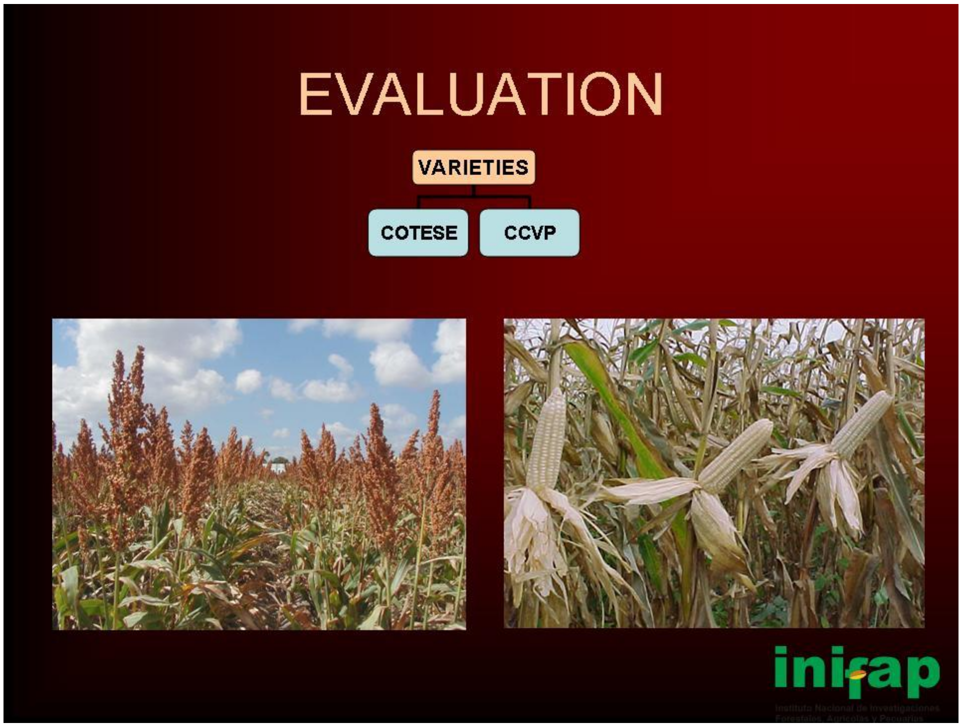
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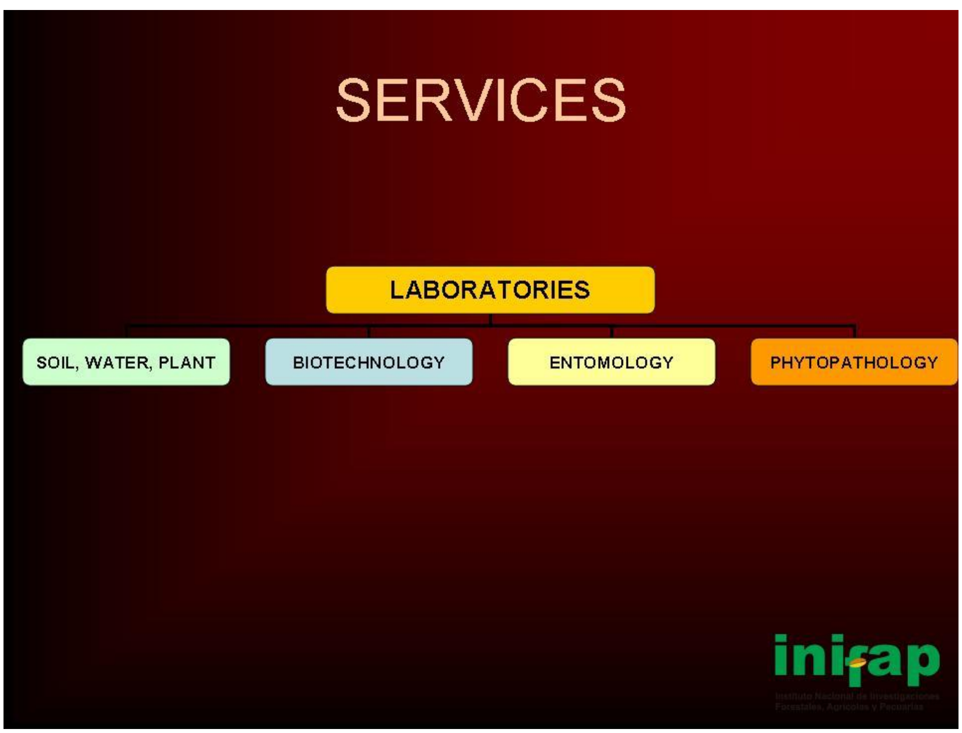
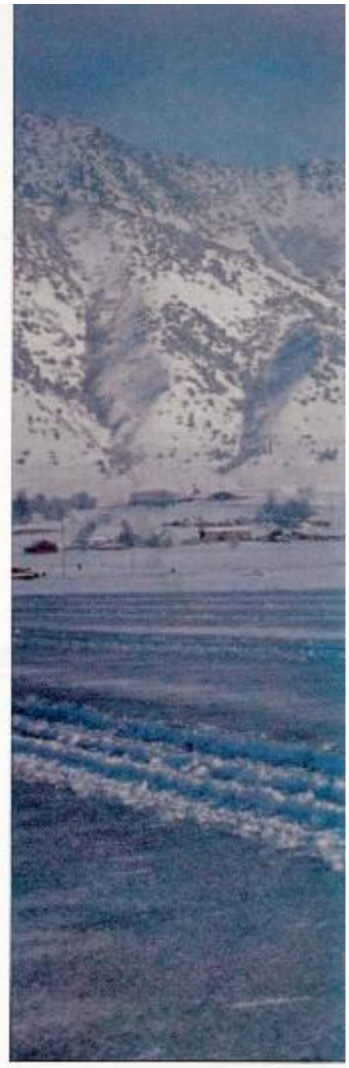

SERVICES
LABORATORIES
SOIL, WATER, PLANT
BIOTECHNOLOGY
ENTOMOLOGY
PHYTOPATHOLOGY
inifap


COOPERATIVE
AGREEMENTS
inifap

'Controlling Snowmold in Dryland Wheat'

Dr. Ray Cartee, Director of Research Farms
Utah State University
Logan, Utah

CONTROLLING SNOWMOLD IN DRYLAND WHEAT



R. L. CARTEE, R. F. NIELSON, and T. A. TINDALL

Snowmold in dryland winter wheat grown in northern Utah and southern Idaho has caused millions of dollars of damage annually in reduced yields and costs of replanting (Nielson and Cartee 1976). The disease is caused by the widespread organisms *Typhula* and *Fusarium*. Mold damage is increased when the snow is deep enough (one foot or more) to insulate

Furnace ash being spread with a Snow Cat.

wheat from the freezing air temperatures. The residual heat from the soil and plant respiration melts the snow over the wheat plant, thus creating a tunnel of moist warm air around the plant, an ideal environment for the snowmold organism.

Snowmold damage can range from spots to entire fields. Damage is less likely when soils remain frozen throughout the winter. However, early snow cover often means soil is not frozen deep enough, creating conditions favoring development of the disease organisms. Even when soils are frozen relatively deep, deep insulating snow cover for a long period may also create conditions conducive to snowmold. A realistic and economically feasible method of reducing snowmold damage involves removal of snow from wheat.

In 1969, USU wheat breeder Wade G. Dewey applied a blackening agent to wheat nurseries at the Evans Experimental Farm at Logan. Snow on treated fields melted faster than on untreated fields, and appeared to have less snowmold damage. These early observations prompted additional studies by Wade Dewey and Rex Nielson at the

A. Loading furnace ash into an airplane.

B. Loading furnace ash into a spreader mounted on a Snow Cat.

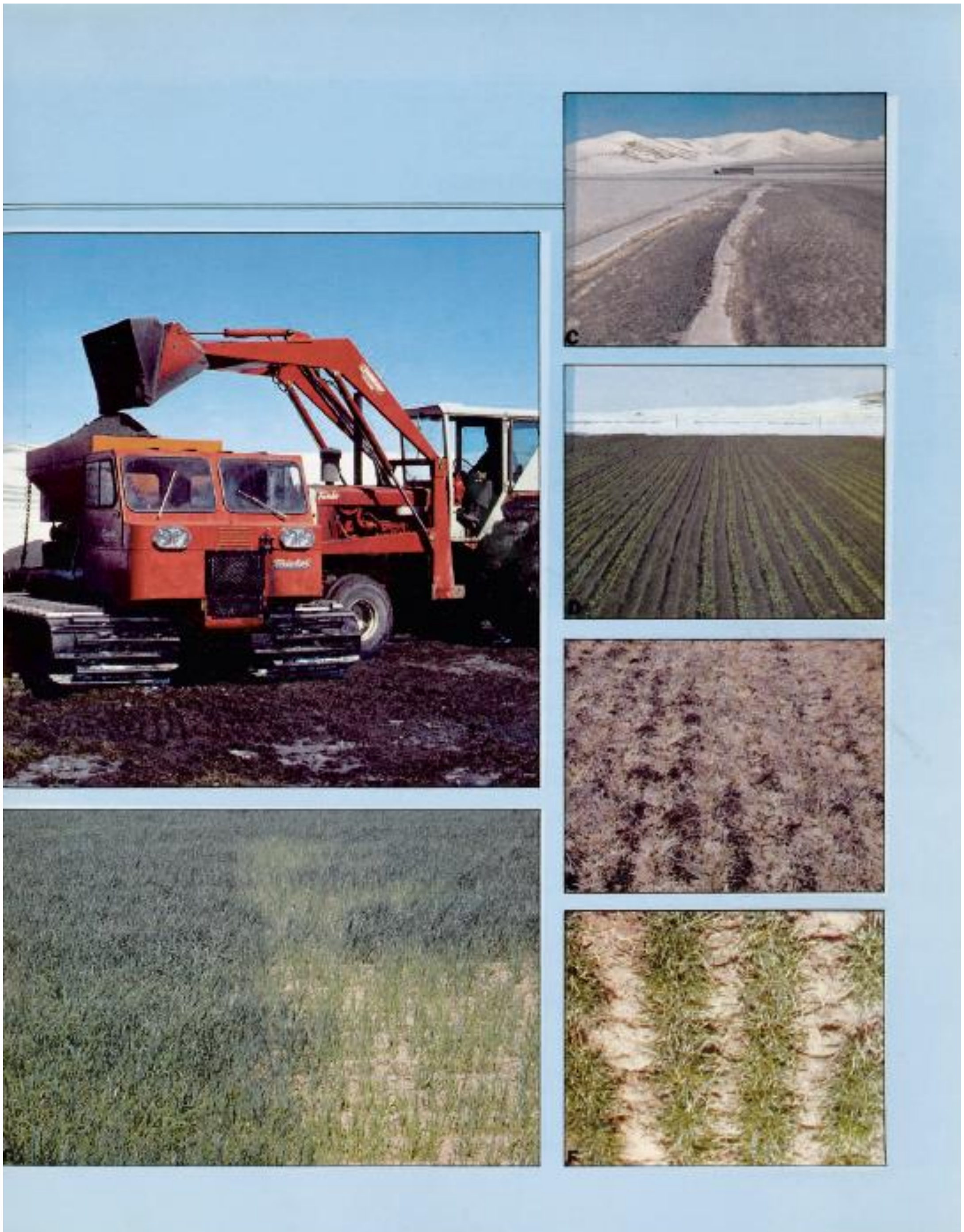
C. Under the right conditions, furnace ash can rapidly decrease snow depth.

D. There was no visible snowmold damage on this field treated with furnace ash. Note the snow cover on the untreated land around the field.

E. Snowmold spores and wheat plants killed by the organism.

F. Healthy winter wheat with very little snowmold damage.

G. Note the difference in the stand of wheat between the area treated with darkening agent (left) and the untreated area (right).



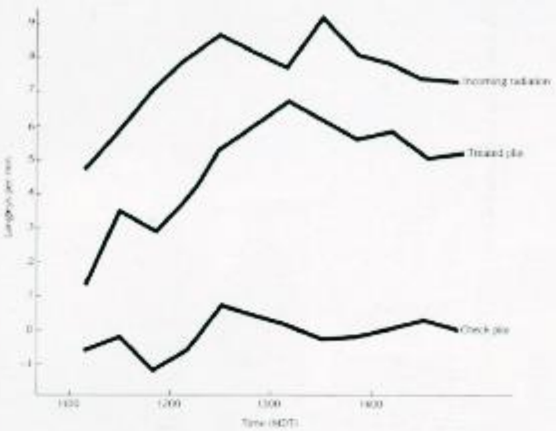


FIGURE 1. Radiation absorption on untreated plots and plots treated with ash.

Bluecreek Experimental Farm in Box Elder County.

Furnace Ash

During 1970-73, furnace ash from the coal-fired heating plant at USU was applied (200 lb. per acre) by an airplane. Treatment accelerated snow melt, and reduced the incidence of snowmold. In the fall of 1973 a fertilizer spreader mounted on a sleigh pulled by a snowmobile was used to apply the ash in more detailed studies of the effects of timing, frequency and rate of application.

Application of a blackening agent such as furnace ash darkens the snow surface; more incoming solar radiation is absorbed, thus melting the snow even though air temperatures may be freezing or below. White, untreated snow surface reflects solar radiation. Figure 1 compares radiation absorbed by treated and untreated plots at midday. The treated area absorbed considerable incoming radiation while the untreated area absorbed almost none. Application of less than 150 lb. of ash per acre did not darken snow enough while applying over 200 lb. per acre did not increase absorption. This indicated that the optimum amount of ash to apply was between 150 and 200 lb. per acre.

Table 1 compares snowmelt on treated and untreated areas from 1975 through 1985. The untreated areas remained under snow longer than those treated with ash. In some years, soil under snow was not frozen. Both snow cover and unfrozen soils contributed to severe snowmold damage.

Table 2 shows yield and percentage protein on experimental plots. Except in 1977, applying ash significantly increased wheat yields. During 1975-77, the protein content of the wheat variety (Hansel) remained constant or increased in the treated areas. The wheat variety in subsequent years was Manning. Except in 1982, protein content decreased in the treated areas because yields increased considerably. Protein content of Manning tends to decrease as yields increase, however, Cartee et al. (1986) found that protein level can be maintained with high yields if additional nitrogen is applied in the spring. In 1977, soils were covered late in the winter by about 10 inches of snow and remained frozen during the remainder of winter. Consequently, treatment did not significantly increase yields because snowmold damage was slight. Therefore, ash was not applied in 1980 and 1981 when conditions were similar.

In 1976, USU cooperated with Thiokol Corporation (Snow Cat Division) in mounting a sand spreader on a large snow-cat to apply ash on plots at four locations in northern Box Elder County. The results (Nielson and Cartee 1976) were similar to those at the Blue Creek Experimental Farm during 1976 (Table

TABLE 1. Comparison of snowmelt on control plots and plots treated with fly ash (Bluecreek Experimental Farm).

	Treated		Untreated		
	Continuous days under snow		Continuous days under snow		Reduction in days under snow with treatment
Year	Total	No soil frost	Total	No soil frost	
1975	65	22	85	42	20
1976	90	90	118	118	28
1977	40	0	48	0	8
1978	63	30	83	50	20
1979	102	64	126	88	24
1980			— Ash not applied —		
1981			— Ash not applied —		
1982	68	68	86	86	16
1983	104	70	128	94	24
1984	100	62	117	79	17
1985	80	61	101	82	21
Average	79	52	99	71	20

2). Snowmold damage decreased and yields increased by 50 to 70 percent where ash was applied. Following this study, commercial application of darkening agents began, primarily using ash from coal-fired power plants.

Table 3 presents an economic evaluation of ash application. Income per acre, based on the price per bushel at harvest, was adjusted for protein and yield. The net income per acre was calculated by adding the income from the untreated plots to the cost of applying ash. This sum was then subtracted from income from treated plots. Except in 1977 when snow cover was light and soils remained frozen, applying ash increased net income.

TABLE 2. Yield and protein content of wheat from control plots and plots treated with fly ash (Bluecreek Experimental Farm).*

	Yield (bu/A)				Protein (%)			
Year	Treated	Untreated	Difference	LSD**	Treated	Untreated	Difference	LSD**
1975	51.2	43.0	8.2	2.4	15.7	13.9	1.8	0.4
1976	41.2	19.8	21.4	3.4	14.8	13.6	1.2	0.5
1977	58.5	56.2	2.3	2.8	8.9	8.9	0	0.6
1978	53.8	36.5	16.3	1.9	10.2	11.0	-0.8	0.5
1979	42.7	22.7	20.0	2.3	10.6	13.8	-3.2	0.7
1980				— Ash not applied —				
1981				— Ash not applied —				
1982	58.1	32.0	26.1	3.6	10.9	10.4	0.5	0.6
1983	53.6	33.1	20.5	2.7	10.8	12.1	-1.3	0.4
1984	49.9	29.2	20.7	2.1	11.2	11.8	-0.6	0.3
1985	58.0	30.4	27.6	3.1	10.5	12.0	-1.5	0.8
Average	51.9	33.7	18.2	2.7	11.5	11.9	-0.4	0.5

*All plots were fertilized with 50 lb N/A as anhydrous ammonia in the fall.
**Least significant difference at 0.05 confidence level.

TABLE 3. Yields, protein content, and returns on control plots and plots treated with fly ash (Bluecreek Experimental Farm).

Year	Untreated			Treated			Cost/a of applying ash	Net increase in income per acre due to application of ash
	bu/a	Protein (5)	Income/a	bu/a	Protein (%)	Income/a		
1975	43.0	13.9	$190.92	51.2	15.7	$245.76	$ 6.00	$48.84
1976	19.8	13.6	86.72	41.2	14.8	190.34	6.00	97.62
1977	56.2	8.9	185.46	58.5	8.9	193.05	6.00	1.59
1978	36.5	11.0	133.23	53.8	10.2	188.30	12.00	43.07
1979	22.7	13.8	100.33	42.7	10.6	151.59	12.00	39.36
1980					— Ash not applied —			
1981					— Ash not applied —			
1982	32.0	10.4	112.32	58.1	10.9	210.90	7.00	91.58
1983	33.1	12.1	135.05	53.6	10.8	193.50	7.00	51.45
1984	29.2	11.8	115.34	49.9	11.2	184.63	14.00	55.29
1985	30.4	12.0	104.88	58.0	10.5	174.00	7.00	62.12
Average	33.7	11.9	$132.90	51.9	11.5	$194.21	$ 8.67	$52.65

Table 4 lists selected data from studies conducted at the Bluecreek Experimental Farm. Net return reflects difference in wheat prices and varying costs of applying ash in addition to the effects of snowmold. Wheat prices were highest in 1975 and 1976, which increased net returns. However, results clearly indicate that severe snowmold damage and a reduction in yield occur when soils are unfrozen under a deep snow cover for 70 days or more. Darkening the snow to accelerate snowmelt reduces snowmold damage and thus increases wheat yields, thereby increasing profits.

Darkening Agent-Nitrogen Solutions

In 1984 commercial applicators felt they could increase area covered per load by applying darkening agents in an urea ammonium nitrate (UAN) solution. By using a nitrogen solution (which has a low freezing point) as the carrier for the

TABLE 4. Effect of treatment with fly ash on days under snow, yield, protein content, and net return.

Year	Continuous days under snow with no soil frost	Reduction in days under snow due to treatment	Increase in yield due to treatment (bu/a)	Increase in protein content due to treatment (%)	Increase in net return due to treatment ($/a)
1975	42	20	8.2	1.8	48.84
1976	118	28	21.4	1.2	97.62
1977	0	8	2.3	0	1.59
1978	50	20	16.3	-0.8	43.07
1979	88	24	20.0	-3.2	39.36
1980			— Ash not applied —		
1981			— Ash not applied —		
1982	86	16	26.1	0.5	91.58
1983	94	24	20.5	-1.3	51.45
1984	79	17	20.7	-0.6	55.29
1985	82	21	27.6	-1.5	62.12
Average	71	20	18.2	-0.4	52.65

TABLE 5. Comparison of liquid and dry methods of applying a darkening agent (1984).

Method	Days under snow		Yield (bu/a)	Protein (%)	Income ($/a)	Cost ($a*)	Net Return ($/a)
	Total	No soil frost					
Liquid	102	64	53.2	11.5	210.14	14.00	84.00
Ash	102	64	54.0	11.9	213.30	15.34	83.26
Untreated	117	79	31.0	10.8	114.70	—	—

*Includes cost of additional nitrogen.

NOTE: All plots had 50 lb. N/A as anhydrous ammonia. Additional nitrogen (14 lb./a) applied to both liquid and ash treatments in the spring.

TABLE 6. Rate of snowmelt associated with darkening materials in UAN solutions.*

Material	Snow depth (inches)						
	Date: 3/19	3/21	3/26	3/31	4/2	4/5	4/10
Fly ash	20b**	17.5d	13.5c	10d	6cd	0a	0
Ground coal	19b	17.5d	13.5c	10d	5c	0a	0
Graphite 3739	16a	12a	4a	0.5a	0a	0a	0
Graphite 3226	17a	13ab	5a	1d	0a	0a	0
Coke (99% carbon)	23c	18de	14d	12e	7d	0.5a	0
Graphite 3124	17a	14bd	10b	5b	1a	0a	0
Graphite 8600	17a	12.5a	9b	7c	3b	0.5a	0
Coal—25% graphite	19b	15c	9b	7c	5b	1	0
Control	24c	19c	17c	14.5e	12e	5c	0

*Source: Tindall 1986 (see References).
**Treatment means followed by the same letter are not significantly different at the 0.05 confidence level.

darkening agent such as graphite, additional nitrogen could be applied, thus eliminating a separate trip over the field. In cooperation with a commercial applicator, studies compared the effectiveness of liquid and dry darkening agents. There was no significant difference between liquid or dry darkening agents, but there were significant differences in yield, days under snow, and net returns between treated and untreated areas regardless of the type of darkening agent (Table 5). In the spring, 14 lb. of nitrogen per acre were applied to the plots treated with dry ash; this was equal to that applied to plots treated with a nitrogen solution.

In 1985, Bear River Supply of Garland cooperated in a study of different darkening agents applied at a site in Pocatello Valley (Table 6). Due to equipment malfunction, the maximum ash application rate was only about 100 lbs. per acre. This probably accounts for the slower melt rate on plots treated with ash. Liquid solutions applied by other equipment contained 7 lb. of nitrogen and 18 lb. of darkening agent per acre. Snowmelt was more rapid on areas treated with a graphite-nitrogen solution, and was most rapid on areas treated with graphite 3739. Yields are not shown because nitrogen rates varied; however, yields on all treated areas were significantly greater than on untreated areas.

Conclusions

When conditions favor the development of snowmold, applying darkening agents to increase snowmelt rate is a profitable method of reducing yield losses. Regardless of material used, skies must be clear for 5 to 7 days following application for the material to be effective. Also, the material may need to be reapplied if 4 or more inches of new snow covers the material. If there is less than 4 inches of snow over the darkening agent, it will usually melt, thus revealing the darkened snow.

Dry darkening agents may be any dark material that will spread uniformly and is light enough to remain on the

Applying darkening agent and liquid nitrogen.

snow surface as it melts. Some of the materials that have been used successfully are furnace ash, dry soil, coal dust and dry manure. If a darkening agent is to be mixed with liquid nitrogen, it must stay in suspension. Some of the materials used successfully are graphite, coke and coal dust. Lampblack is very dark when first applied, but flows down through the snow with the water, thus reducing its effectiveness.

In addition to their benefits in reducing snowmold, darkening agents also help control run-off. When darkening agents are applied when air temperatures are freezing or below snow melts slowly during daylight hours so runoff does not exceed infiltration into the soil. This reduces the risk of soil erosion later in the spring caused by rapid snowmelt; a snowpack can melt in 48 hours. However, runoff and erosion could be increased if warming temperatures follow the application of darkening agent in mid-March or later.

Recommendations

1. Check wheat once a week and begin monitoring frost depths 2 weeks after deep snow covers wheat. Continue these weekly surveys until the snow has melted.

2. Prepare to treat fields at the first sign that frost is leaving the soil. Try to apply darkening agents when weather forecasts indicate skies are to remain clear for 5 to 7 days. Darkening agents may have to be reapplied if new snow covers the darkening agent. However, if enough snow has melted, snow tunnels may collapse around the wheat and retard mold activity. Under these circumstances, reapplication may not be necessary.

3. Don't be overly complacent even if mold is not visible. Apply a darkening agent by late February if deep snow persists and no frost remains in the soil.

4. There appear to be only small differences between the effectiveness of dry or liquid darkening agents. Therefore, the method selected by a farmer should be based on compatibility with other aspects of crop production. It initially costs less to apply ash, about $7 per acre, than to apply a graphite-nitrogen solution, which costs about $12 per acre, depending on how much nitrogen is applied. However, costs associated with dry or liquid materials are about equal if a farmer utilizes a complete program, one involving snow removal, split applications of fertilizer, and herbicide application. Two operations are required in a complete program, whether the darkening agent is a liquid or a dry material. If a dry darkening agent is applied, ash would first be applied to remove snow, and a mixture of liquid nitrogen and herbicide (such as Ally or Glean) would then be applied after the field is bare. A farmer applying liquid material would first apply nitrogen and darkening agent, herbicide would be applied after the field is bare. **It is illegal to apply herbicide on the top of the snow as herbicides are not labeled for this type of application.**

ABOUT THE AUTHORS

Raymond L. Cartee is an assistant professor in the Department of Soil Science and Biometeorology at USU and supervisor of the Agronomy Research Farms for the Agricultural Experiment Station. He is currently working on several projects related to soil fertility, conservation tillage and use of saline water for irrigation.

Rex F. Nielson is an associate professor emeritus at USU and was the principal investigator on fertility management studies of dryland wheat in Utah for the past 35 years.

Terry A. Tindall is an extension soil specialist and assistant. He received a PhD at Oklahoma State University. He is currently working on graphite nitrogen solutions applied to snowcover infertility management of winter wheat and rangeland.

REFERENCES

Cartee, R. L., R. F. Nielson and V. P. Rasmussen. 1986. Split applications of nitrogen fertilizers to dryland wheat can increase profits. *Utah Science* 47(2):56-62.

Nielson, R. F. and R. L. Cartee. 1976. A new look at snowmold. *Utah Science* 37(4):100-103.

Nielson, R. F. and R. L. Cartee. 1976. The effects of furnace ash on snow melt and production of dryland winter wheat. Final Report to Thiokol Corporation. 22 pp.

Nielson, R. F. and D. P. Austin. 1977. Fly ash helps battle winter kill. Western Hay and Grain Grower. February 1977, pp. 16-17.

Tindall, T. A. 1986. Darkening agents in a UAN Solution: Influence on snow mold and yield of winter wheat. Journal of Fertilizer Issues. Oct-Dec. 3(4):129-133.

'The Growing Hispanic Population - What They Buy Will Influence What Will Be Grown'

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Abstract

The United States of America is a country that was founded by immigrants, made great by immigrants and continues to be a magnet for immigrants wanting an opportunity to improve conditions for themselves and their families. In 1890 the foreign born population in the U.S. was 9.2 million people which comprised 14.8% of the total population. The 1970 census indicated that 9.6 million foreign born residents comprised just 4.7% of the total population. Between 1990 and 2002, the foreign born population increased from 19.8 million (7.9%) to 32.5 (11.5%) million people. This was a 64% increase in twelve years.

The origin of the immigrants has drastically changed in the last 100 years. In 1900 96% of all immigrants originated in Europe. The history, culture and food preferences of these immigrants determined the look of the average American food market and thus what was grown in the fields. In 2000 the number of European immigrants has declined to 24% with a shift to growing populations of Orientals at 21% and the Hispanics at 50%. These shifts in the new immigrant populations are influencing the dynamics of food markets and ultimately will change the product mix on U.S. farms.

When comparing gross products, the Selig Foundation estimated that if the purchasing power of Hispanics in the United States was compared to all the nations in the world they would be the 9th largest country in the world. They estimate that there are more Hispanics in the United States than there are in Mexico. They stated that the Oriental and Hispanic populations in America are growing at a much faster rate than the general population and that minority buying power will exceed $2.4 trillion by 2010.

Research has found that in each of the unique immigrant populations certain similarities can be found relative to food demand, language preference, market choices, and shopping habits. All of these characteristics influence what products are grown and even in the manner they are marketed. For producers and researchers to better understand the potential demand for food products we need to get to know and better understand the Hispanic consumer.

Hispanics tend to hold onto their culture through several generations after immigration. Many of their cultural traditions and social activities are centered around family and food. Love is expressed through preparation of food from scratch. Traditional food preparation is taught from generation to generation. The family tends to shop together as a teaching tool seeking fresh ingredients with quality and flavor.

Hispanics favor sweet beverages that compliment spicy menus such as fruit juices. They have more children and larger households with an average of 4.2 people versus 2.4 for the average American household. Shopping is considered a family activity. Homemade food is a reflection of the strength and love of the family to others. On the average, Hispanics cook supper at home 5.6 times a week. Fifty three percent cook at home every night.

Hispanics consider most public and family events to be social occasions and reasons for the family to celebrate and for food and togetherness. Some of the more common occasions for family celebrations are birthdays, quinceañeras, baptisms, first communion, saint's day, graduation, weddings, religious holidays, U.S holidays, country of origin holidays, Sunday afternoon visit, etc. Just being together as a family is a reason to celebrate and have a party.

Hispanics' attitudes towards shopping center around the axiom of, "We look for good quality products at good prices, because we have a big family and need to shop to meet their needs."

The Food and Marketing Institute has found that Hispanics make 4.6 trips to the grocery store per week versus 2.2 trips for all US shoppers. That is more than twice the number of trips per week. Hispanics are huge grocery shoppers spending $128.50 per week versus the traditional shopper who spends approximately $91.00 per week, a 41% greater expenditure.

Since I work with mostly fruits and vegetables I find the Simmons report that Hispanics spend $408 for produce a year versus $208 for the average shopper to be of considerable interest.

Between 1970 and 2000 45% of the Hispanic population were 1st generation or foreign born with 28% second generation and 27% 3rd generation. It is estimated that from 2000 to 2020 the mix will shift to 25% first generation, 47% second generation, and 28% third generation.

Why is this knowledge important to merchants? It has been found that of first generation Hispanics 74 percent are Spanish language dominant with approximately 25% fluently bilingual and only about 7% strong English dominant. The second generation are found to be 46% English dominant, 47% bilingual and 7% Spanish dominant. By the third generation the people are virtually acculturated with 78% English dominant, 22% strongly bilingual, and virtually none are Spanish dominant. As the population matures from first generation immigrants their preferences for products and especially the manner in which they shop changes such that the observant merchant can take advantage of these changes to better provide for the changing preferences.

The less acculturated people generally prefer traditional dishes, cook from scratch daily, shop on a frequent basis, consider shopping a social event, seldom eat out, and have large mental cookbooks. The more acculturated people prefer a mixture of traditional and American dishes, buy prepared foods, consider shopping a utilitarian necessity, eat out often, and need cookbooks to help with special occasions.

When less acculturated Hispanics shop for groceries, certain elements are of high priority when they select a store. One of the most critical is the availability of bilingual employees. Other criteria for store selection are the availability of Hispanic products, bilingual store signs, and bilingual packaging on food products. As the population progresses to the second and third generation these criteria become less and less important.

When surveyed regarding factors that impacted their supermarket choice, Hispanics ranked fresh high-quality fruits and vegetables the number one reason for selecting a store.

The next three reasons in declining order were clean neat store, courteous and friendly employees, and then low prices.

Once having chosen a particular supermarket, Hispanics did not make purchase decisions based on price as much as the average U.S. Consumer. Generally, the availability of a trusted brand was more important to the decision than the price of the product. They also tended to consider no additives, no preservatives and organically grown to be a stronger reason for their purchases than the average American grocery buyer.

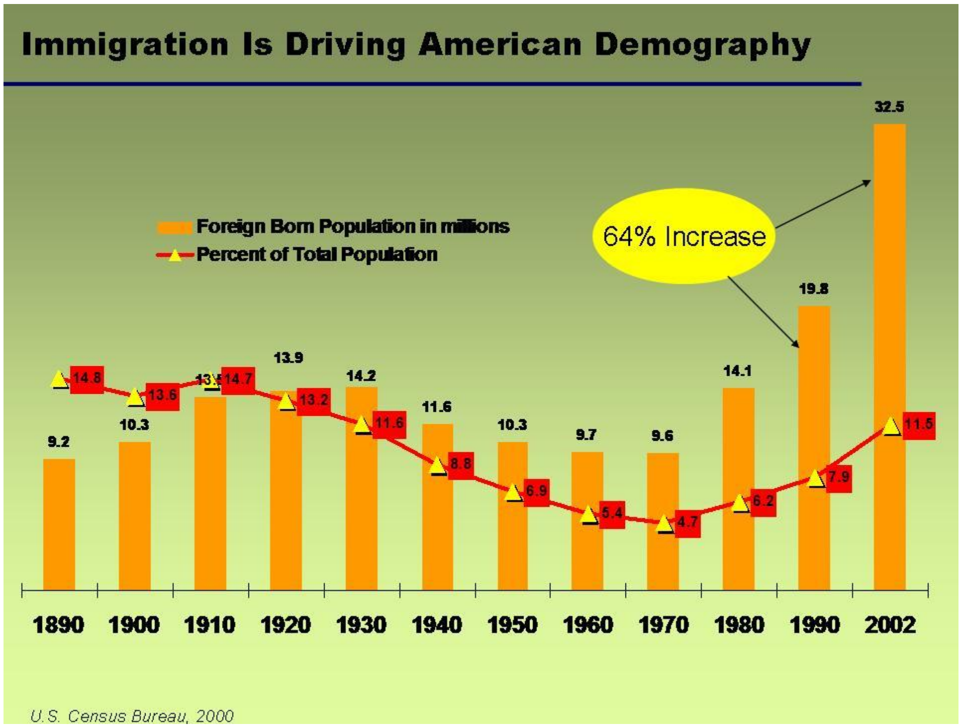
Hispanics tend to not use mail-in rebates, or cents-off coupons, stock up on items at bargain prices, buy products on special, buy store brands which are cheaper as do the average U.S. shopper. They also tend to stick to what is on their shopping list much more than the average shopper.

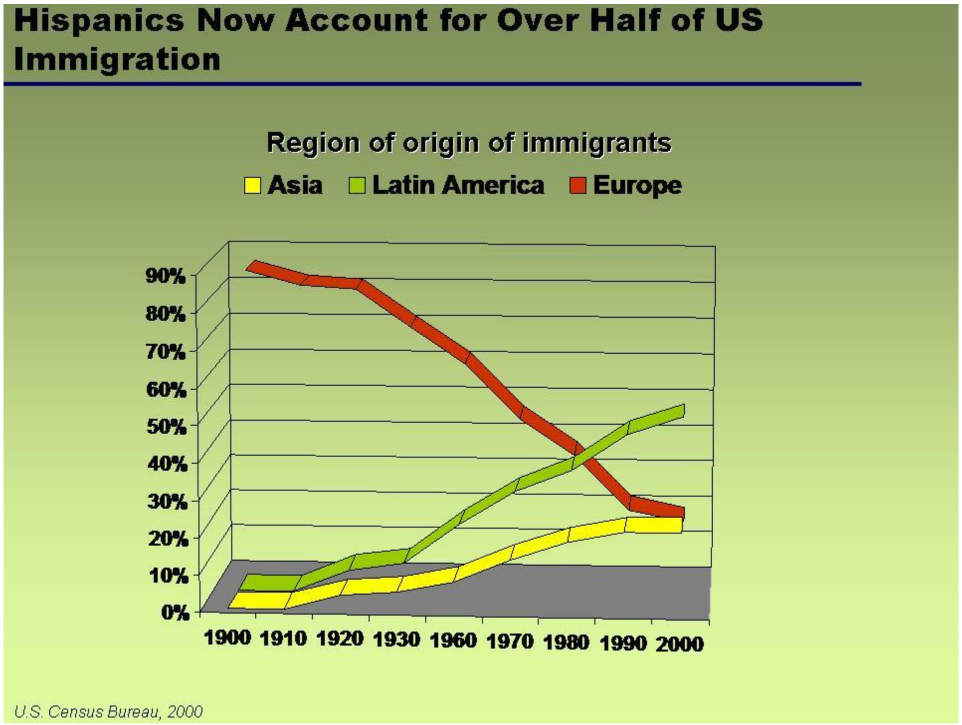
Many of the products that Hispanics desire are grown in tropical and sub-tropical locations and may not be crops that most U.S. growers can produce. Some of these specialty crops include exotic fruit, bananas, mangos, avocadoes, oranges and limes. As we become more adept at producing in controlled environment facilities some of these crops may become economically feasible to produce.

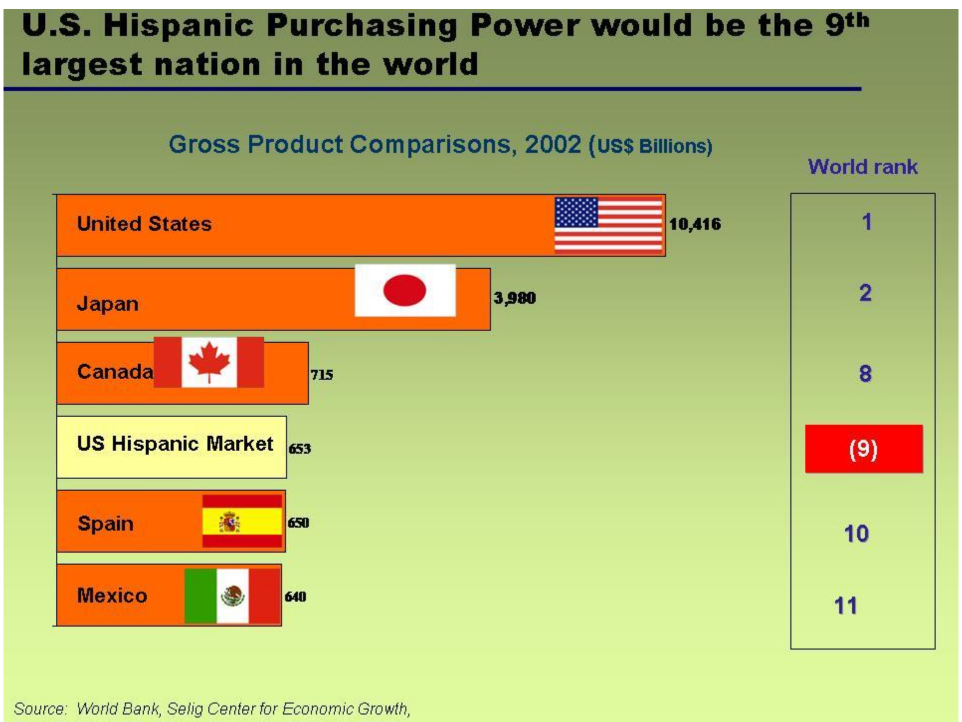
But there is a huge list of products desired by Hispanics that can be grown in temperate climates. The list includes tomatoes, onions, corn, lettuce, cilantro, cucumber, potatoes, watermelon, garlic, different types of chilies (jalapeño, habanero, de arból, ancho, serrano), squashes (chayote, Mexican, kabocha), legumes or beans (black, white, pinto) and habichelas, fabanas, and guandules.

These crops will be sold in the stores in increasing quantities as the Hispanic population continues to grow in the United States. We as researchers in experiment stations across the country should make sure that our producers have the latest research information available on these crops. If U.S. producers don't provide these products for this increasing demand the sales will surely go to foreign growers. We as directors of research centers across the country can have a large impact on what is grown in the U.S. by paying attention to the growing Hispanic population because what they buy will influence what will be grown.


The Growing Hispanic Population
What They Buy
Will Influence What Will Be Grown
RCAS Winter Meeting
South Padre Island, TX
Merritt Taylor


Immigration Is Driving American Demography
Foreign Born Population in millions
Percent of Total Population
64% Increase
32.5
19.8
14.1
13.9
14.2
11.6
10.3
9.7
9.6
9.2
10.3
14.8
13.6
14.7
13.2
11.6
8.8
6.9
5.4
4.7
6.2
7.9
11.5
1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2002
U.S. Census Bureau, 2000


Hispanics Now Account for Over Half of US Immigration
Region of origin of immigrants
Asia
Latin America
Europe
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1900 1910 1920 1930 1960 1970 1980 1990 2000
U.S. Census Bureau, 2000


U.S. Hispanic Purchasing Power would be the 9th largest nation in the world
Gross Product Comparisons, 2002 (US$ Billions)
World rank
United States
10,416
1
Japan
3,980
2
Canada
715
8
US Hispanic Market
653
(9)
Spain
650
10
Mexico
640
11
Source: World Bank, Selig Center for Economic Growth,

Hispanic and Asian American populations are growing at a much Faster pace than the general population.

According to the Selig Center:

> The combined buying power of minorities in the United States will exceed $2.4 trillion by 2010.

Understanding the Hispanic Market

Getting to know the consumer…

Culture, Traditions & Food

- Centrality of family and food is integral to social occasions
  - Love expressed through preparation of food from scratch
  - Traditional food preparation taught from generation to generation
    - Shop together (teaching)
  - Fresh ingredients (quality & flavor)

Latino Consumption Insights

- Latinos favor sweet beverages; they compliment spicy menus*
  - Fruit juices
- More kids, larger House Holds: 4.2 vs. 2.4
- Shopping is a family activity
- Home made food is a reflection of family to others
- On average, Hispanics cook dinner at home 5.6 x / week
  - 53% cook at home every night

Faith Popcorn's BrainReserve, 2001, Marketing to the Emerging Majorities, 2001, Brandweek, 2002, Simmons 2005

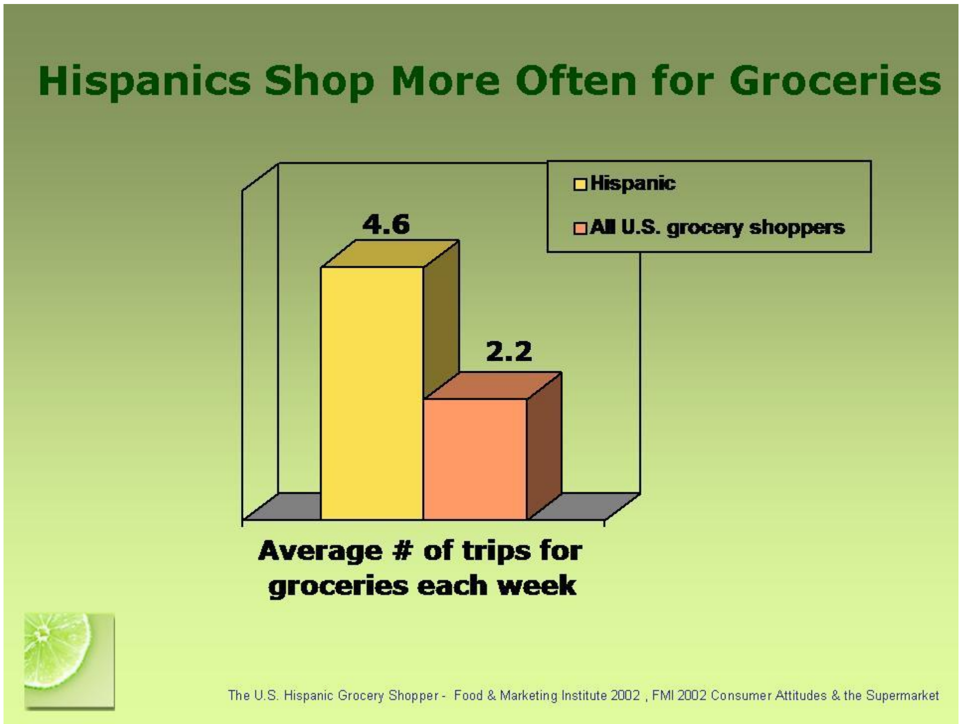
Social Occasions - Celebrations

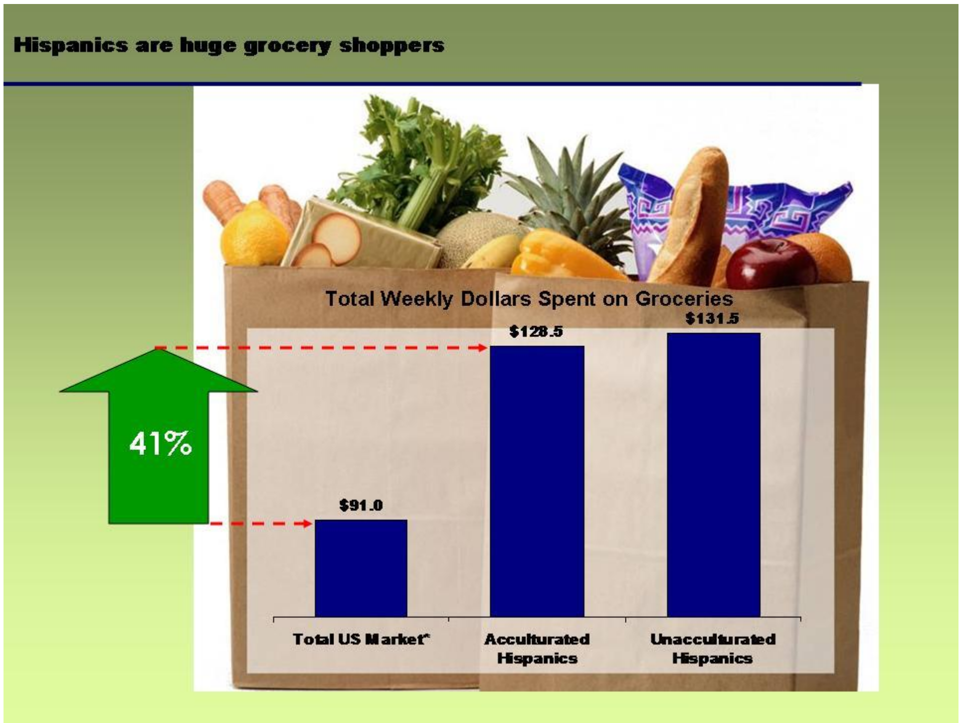
- Birthdays
- Quinceañeras
- Baptisms
- First Communion
- Posadas
- Saints' days
- Graduation
- Parties
- Weddings
- Religious holidays
- Latino holidays
  - "Day of the Dead"
- U.S. Holidays
- Patriotic festivities
  - Country of origin
- Sunday afternoon visit

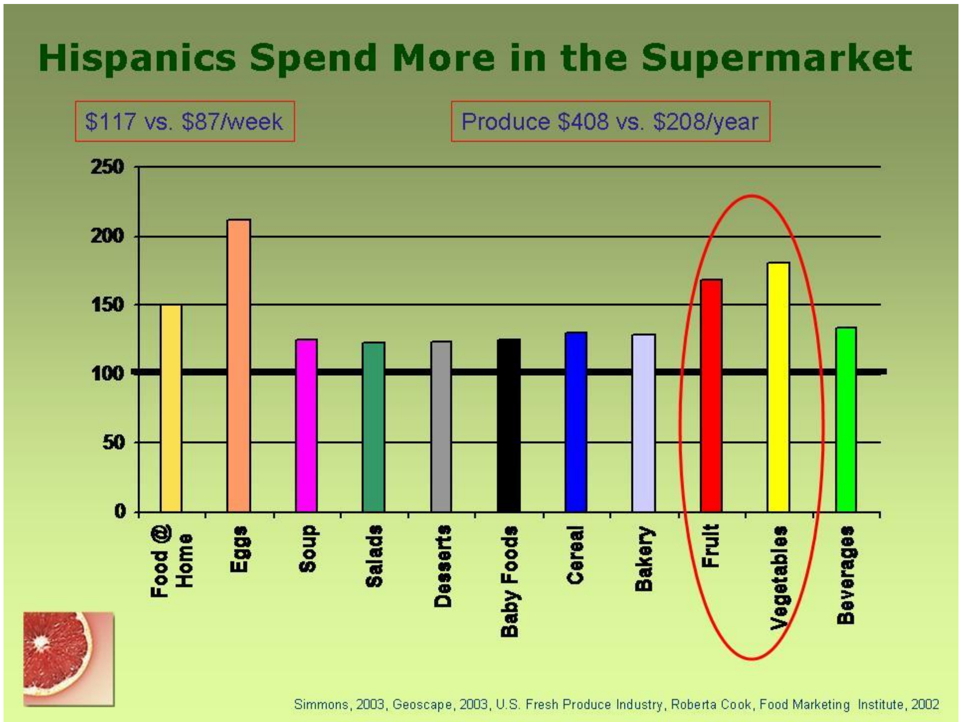
Attitudes Toward Food Shopping

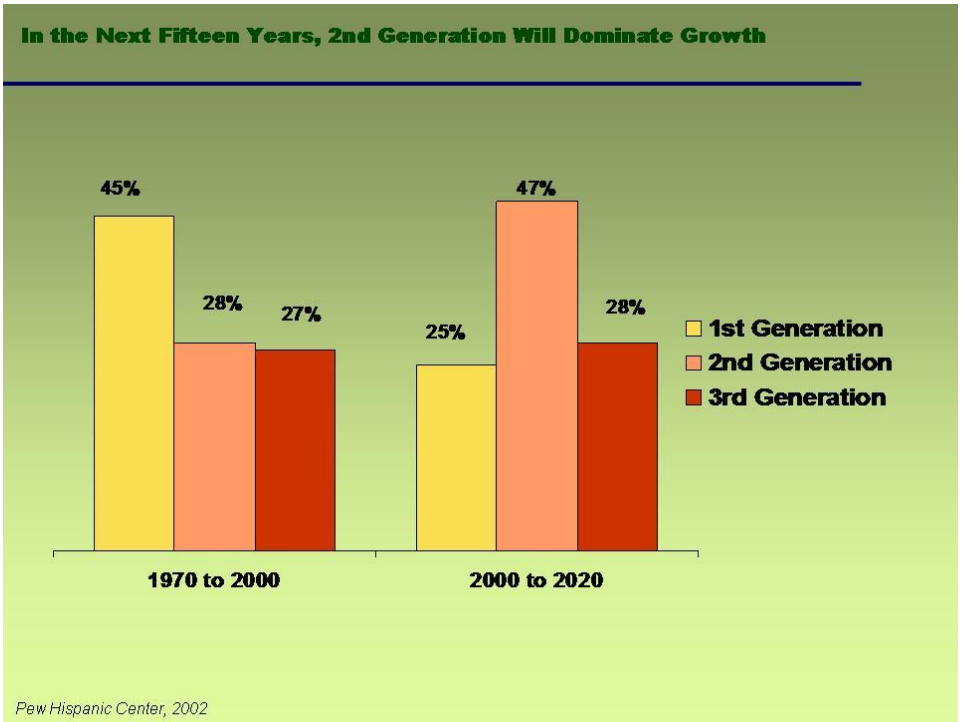
"We look for good quality products at good prices, because we have a big family and need to shop to meet their needs."

Cultural Access Group/AC Nielsen, 2002

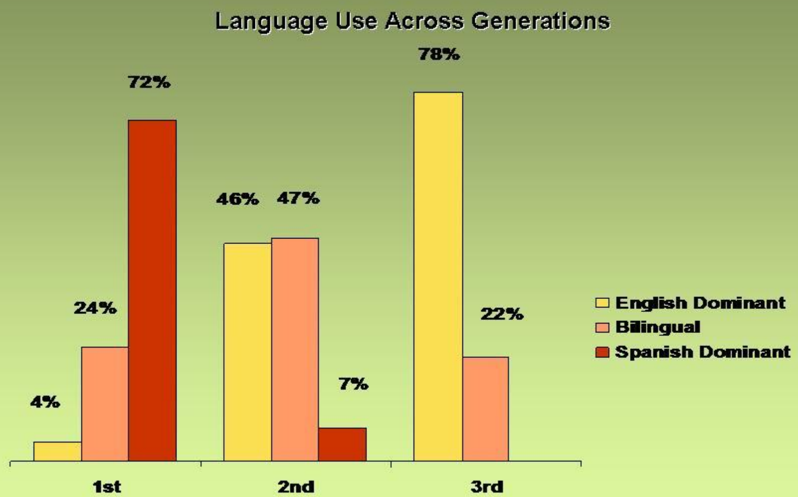

Hispanics Shop More Often for Groceries
Hispanic
All U.S. grocery shoppers
4.6
2.2
Average # of trips for groceries each week
The U.S. Hispanic Grocery Shopper - Food & Marketing Institute 2002 , FMI 2002 Consumer Attitudes & the Supermarket


Hispanics are huge grocery shoppers
Total Weekly Dollars Spent on Groceries
41%
$91.0
$128.5
$131.5
Total US Market*
Acculturated Hispanics
Unacculturated Hispanics


Hispanics Spend More in the Supermarket
$117 vs. $87/week
Produce $408 vs. $208/year
250
200
150
100
50
0
Food @ Home
Eggs
Soup
Salads
Desserts
Baby Foods
Cereal
Bakery
Fruit
Vegetables
Beverages
Simmons, 2003, Geoscape, 2003, U.S. Fresh Produce Industry, Roberta Cook, Food Marketing Institute, 2002


In the Next Fifteen Years, 2nd Generation Will Dominate Growth
45%
28%
27%
25%
47%
28%
1st Generation
2nd Generation
3rd Generation
1970 to 2000
2000 to 2020
Pew Hispanic Center, 2002

The Second Generation Tends to be Either English Dominant or Bilingual



Pew Hispanic Center, 2002 National Survey of Latinos

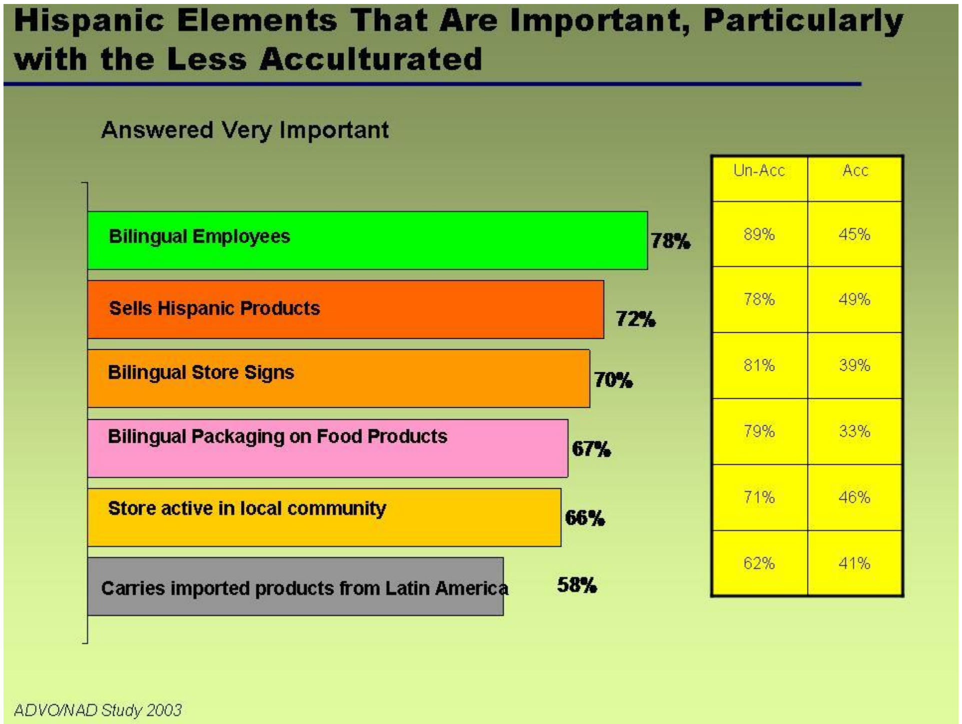
Acculturation Changes How Hispanics Eat

Less Acculturated

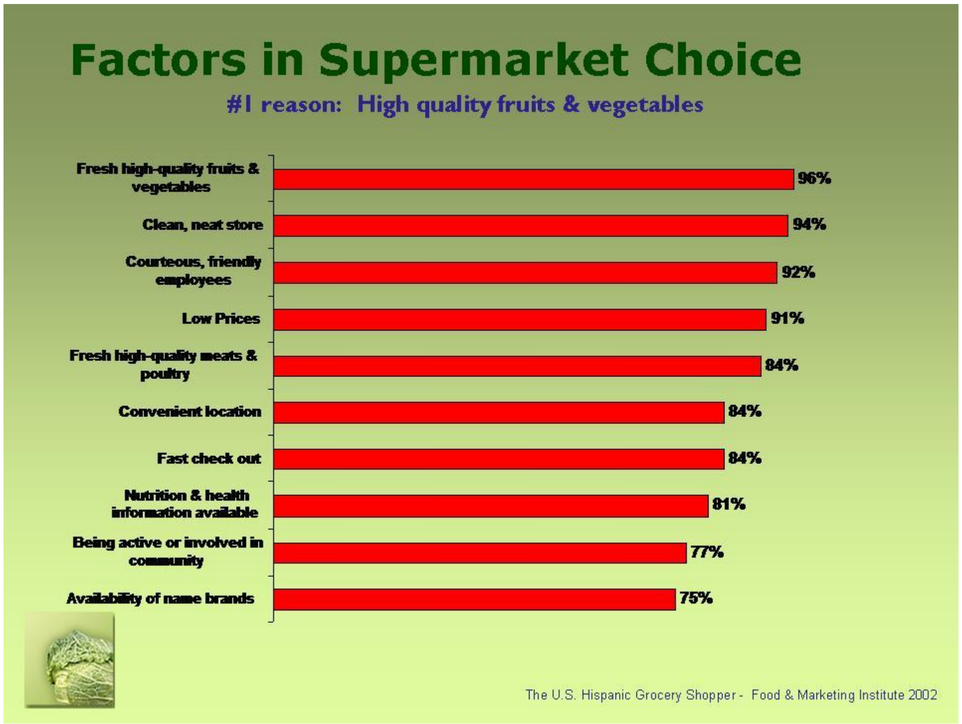
- Traditional dishes
- Cook from scratch daily
- Shopping is social
- Seldom eat out
- Large mental cookbooks

More Acculturated

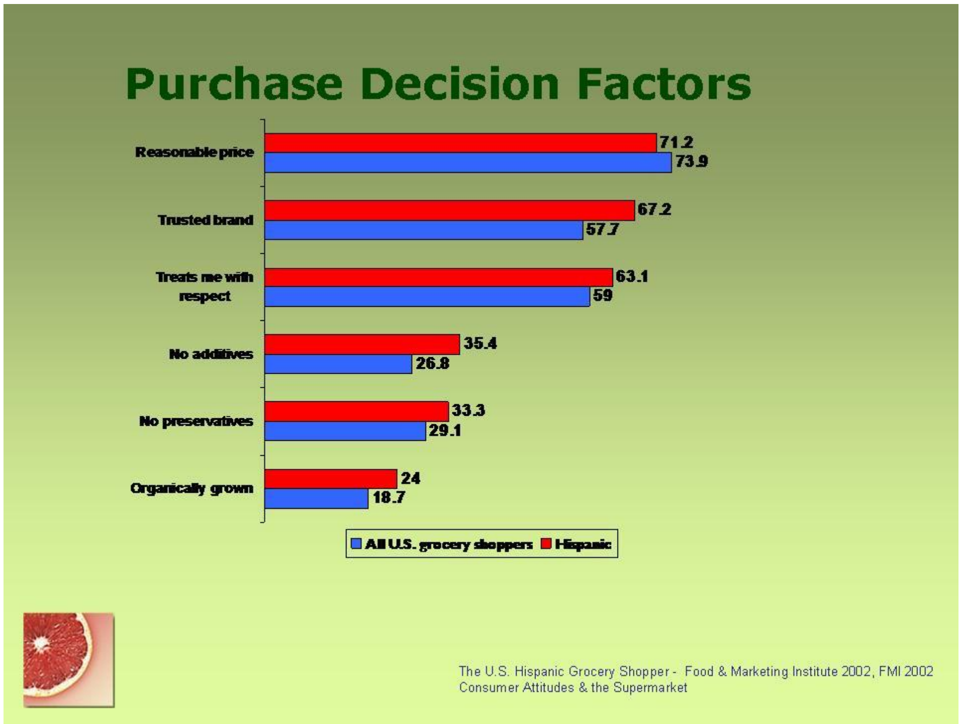
- Traditional + American dishes
- Prepared foods
- Shopping is utilitarian
- Eat out often
- Cookbooks help for special occasions

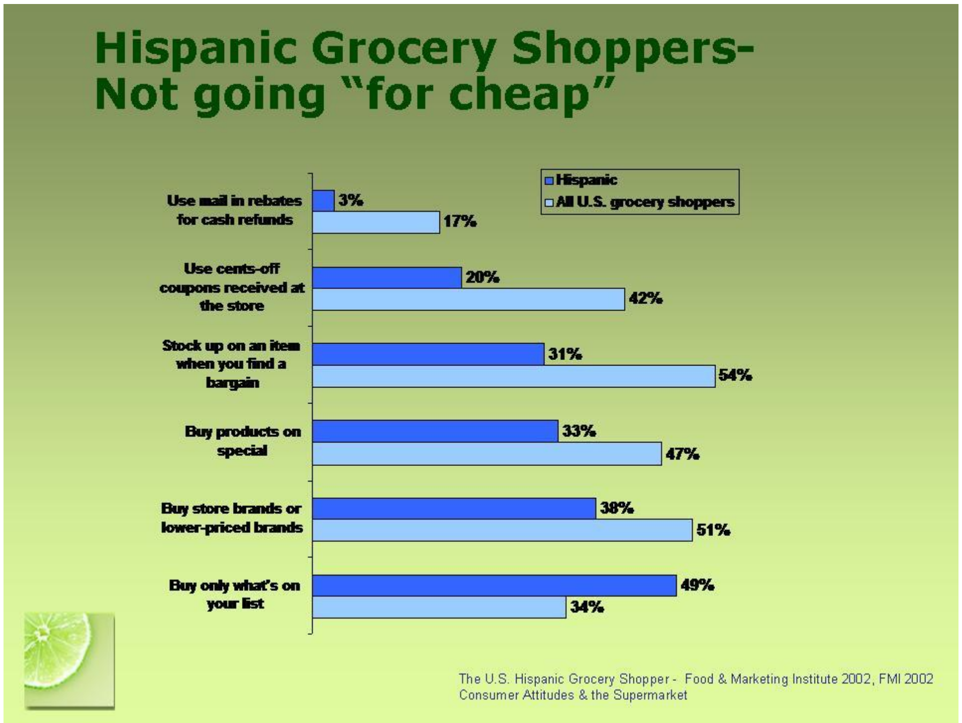


Hispanic Elements That Are Important, Particularly with the Less Acculturated
Answered Very Important
Bilingual Employees
78%
Sells Hispanic Products
72%
Bilingual Store Signs
70%
Bilingual Packaging on Food Products
67%
Store active in local community
66%
Carries imported products from Latin America
58%
Un-Acc
Acc
89%
45%
78%
49%
81%
39%
79%
33%
71%
46%
62%
41%
ADVO/NAD Study 2003



Factors in Supermarket Choice
#1 reason: High quality fruits & vegetables
Fresh high-quality fruits & vegetables
96%
Clean, neat store
94%
Courteous, friendly employees
92%
Low Prices
91%
Fresh high-quality meats & poultry
84%
Convenient location
84%
Fast check out
84%
Nutrition & health information available
81%
Being active or involved in community
77%
Availability of name brands
75%
The U.S. Hispanic Grocery Shopper - Food & Marketing Institute 2002


Purchase Decision Factors
Reasonable price
71.2
73.9
Trusted brand
67.2
57.7
Treats me with respect
63.1
59
No additives
35.4
26.8
No preservatives
33.3
29.1
Organically grown
24
18.7
All U.S. grocery shoppers
Hispanic
The U.S. Hispanic Grocery Shopper - Food & Marketing Institute 2002, FMI 2002
Consumer Attitudes & the Supermarket


Hispanic Grocery Shoppers-
Not going "for cheap"
Hispanic
All U.S. grocery shoppers
Use mail in rebates for cash refunds
3%
17%
Use cents-off coupons received at the store
20%
42%
Stock up on an item when you find a bargain
31%
54%
Buy products on special
33%
47%
Buy store brands or lower-priced brands
38%
51%
Buy only what's on your list
49%
34%
The U.S. Hispanic Grocery Shopper - Food & Marketing Institute 2002, FMI 2002
Consumer Attitudes & the Supermarket


Hispanic Desired Produce from Tropical or Sub-Tropical Climates
Specialty / Exotic Fruit
Loroco (El Salvador) “capers”
Mamey
Sapote
Guanábana
Pummelo
Tamarind
Carambola
Cherimoya
Pitaya (fruit of cactus)
Bananas
Guineo
Macho
Burro
Baby red
Manzano
Niño
Mangos (3 types)
Avocadoes
Oranges
Limes


Hispanic Desired Produce from Temperate Climates
Tomatoes
Onions
Corn
Lettuce
Cilantro
Cucumber
Potatoes
Watermelon
Garlic
Onion
Chiles
Jalapeño
Habanero
De árbol
Ancho
Serrano
Squashes
Chayote
Mexican
Kabocha
Legumes (beans)
Frijoles blancos o negros (white or black)
Habichuelas
Fabadas
Gandules

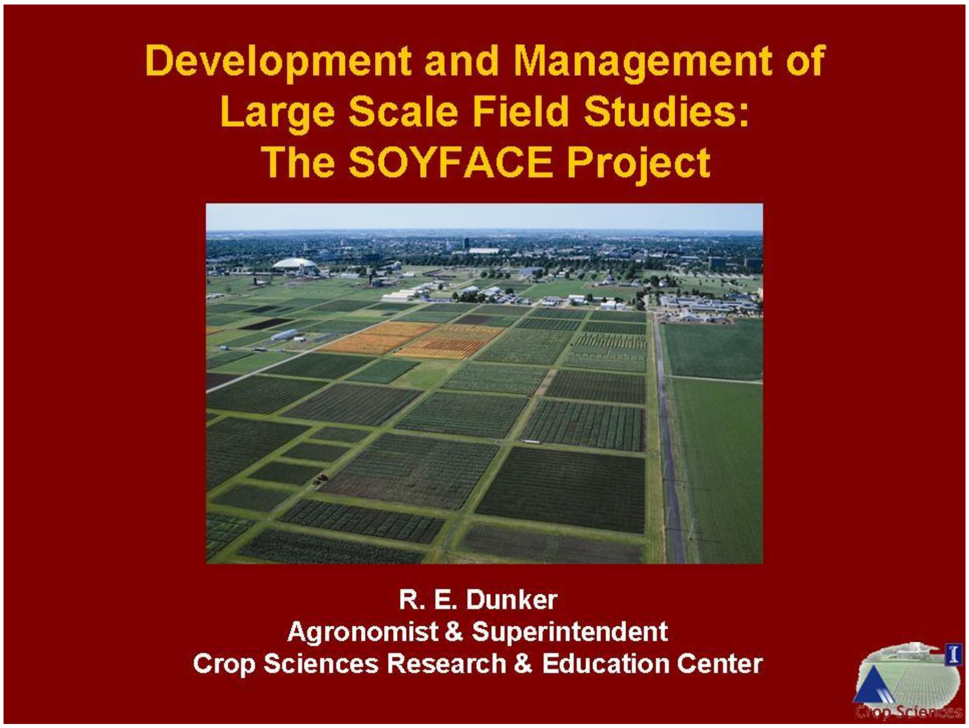
Thank You

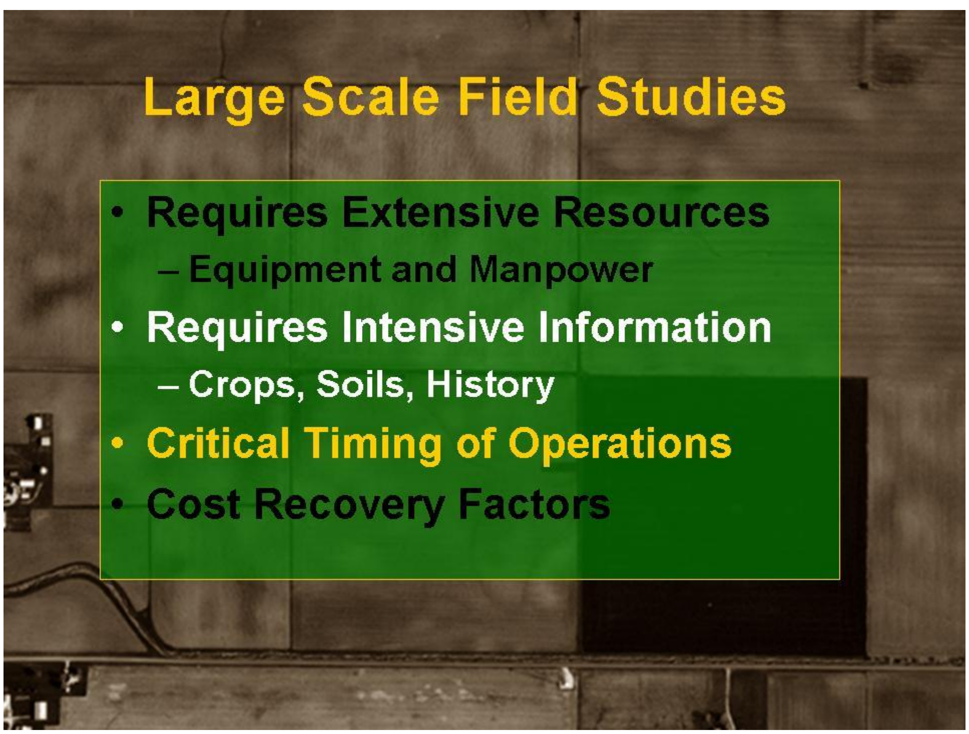
¿Questions?
¿Preguntas?

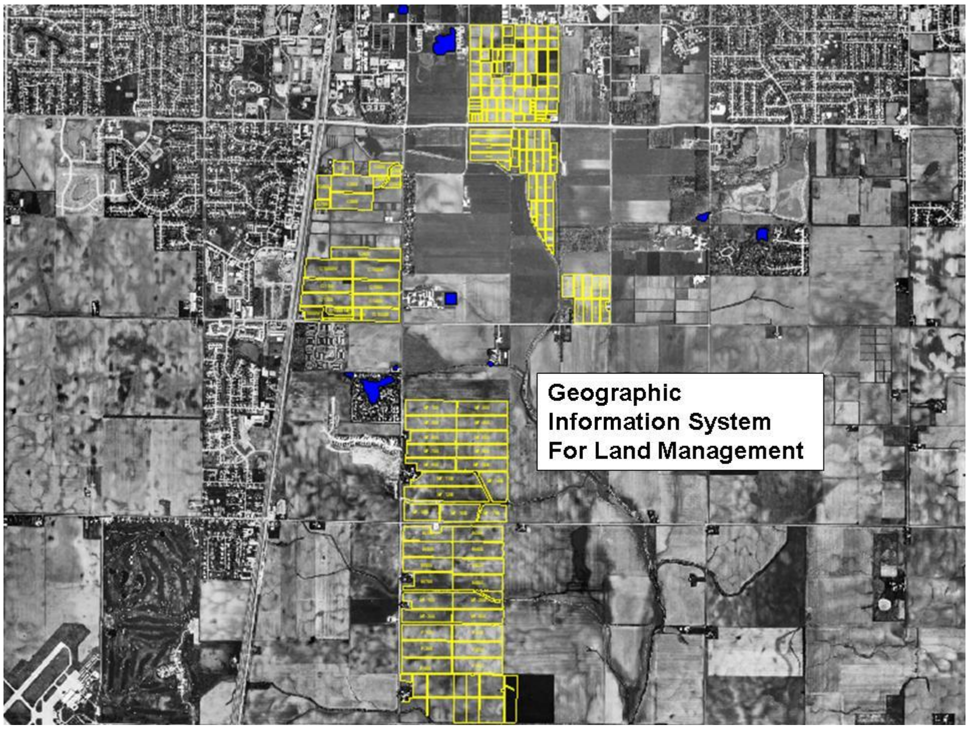
www.lane-ag.org

'Development and Management of a Large Scale Field Study: The SOYFACE Project'

Dr. Robert Dunker, Agronomist and Superintendent
University of Illinois Crop Sciences Research and Education Center
Urbana, Illinois

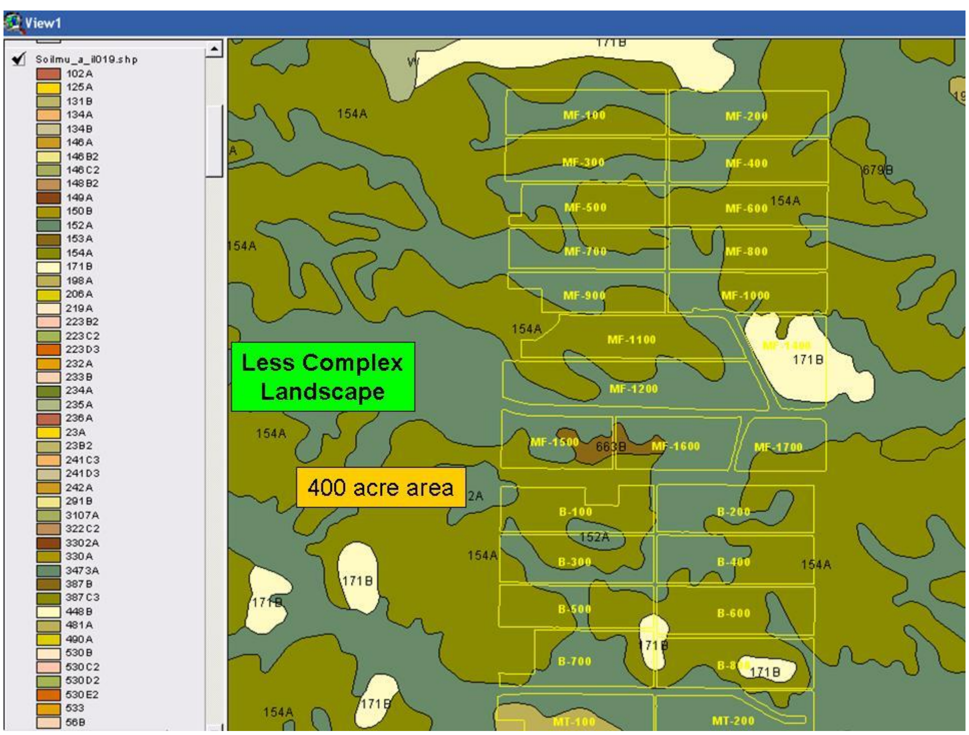




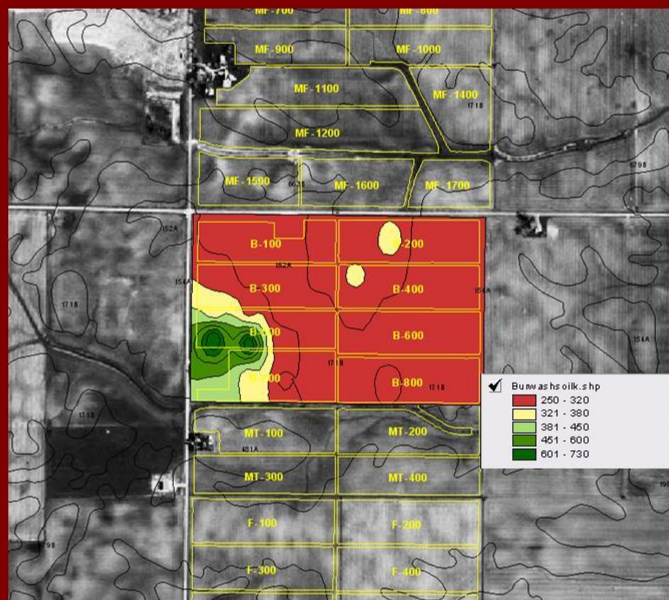

Geographic
Information System
For Land Management


Soil
Resources
Crop Sciences

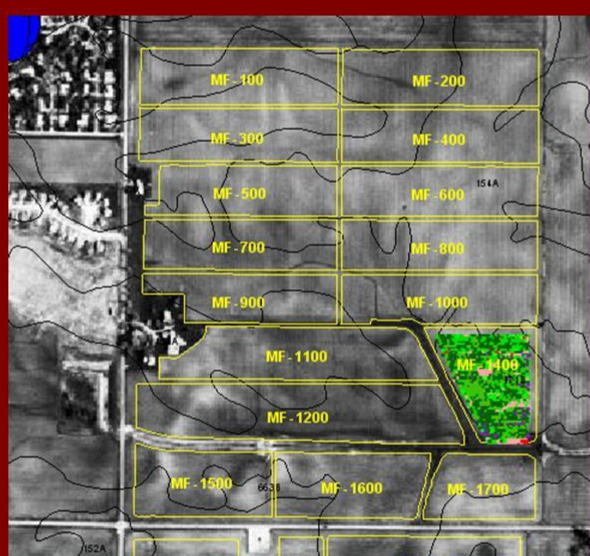

View1
Complex Landscapes -
Confounding factor in
large scale studies


View1
Less Complex
Landscape
400 acre area

Geo-Referenced Soil Tests

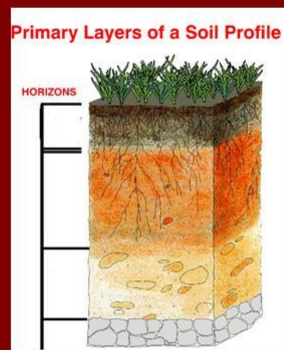


Geo-Referenced Yield Data



Soil Database

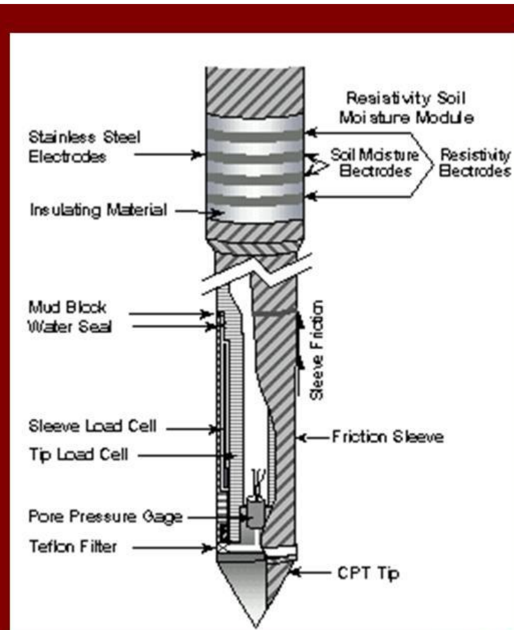
- Penetrometer Data
  - Tip Stress, Sleeve Stress, Soil Resistivity, Vol. Moisture
- Soil Fertility
  - GPS Grid Samples
- Soil Properties
  - Particle size (texture)
  - Clay mineralogy
- Topography
  - Terrain Elevation Mapping



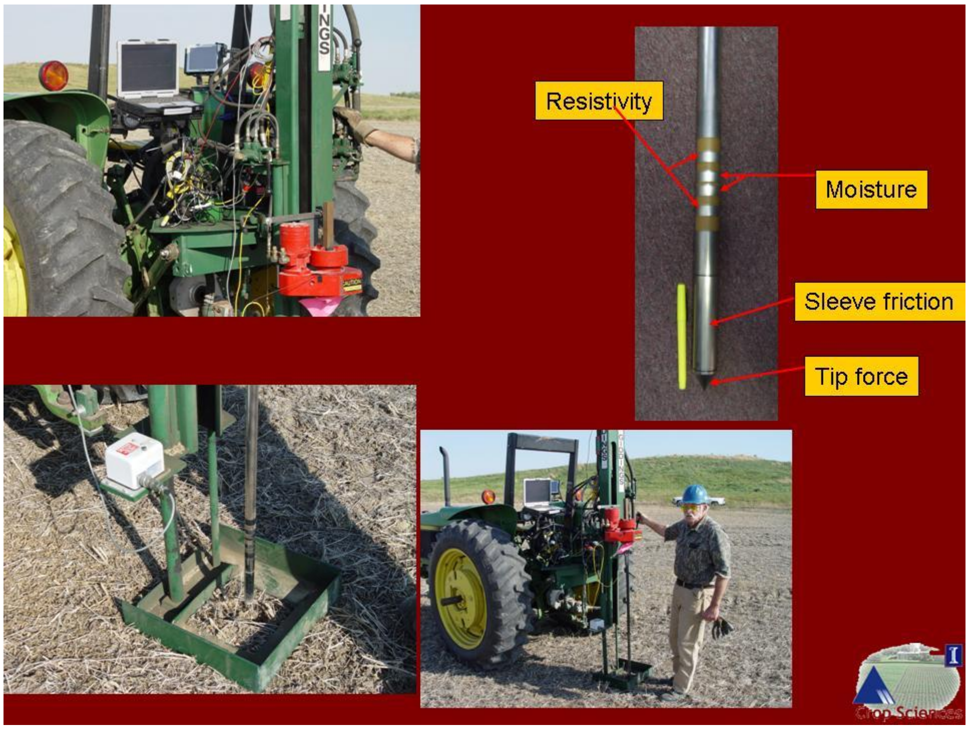
Digital Penetrometer Technology

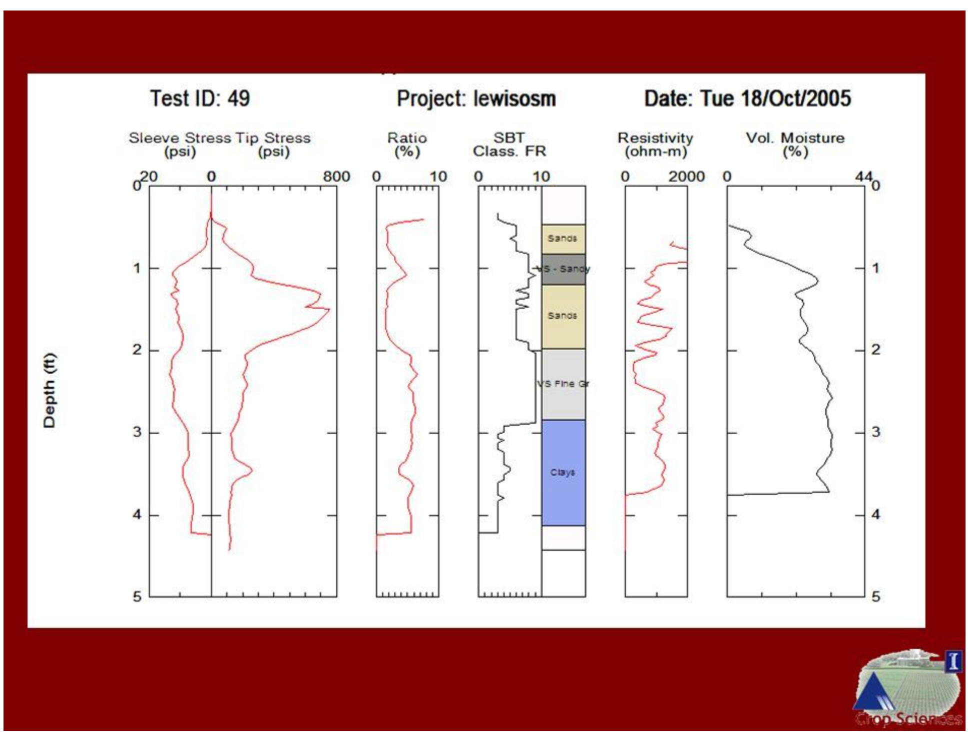
ASTM**

- 60^0Tip angle
- 2 cm/sec
- Tip force
- Sleeve friction
- Soil resistivity
- Soil moisture

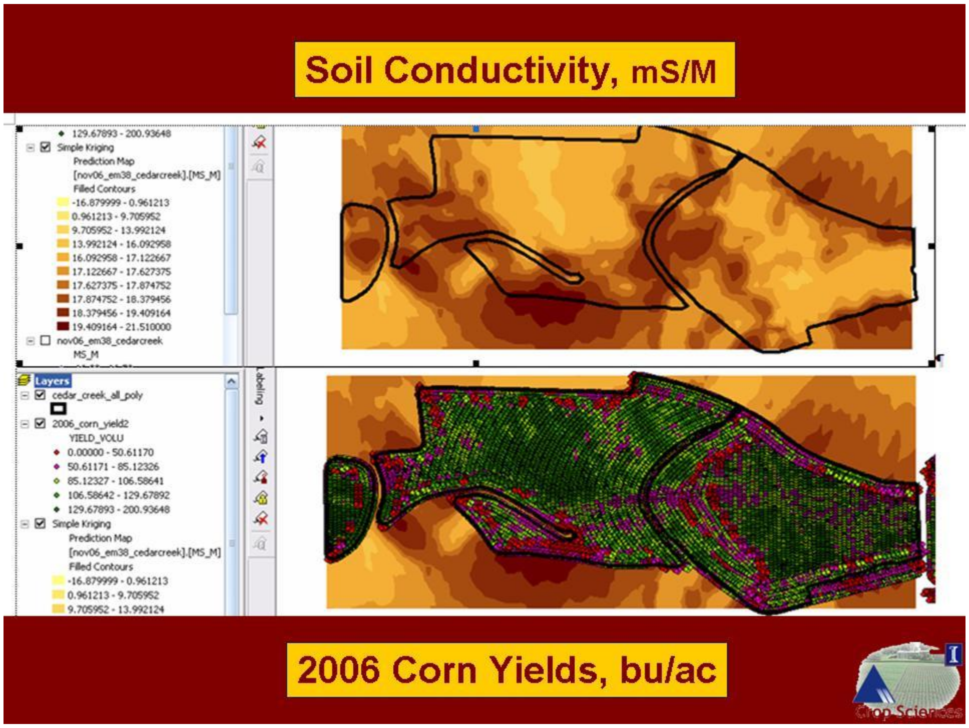


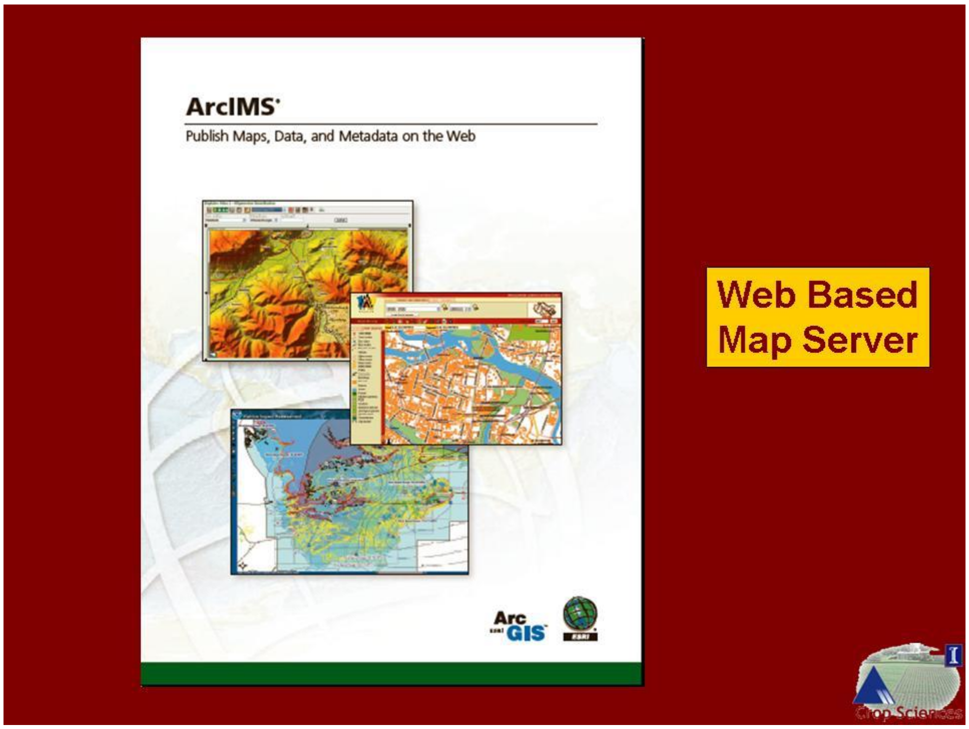
**American Society of Testing and Materials

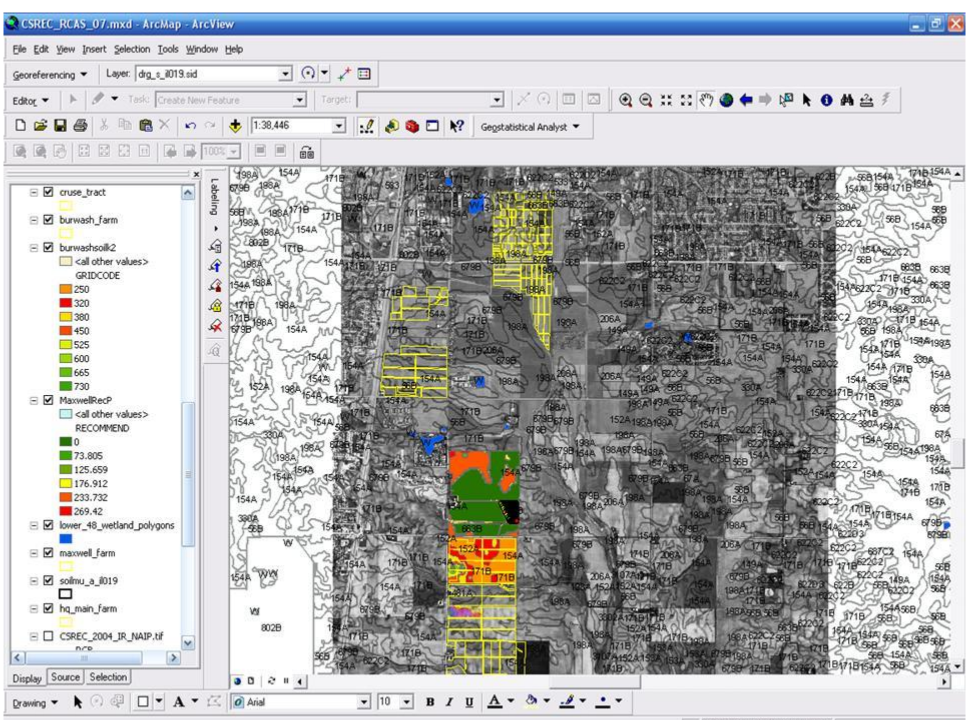

Resistivity
Moisture
Sleeve friction
Tip force
Crop Sciences

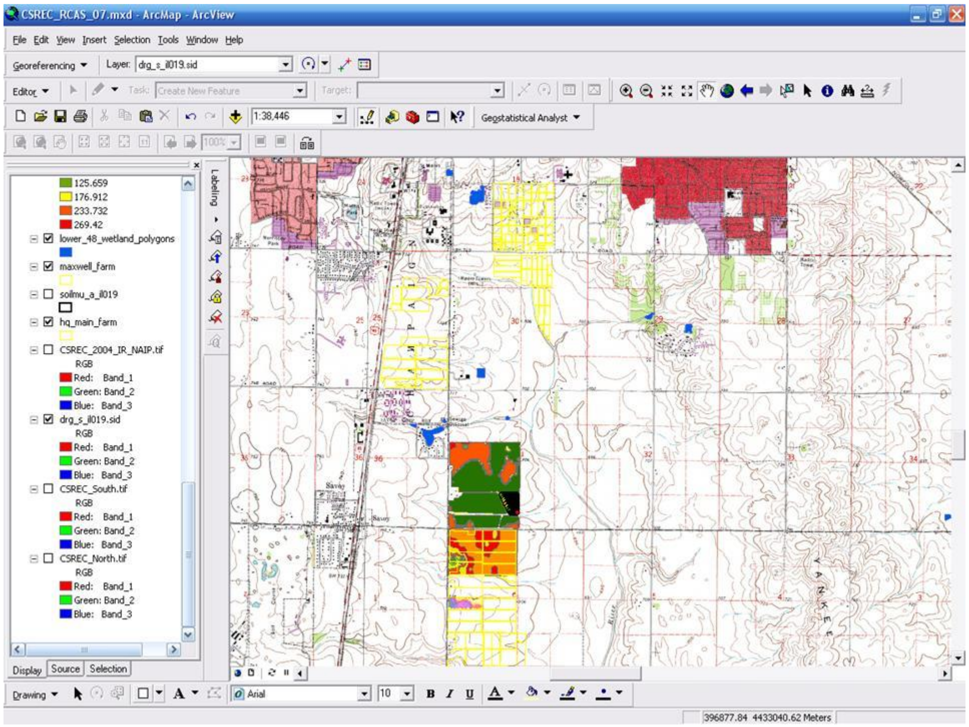

Test ID: 49
Project: lewisosm
Date: Tue 18/Oct/2005
Sleeve Stress (psi)
Tip Stress (psi)
Ratio (%)
SBT Class. FR
Resistivity (ohm-m)
Vol. Moisture (%)
Depth (ft)
Sands
Clays
Crop Sciences

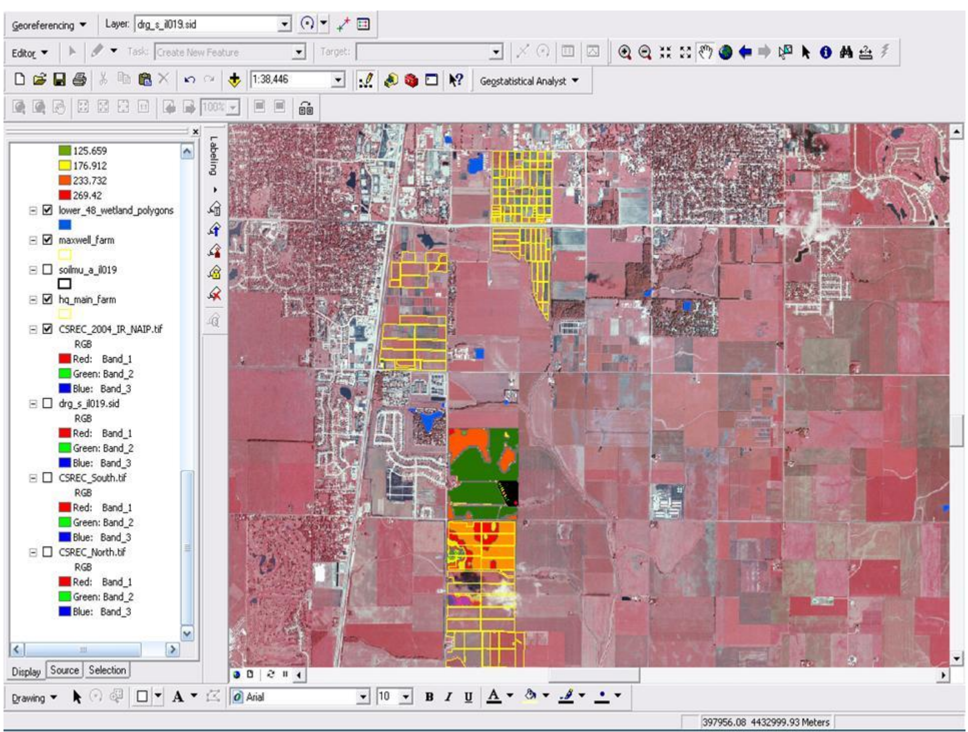

Soil
Conductivity
Geonics EM-38

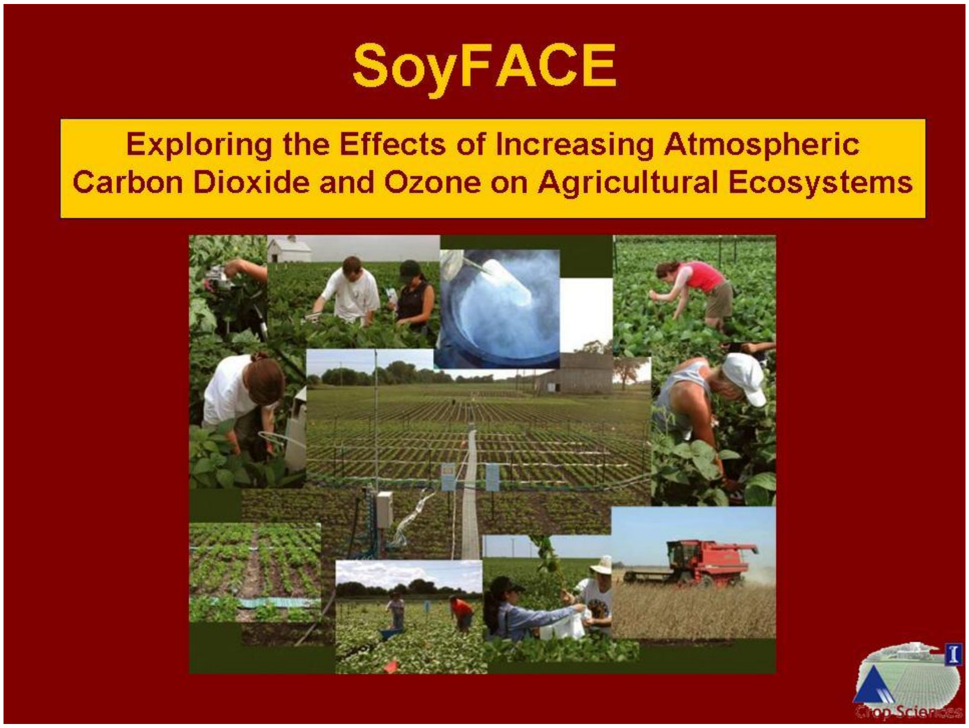

Soil Conductivity, mS/M
2006 Corn Yields, bu/ac

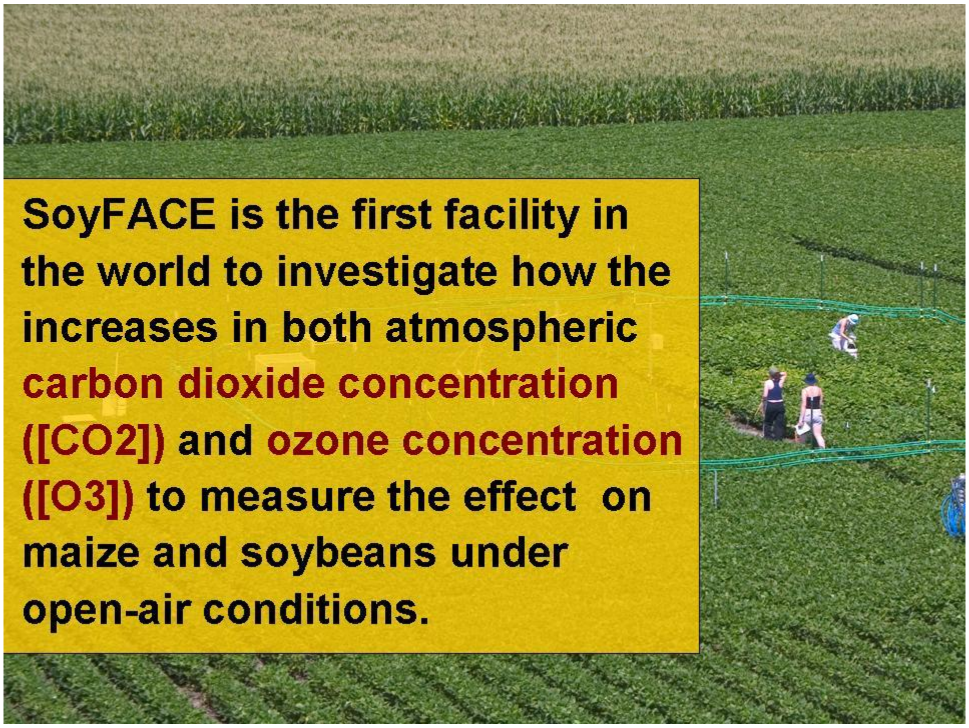

ArcIMS
Publish Maps, Data, and Metadata on the Web
Web Based
Map Server

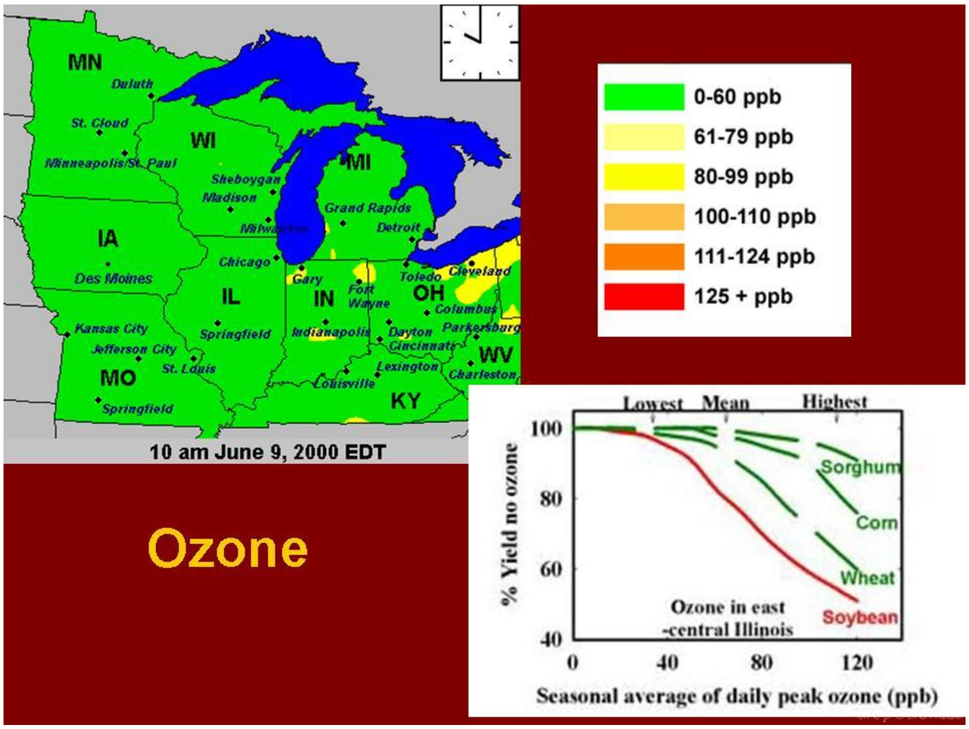

CSREC_RCAS_07.mxd - ArcMap - ArcView

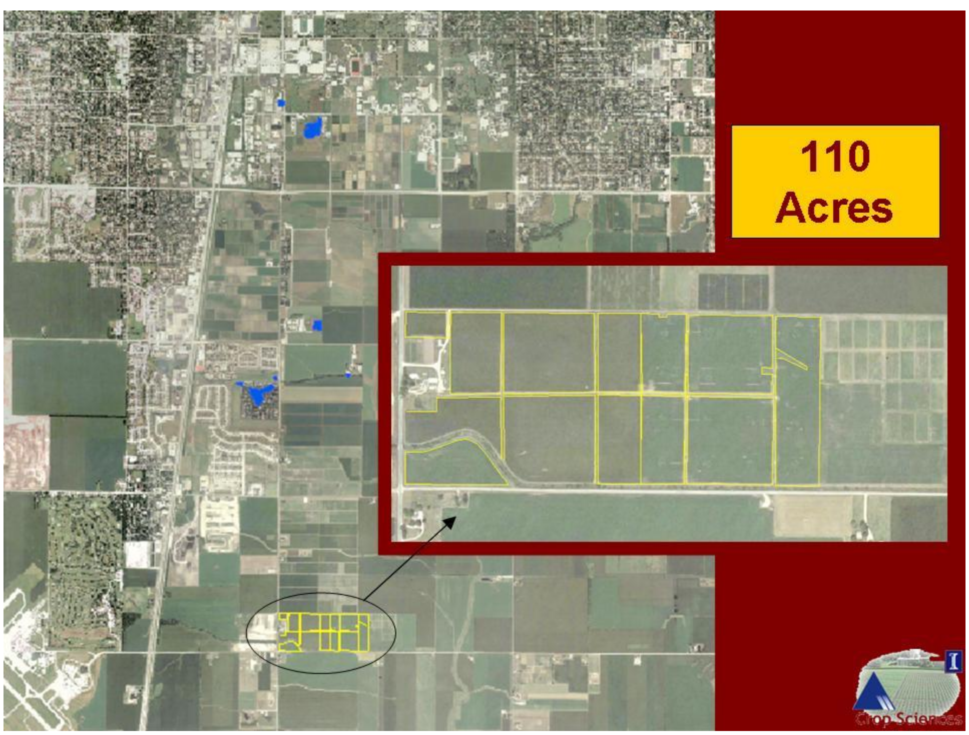


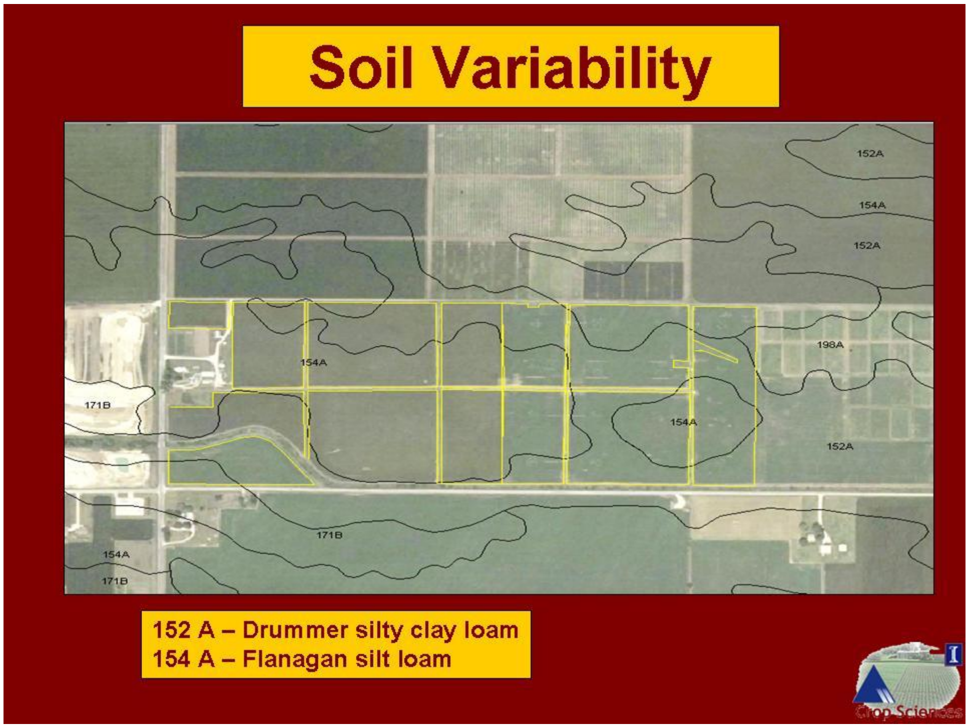


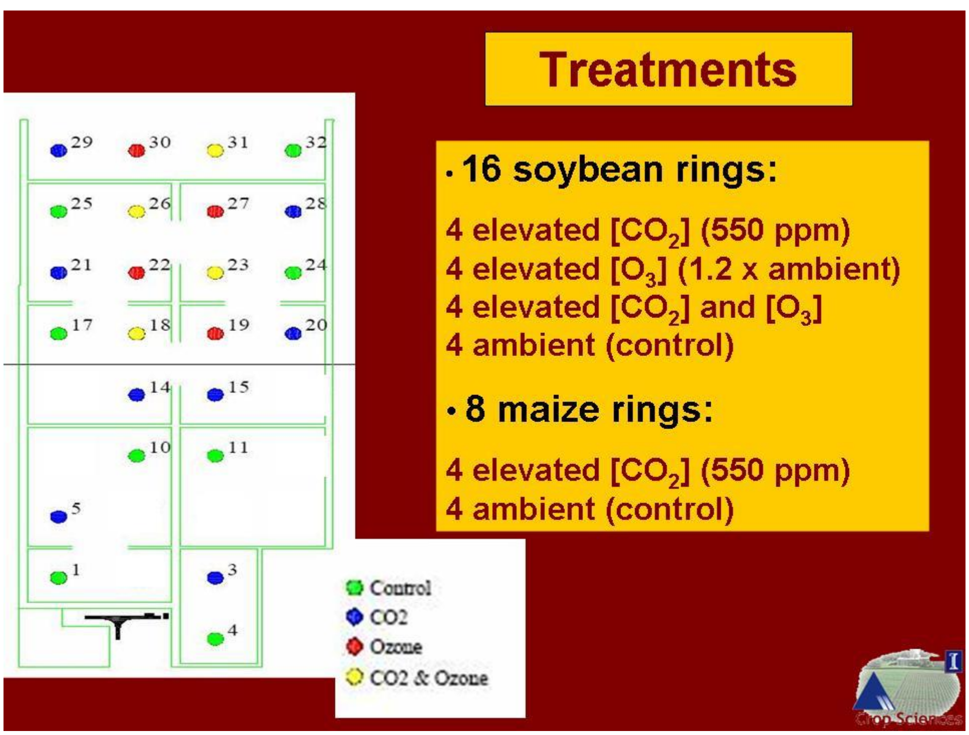

SoyFACE
Exploring the Effects of Increasing Atmospheric Carbon Dioxide and Ozone on Agricultural Ecosystems
Crop Sciences

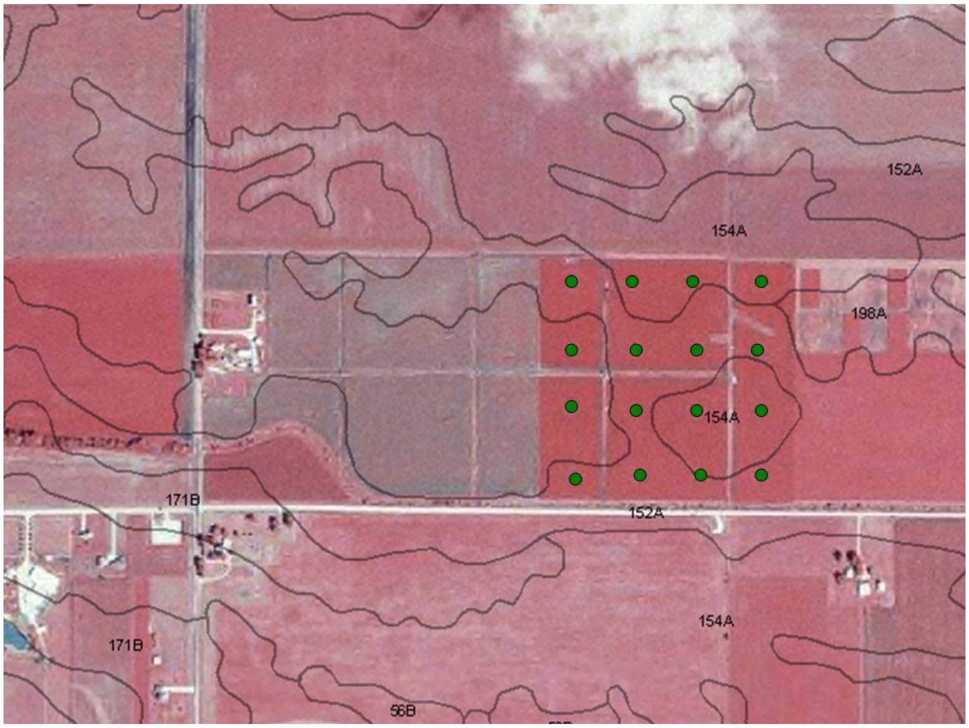

SoyFACE is the first facility in the world to investigate how the increases in both atmospheric carbon dioxide concentration ([CO2]) and ozone concentration ([O3]) to measure the effect on maize and soybeans under open-air conditions.

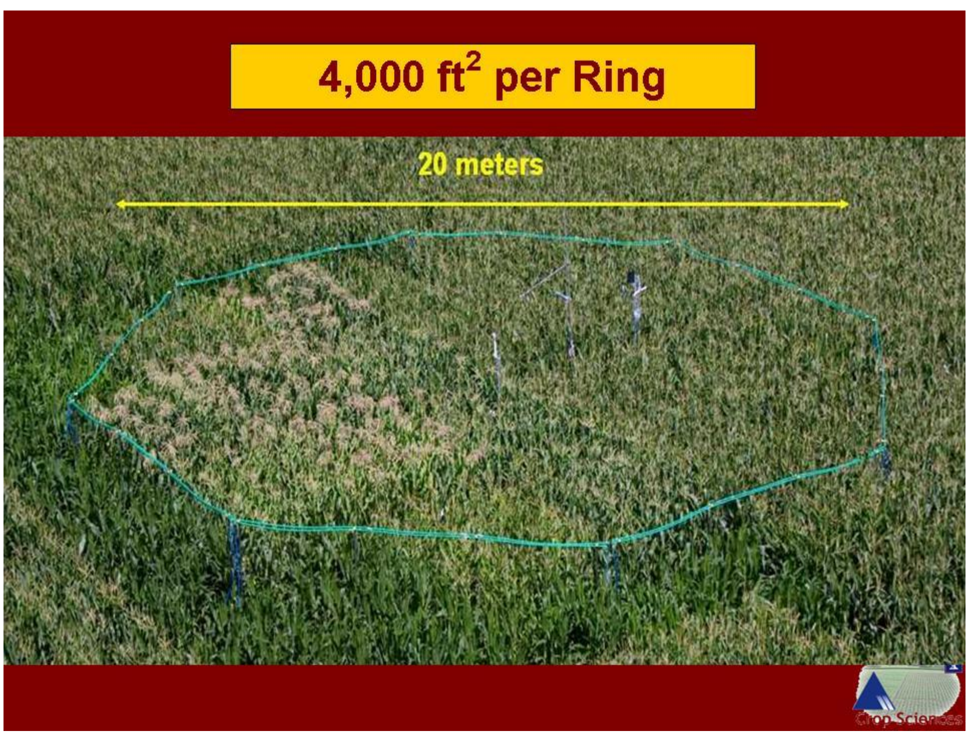

MN
Duluth
St. Cloud
Minneapolis/St. Paul
WI
MI
Sheboygan
Madison
Milwaukee
Grand Rapids
Detroit
IA
Des Moines
Chicago
Gary
Toledo
Cleveland
IL
IN
Fort Wayne
OH
Columbus
Kansas City
Springfield
Indianapolis
Dayton
Parkersburg
Jefferson City
Cincinnati
WV
St. Louis
Lexington
Charleston
MO
Louisville
KY
Springfield
10 am June 9, 2000 EDT
0-60 ppb
61-79 ppb
80-99 ppb
100-110 ppb
111-124 ppb
125 + ppb
Ozone
Lowest
Mean
Highest
% Yield no ozone
100
80
60
40
Sorghum
Corn
Wheat
Soybean
Ozone in east -central Illinois
0
40
80
120
Seasonal average of daily peak ozone (ppb)

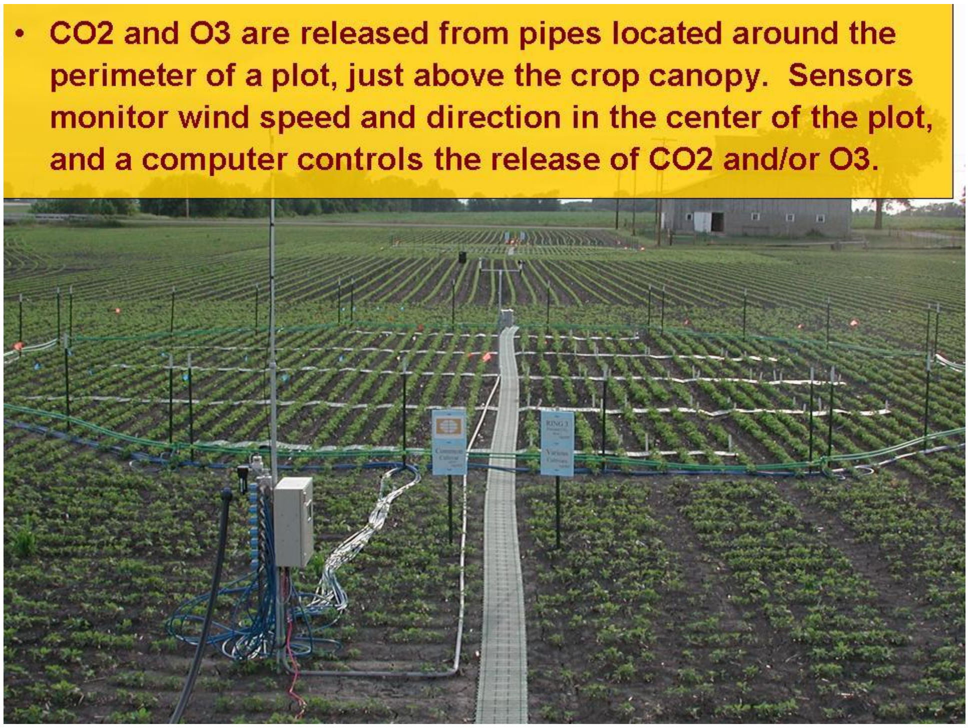

110 Acres
Crop Sciences


Soil Variability
152A
154A
152A
198A
154A
171B
154A
152A
171B
154A
171B
152 A – Drummer silty clay loam
154 A – Flanagan silt loam
Crop Sciences


Treatments
• 16 soybean rings:
4 elevated [CO_2] (550 ppm)
4 elevated [O_3] (1.2 x ambient)
4 elevated [CO_2] and [O_3]
4 ambient (control)
• 8 maize rings:
4 elevated [CO_2] (550 ppm)
4 ambient (control)
Control
CO2
Ozone
CO2 & Ozone
Crop Sciences

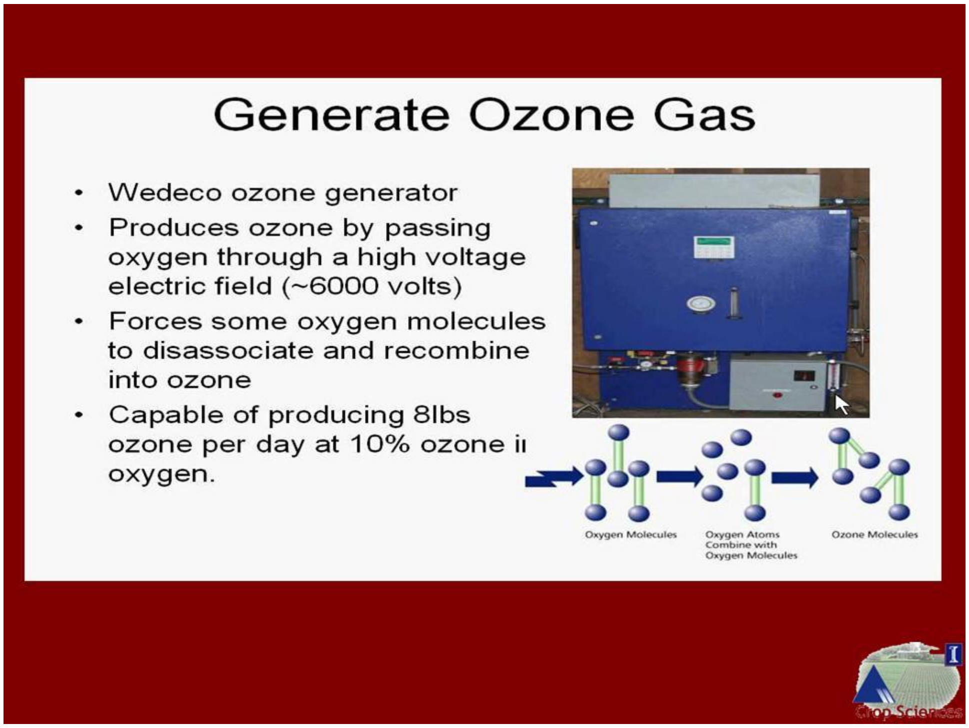

152A
154A
198A
154A
171B
152A
154A
171B
56B

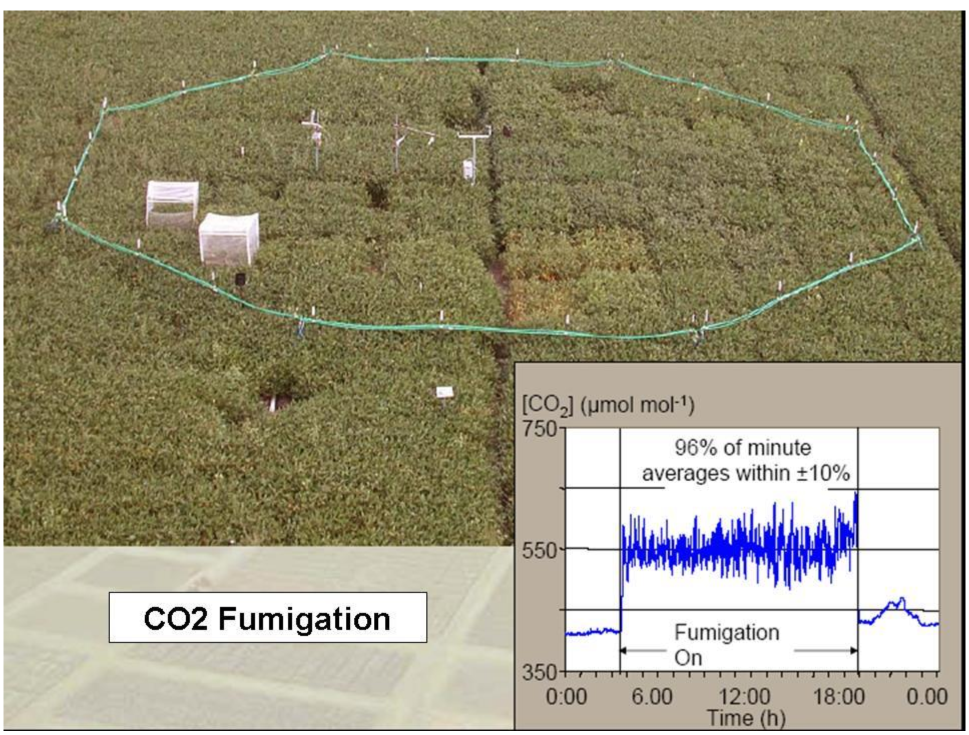

4,000 ft^2 per Ring
20 meters
Crop Sciences

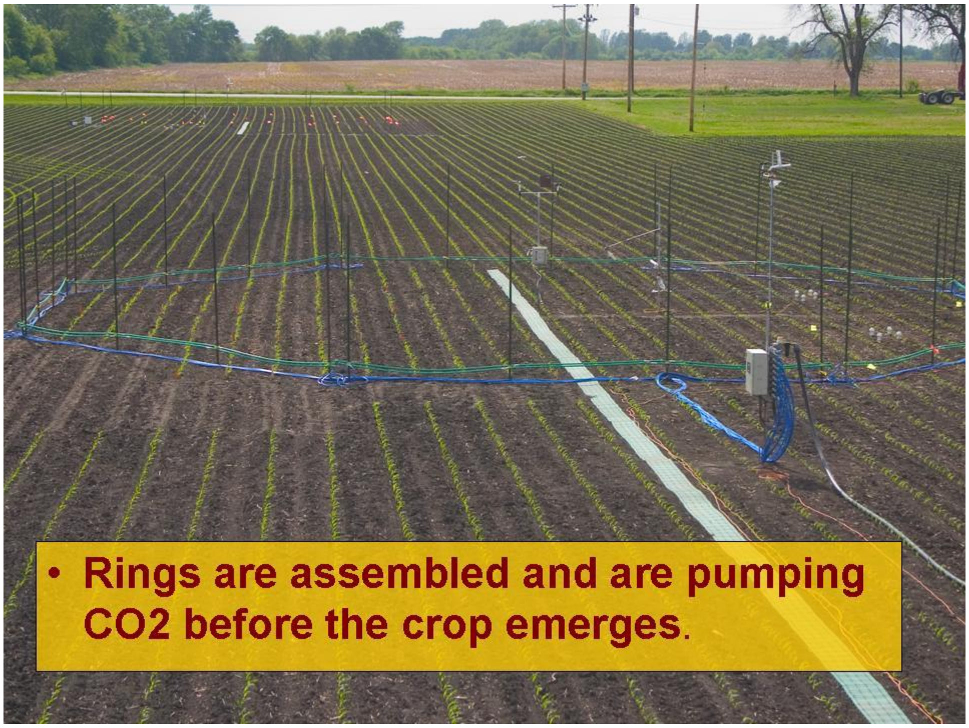


How Do We Fumigate

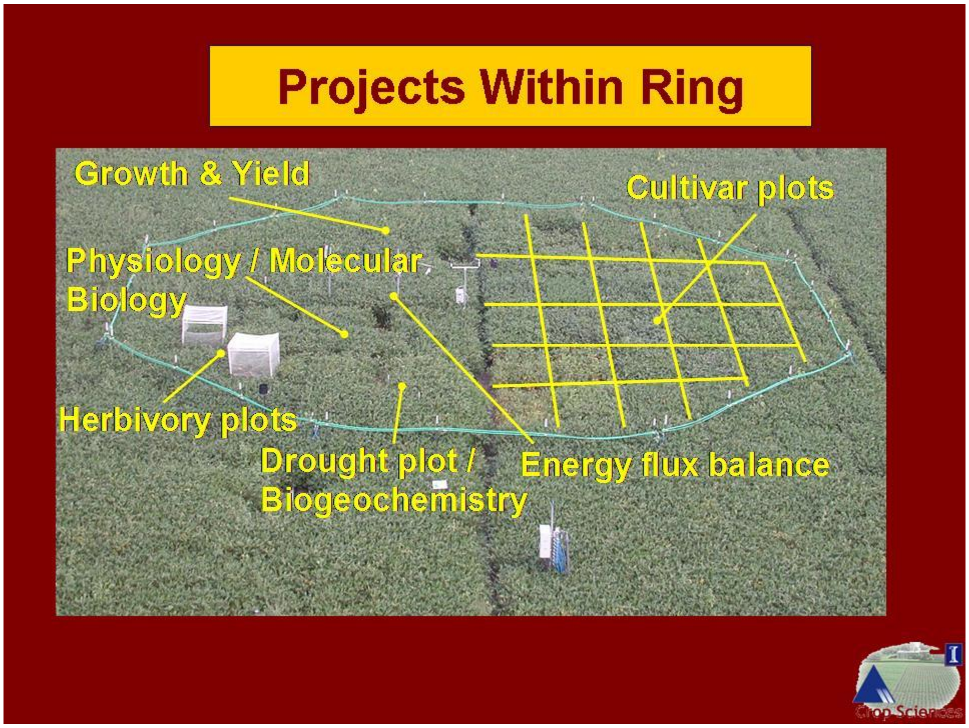
- CO_2 – Daylight Hours-550 ppm CO_2 target
- Ozone
  - Daylight Hours
  - Dry plant canopy
    - Wait until dew burns off in the morning
    - Shut down during rain
  - Average wind speed > 0.5 m/s
  - **Target is ambient + 50%**


Generate Ozone Gas
• Wedeco ozone generator
• Produces ozone by passing oxygen through a high voltage electric field (~6000 volts)
• Forces some oxygen molecules to disassociate and recombine into ozone
• Capable of producing 8lbs ozone per day at 10% ozone in oxygen.
Oxygen Molecules
Oxygen Atoms Combine with Oxygen Molecules
Ozone Molecules

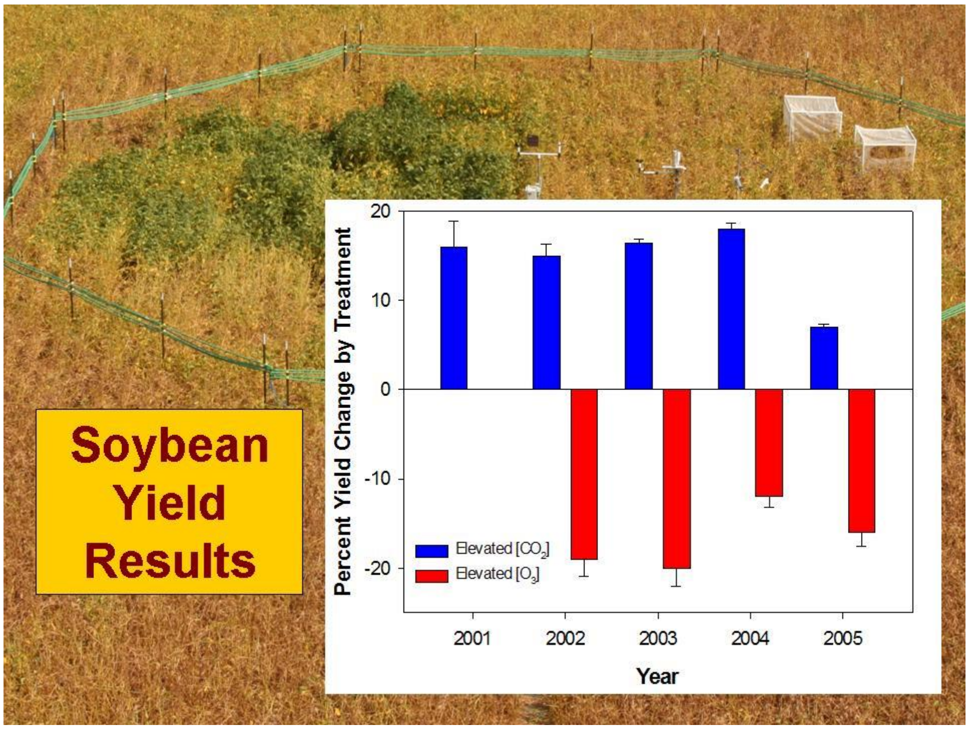

CO2 Fumigation
[CO2] (µmol mol-1)
750
550
350
96% of minute averages within ±10%
Fumigation On
0:00
6.00
12:00
18:00
0.00
Time (h)

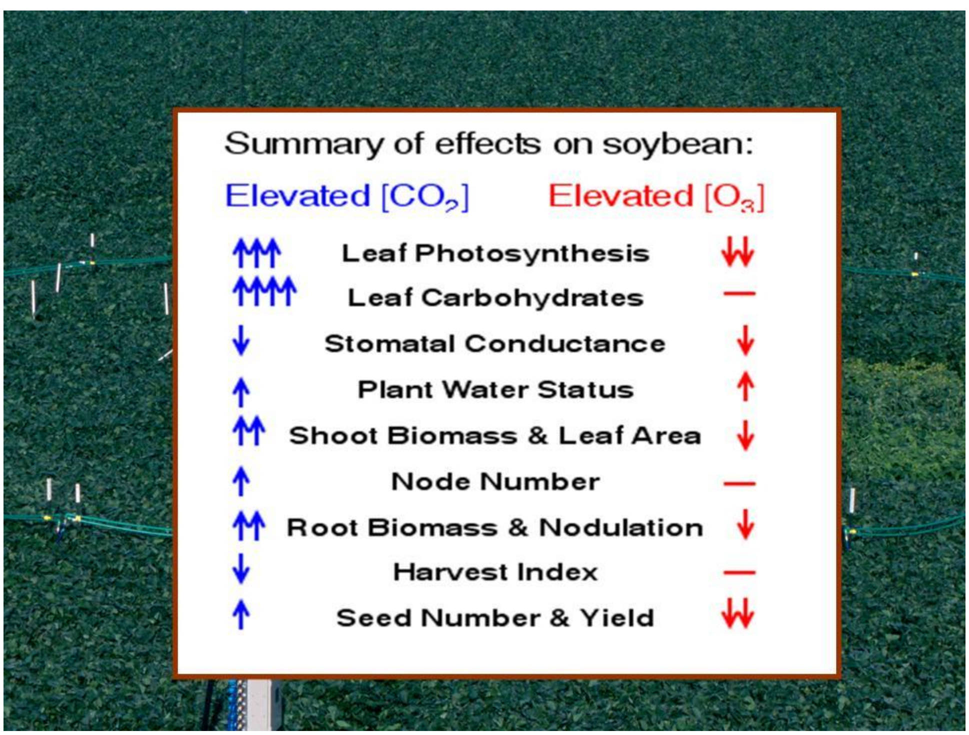


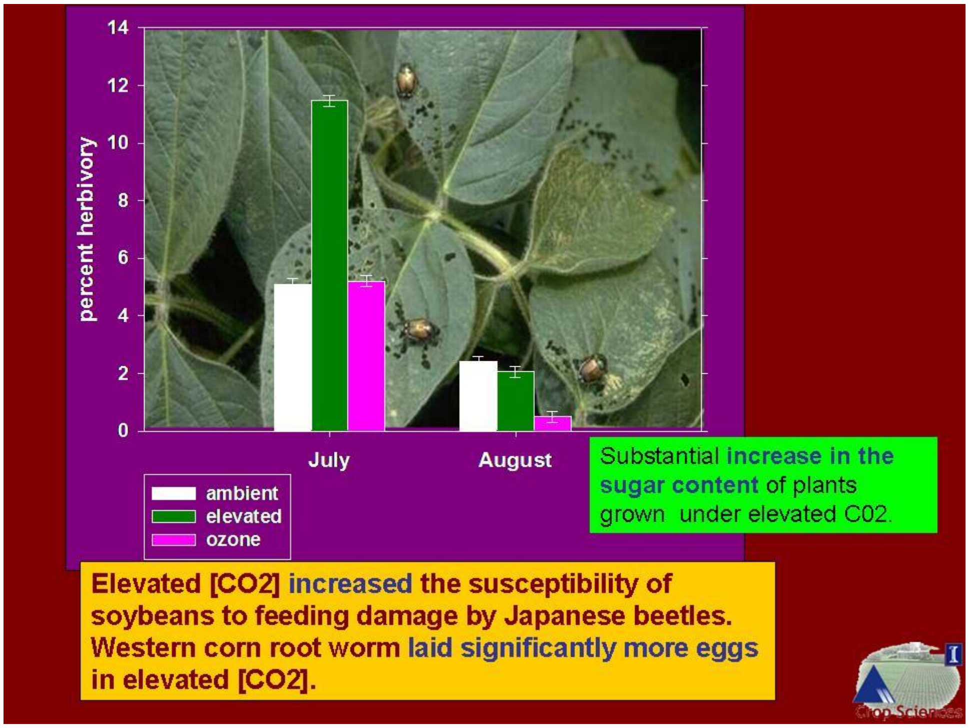
• Rings are assembled and are pumping CO2 before the crop emerges.



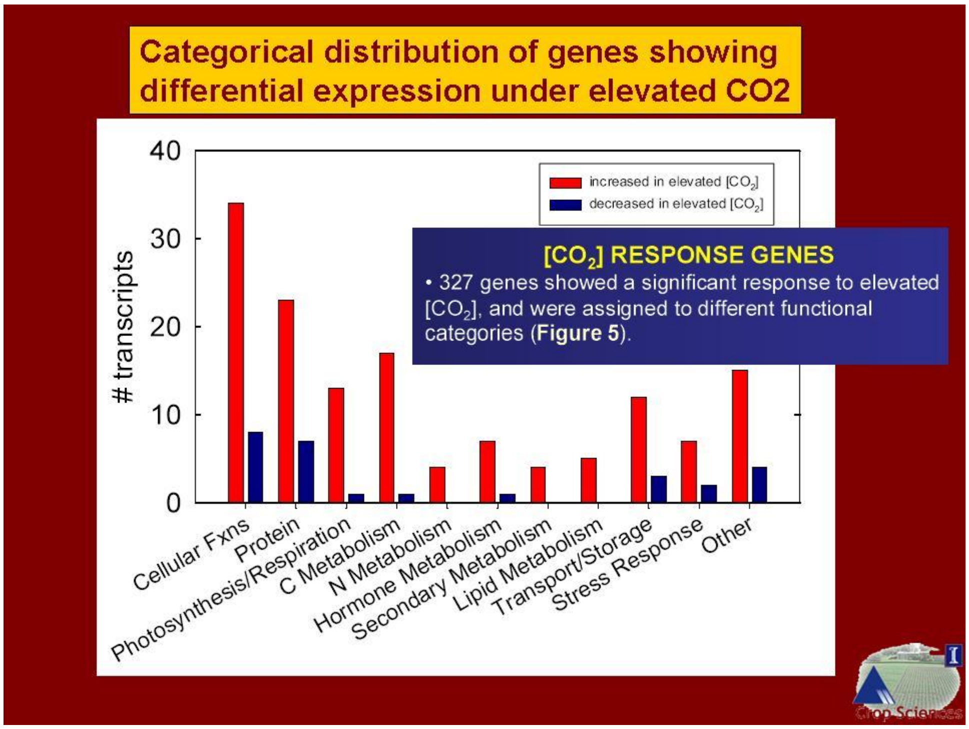
Projects Within Ring
Growth & Yield
Cultivar plots
Physiology / Molecular Biology
Herbivory plots
Drought plot / Biogeochemistry
Energy flux balance

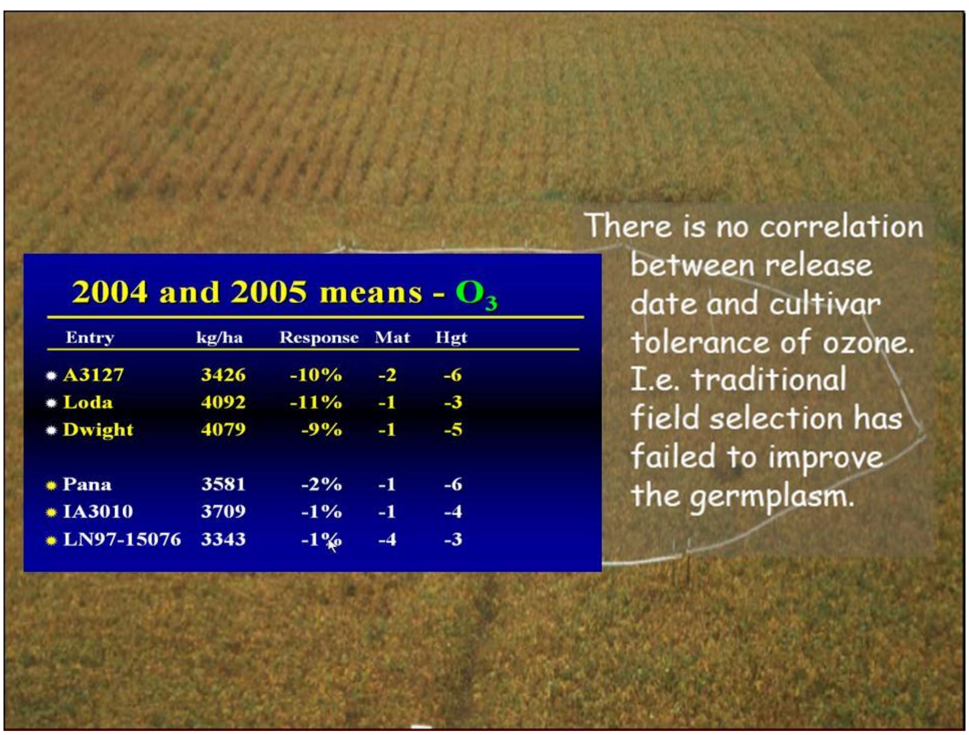

Soybean
Yield
Results
Percent Yield Change by Treatment
20
10
0
-10
-20
Elevated [CO2]
Elevated [O3]
2001
2002
2003
2004
2005
Year

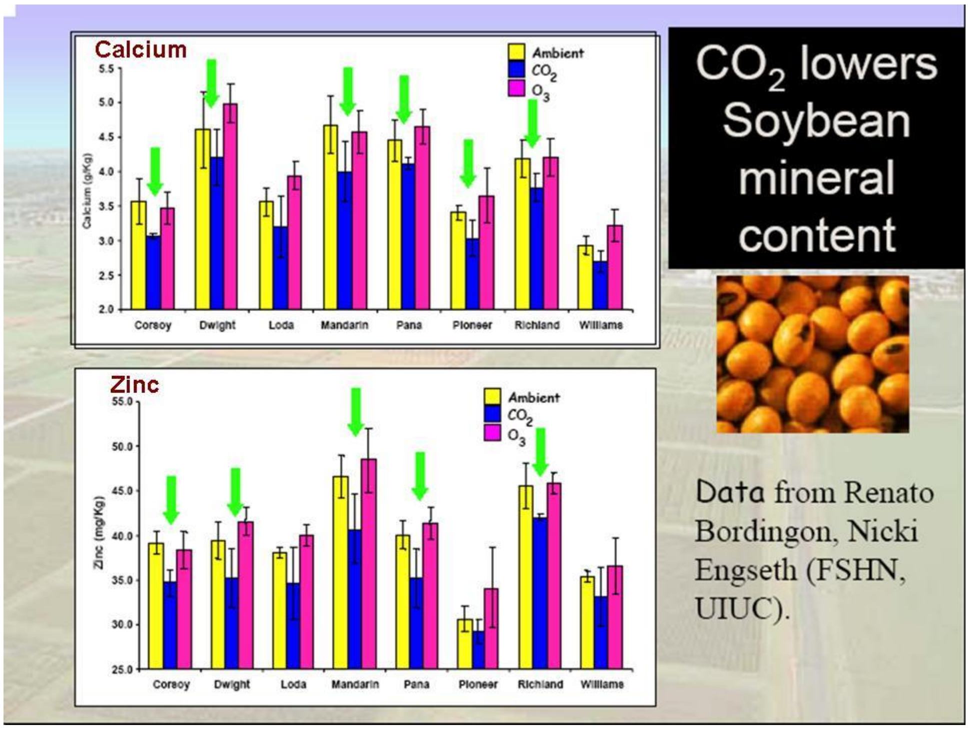

Summary of effects on soybean:
Elevated [CO2]
Elevated [O3]
Leaf Photosynthesis
Leaf Carbohydrates
Stomatal Conductance
Plant Water Status
Shoot Biomass & Leaf Area
Node Number
Root Biomass & Nodulation
Harvest Index
Seed Number & Yield

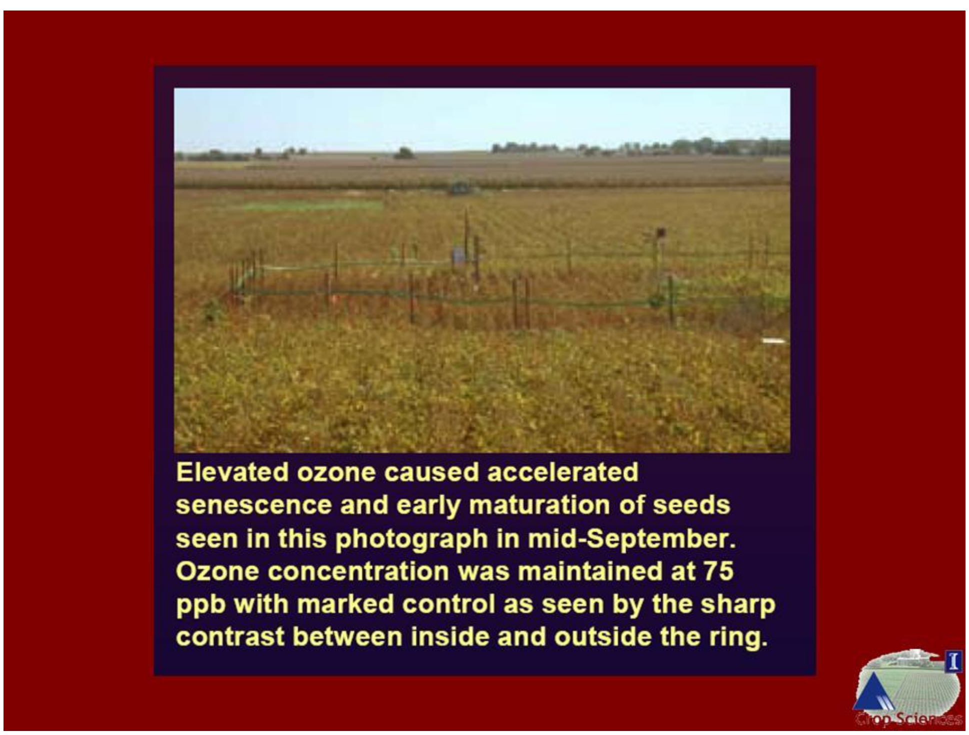

14
12
10
8
6
4
2
0
percent herbivory
July
August
ambient
elevated
ozone
Substantial increase in the sugar content of plants grown under elevated C02.
Elevated [CO2] increased the susceptibility of soybeans to feeding damage by Japanese beetles. Western corn root worm laid significantly more eggs in elevated [CO2].
Crop Sciences

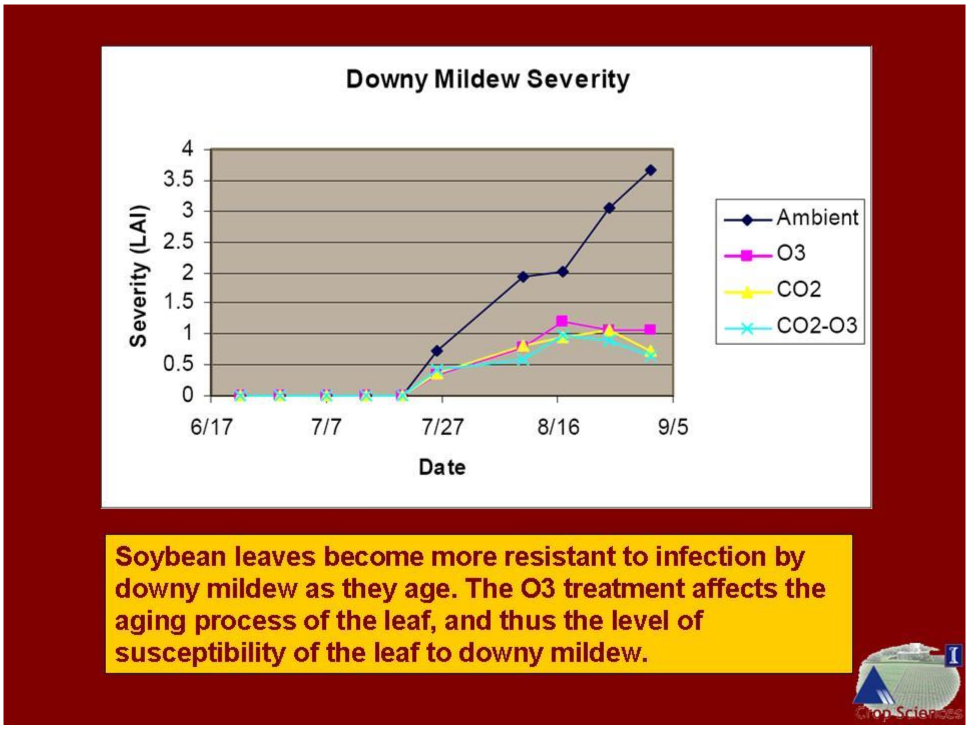

Ambient
Elevated [CO_2]
Leaf curling
No leaf curling
Leaf curling in the early season was an indicator of sustained water stress under ambient conditions but not elevated [CO_2]
Crop Sciences

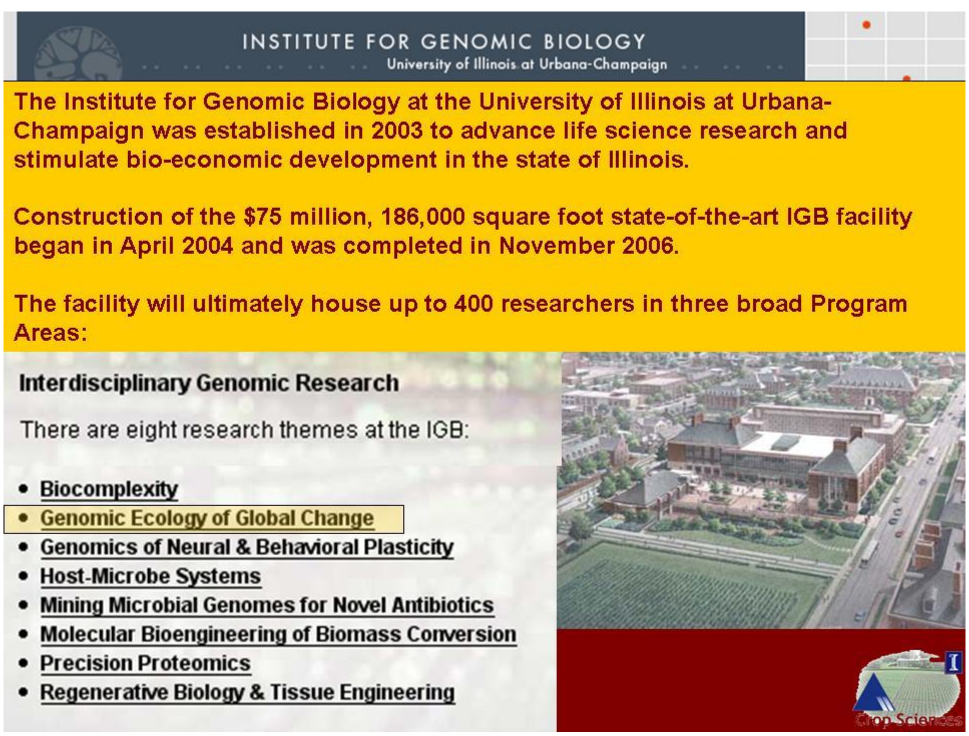

Categorical distribution of genes showing differential expression under elevated CO2
transcripts
40
30
20
10
0
increased in elevated [CO2]
decreased in elevated [CO2]
[CO2] RESPONSE GENES
• 327 genes showed a significant response to elevated [CO2], and were assigned to different functional categories (Figure 5).
Cellular Fxns
Protein
Photosynthesis/Respiration
C Metabolism
N Metabolism
Hormone Metabolism
Secondary Metabolism
Lipid Metabolism
Transport/Storage
Stress Response
Other
Crop Sciences


2004 and 2005 means - O3
Entry kg/ha Response Mat Hgt
A3127 3426 -10% -2 -6
Loda 4092 -11% -1 -3
Dwight 4079 -9% -1 -5
Pana 3581 -2% -1 -6
IA3010 3709 -1% -1 -4
LN97-15076 3343 -1% -4 -3
There is no correlation between release date and cultivar tolerance of ozone. I.e. traditional field selection has failed to improve the germplasm.


Calcium
Calcium (g/Kg)
Ambient
CO_2
O_3
Corsoy
Dwight
Loda
Mandarin
Pana
Pioneer
Richland
Williams
Zinc
Zinc (mg/Kg)
Ambient
CO_2
O_3
Corsoy
Dwight
Loda
Mandarin
Pana
Pioneer
Richland
Williams
CO_2 lowers Soybean mineral content
Data from Renato Bordingon, Nicki Engseth (FSHN, UIUC).


Elevated ozone caused accelerated senescence and early maturation of seeds seen in this photograph in mid-September. Ozone concentration was maintained at 75 ppb with marked control as seen by the sharp contrast between inside and outside the ring.
Crop Sciences


Downy Mildew Severity
Severity (LAI)
4
3.5
3
2.5
2
1.5
1
0.5
0
6/17
7/7
7/27
8/16
9/5
Date
Ambient
O3
CO2
CO2-O3
Soybean leaves become more resistant to infection by downy mildew as they age. The O3 treatment affects the aging process of the leaf, and thus the level of susceptibility of the leaf to downy mildew.
Crop Sciences


INSTITUTE FOR GENOMIC BIOLOGY
University of Illinois at Urbana-Champaign
The Institute for Genomic Biology at the University of Illinois at Urbana-Champaign was established in 2003 to advance life science research and stimulate bio-economic development in the state of Illinois.
Construction of the $75 million, 186,000 square foot state-of-the-art IGB facility began in April 2004 and was completed in November 2006.
The facility will ultimately house up to 400 researchers in three broad Program Areas:
Interdisciplinary Genomic Research
There are eight research themes at the IGB:
• Biocomplexity
• Genomic Ecology of Global Change
• Genomics of Neural & Behavioral Plasticity
• Host-Microbe Systems
• Mining Microbial Genomes for Novel Antibiotics
• Molecular Bioengineering of Biomass Conversion
• Precision Proteomics
• Regenerative Biology & Tissue Engineering
Crop Sciences


Genomic Ecology of Global Change

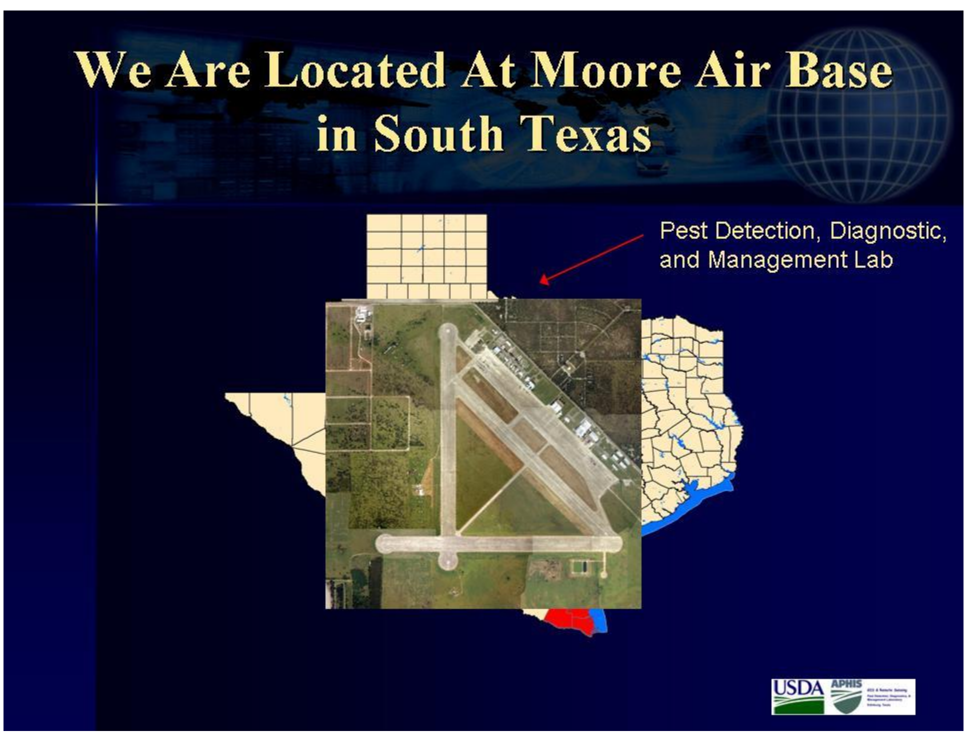
'The APHIS Pest Detection, Diagnostic and Management Laboratory'

Paul E. Parker, Laboratory Director
PDDML
Mission, Texas

Abstract

The main building at the Pest Detection, Diagnostics, and Management Laboratory (PDDML), was constructed in the early 1980's. The first two projects at the laboratory involved the biological control of citrus whitefly and silverleaf nightshade. Numerous other insect and weed biocontrol projects followed during the 1980's and 1990's, including leafy spurge, diffuse & spotted knapweed, Russian wheat aphid, Colorado potato beetle, purple loosestrife, boll weevil, and silverleaf whitefly. Historically, the PDDML has served as a facility that mass reared beneficial insects for biological control of arthropod and weed plant pests. Within the past 6 years, PDDML began to transition away from large mass-rearing projects for biological control towards other control strategies in domestic and emergency programs, as well as off-shore pest safeguarding initiatives. More emphasis has been placed upon molecular diagnostics for arthropods and invertebrate pests; remote sensing/global information systems; epidemiology of certain plant diseases, such as citrus canker; fruit fly trapping; sterile insect technique (SIT) support; and integrated pest management of off-shore pest problems. The laboratory has participated in a number of large-scale national domestic programs, as well as smaller projects that are limited in scope or regional in nature. Recent accomplishments include: the development and evaluation of transgenic Mexican fruit fly (in collaboration with Oxitec Limited, Oxford, UK), improvement of the Mexican fruit fly larval diet formula and technical support to mass rearing program and other fruit fly SIT support issues. In the arena of molecular diagnostics, accomplishments include the development of diagnostics to determine geographic origins of Mexican fruit flies and identify immature *Anastrepha ludens, A. obliqua*, and *A. serpentine* intercepted at ports of entry, development of species-specific markers for the identification of *Scirtothrips dorsalis* (chili thrips) and develop diagnostic tools for pest slug identification. Field accomplishments include: determination of efficacy of commercial formulations of pesticides and bio-rational compounds against giant African snail (GAS) and Chili thrips, research hyperspectral imaging use in conjunction with other remote sensing technology to develop classification maps of ash tree locations in Michigan in support of EAB program, assess dispersal dynamics of bacteria that causes citrus canker and the development, completion and technology transfer of the Giant Salvinia biological control program to state and federal cooperators.


Pest Detection, Diagnostic, &
Management Laboratory
Moore Air Base – Edinburg, Texas
Paul Parker,
Laboratory Director
USDA
APHIS


We Are Located At Moore Air Base
in South Texas
Pest Detection, Diagnostic,
and Management Lab
USDA
APHIS

Facilities at PDDML

- Laboratory Space
  - Arthropod Quarantine
  - Insect Rearing (Growth Chambers)
  - Rearing Support (Diet Lab)
  - Micro Biology Lab
  - Plant Pathology Lab
  - Molecular Diagnostics Lab
  - Field Lab
  - GIS and Remote Sensing
- Field Space
  - Cactus
  - Citrus
- Green & Shade Houses

USDA APHIS

Past Projects at PDDML

- Biocontrol of Citrus Whitefly
- Biocontrol of Diffuse & Spotted Knapweed
- Biocontrol of Leafy Spurge
- Biocontrol of Silverleaf Whitefly
- Biocontrol of Russian Wheat Aphid
- Biocontrol of Purple Loosestrife
- Integrated Pest Management of Glassy-winged Sharpshooter

USDA APHIS


Current Projects at PDDML
Biological Control
Giant Salvinia
Salvinia Weevil


Giant salvinia, *Salvinia molesta*

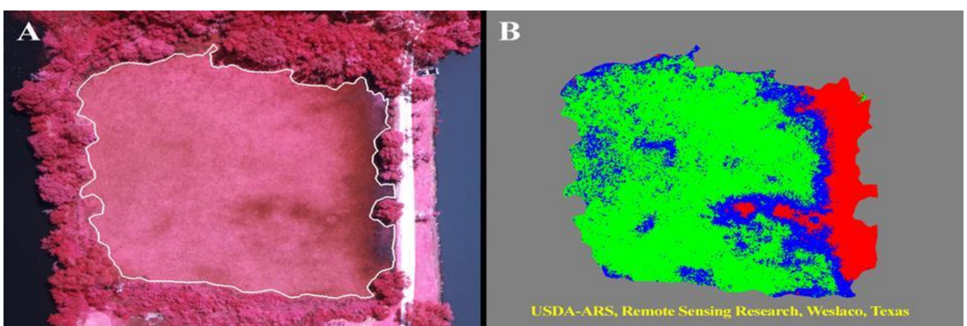

Pre-release site in Bridge City, TX.
USDA
APHIS


Post-release site about nine months later.
USDA
APHIS

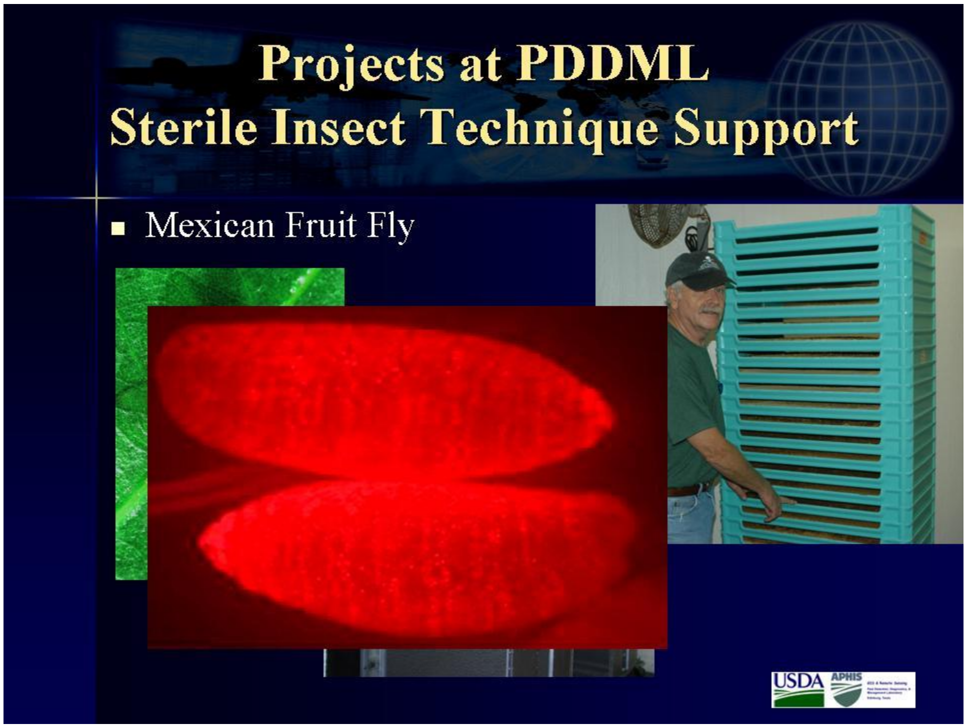

Pre-release site in Bridge City, TX.
USDA
APHIS

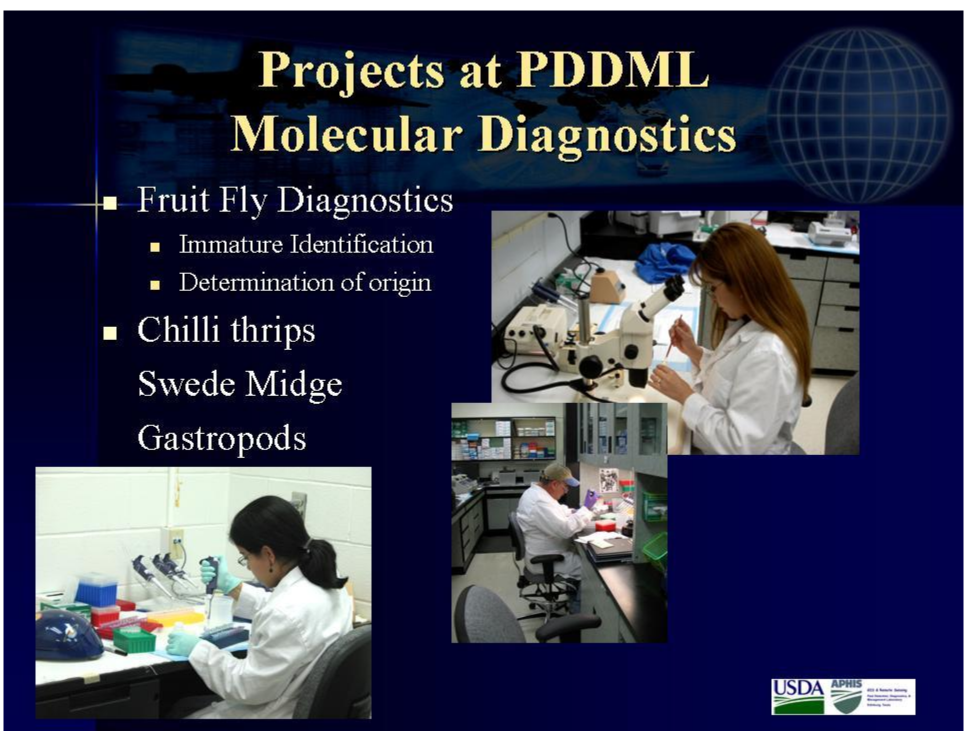

Post-release site about one year later.
USDA
APHIS

Biological control assessment of giant salvinia-infested pond in Bridge City, TX using remote sensing technologies. Aerial color-infrared photographs show 14% increase in damage.



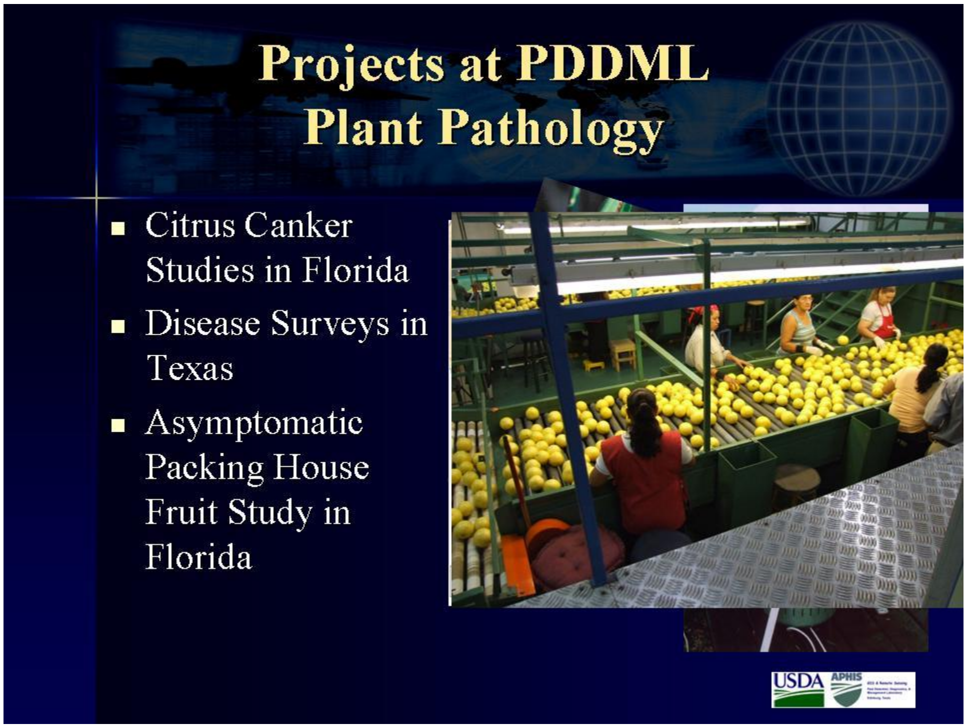
Light reflectance characteristics and remote sensing of giant salvinia-infested pond. Aerial color-infrared photograph (A) and unsupervised computer classification (B) of photographic image captured on July 2004. Color-codes for damaged salvinia are: green = healthy salvinia plants, blue = moderately damaged plants, red = severely damaged plants


Projects at PDDML
Sterile Insect Technique Support
Mexican Fruit Fly
USDA APHIS


Projects at PDDML
Molecular Diagnostics
Fruit Fly Diagnostics
Immature Identification
Determination of origin
Chilli thrips
Swede Midge
Gastropods
USDA APHIS


Slugs – Molecular Diagnostics
Arion rufus
USDA APHIS


Projects at PDDML
Off-shore Initiatives - Caribbean
Chilli thrips
Trapping
Control Measures
Giant African Snail
Control Measures
USDA APHIS


Projects at PDDML
Plant Pathology
Citrus Canker Studies in Florida
Disease Surveys in Texas
Asymptomatic Packing House Fruit Study in Florida
USDA
APHIS

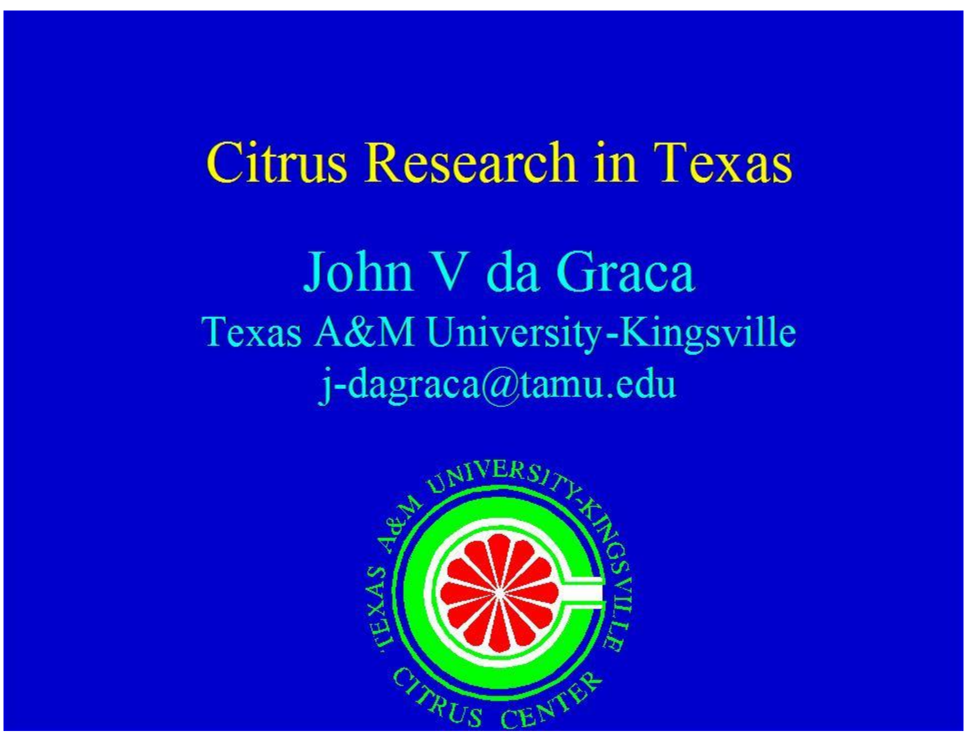

Questions
USDA
APHIS

‘Citrus Research in Texas’

J. V. da Graca
Texas A & M University-Kingsville, Citrus Center
Weslaco Texas

Abstract

The commercial citrus industry of Texas is concentrated in three counties in the Lower Rio Grande Valley of south Texas, and is composed of approximately 70% grapefruit and 30% sweet orange. Citrus is grown elsewhere, especially in east Texas where small plantings or dooryard trees of satsumas and other varieties are grown, but also in areas as far north as Dallas and west to El Paso, where homeowners have trees in the yards and, in containers. These trees could harbor pests and diseases which could threaten the commercial sector. South Texas is the place of origin of the much sought after dark red varieties of grapefruit, and since consumers and growers demand new varieties. There is therefore a research program under way to find and develop new ones with darker red pigmentation, higher levels of health promoting chemicals, improved horticultural characteristics, cold tolerance, and disease and pest resistance. Methods being used include traditional selection of natural variants, as well as production of transgenic plants with specific genes or chromosomes inserted. Texas is the only state with transgenic trees growing in the field. With the threat of several exotic pests and diseases, some of which are now in nearby areas, research is also underway to develop improved prevention and control strategies. Other programs are investigating more efficient use of water and fertilizers.



Institutions in Texas with Citrus Research Activities

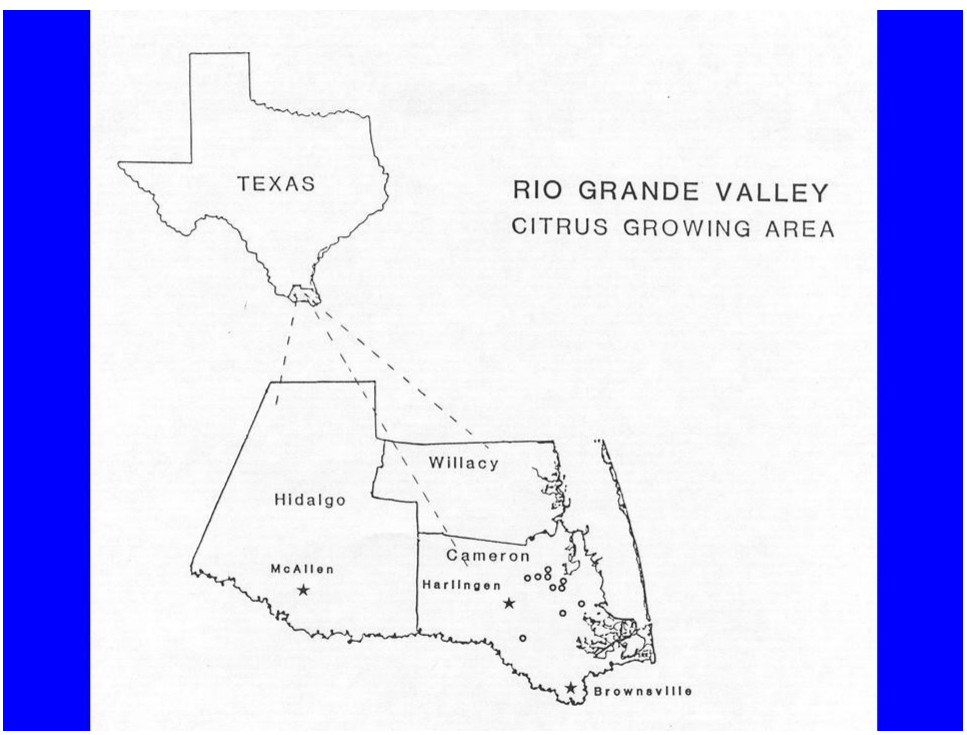
- Citrus Center/TAMU-Kingsville
  (Louzada, French, Skaria, Setamou, Nelson, Parker, Deyhim)
- A&M AREC Weslaco (TAES & TCE)
  (Mirkov, Wiedenfeld, Jifon, Enciso, Castro, Sauls)
- VFIC College Station
  (Patil et al.)
- UT-PanAm (Biology & Chemistry Depts)
  (Persans, Summy, Little, Ahmed, Bhat)
- USDA-ARS Weslaco
- USDA-APHIS-PPQ Moorefield

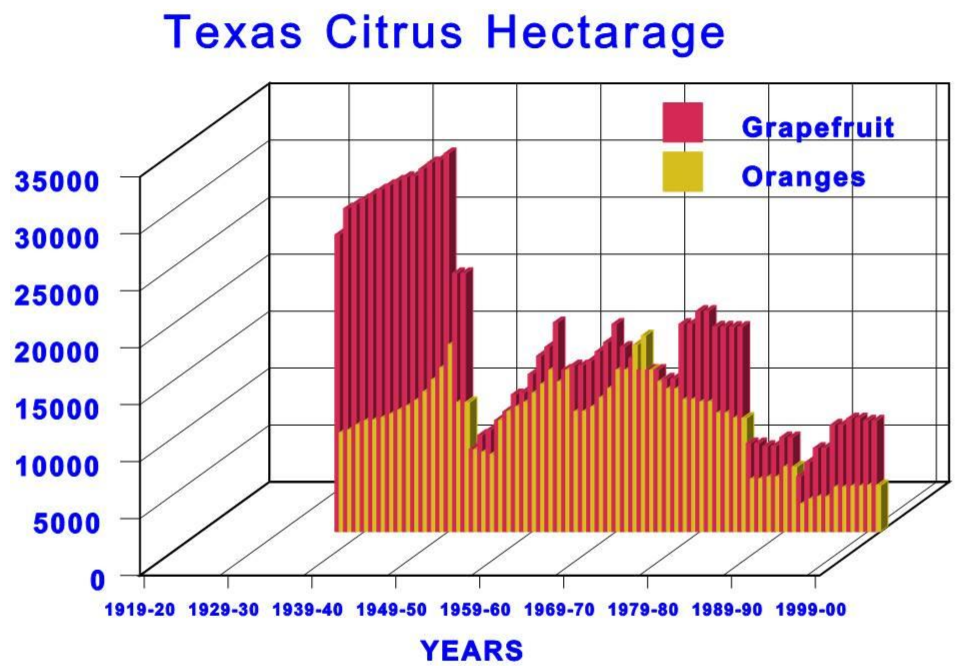
Funding sources

- Texas Citrus Producers Board
- Ago-chemical companies
- Texas Dept of Agriculture
- USDA
  (various – HSI, CSREES, APHIS)

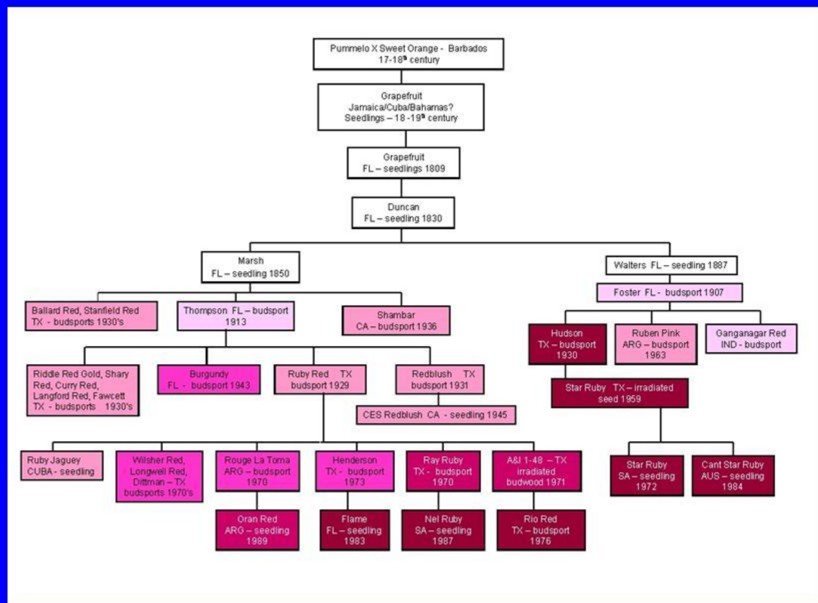
Citrus in Texas

- 19th-early 20th century – east Texas (satsumas). Freezes 1916/17 & canker
- 1908 first groves in LRGV
- 1920s expansion – grapefruit (white/pink)
- 1929 discovery of Ruby Red
- 1948 – 100,000 acres
- Freezes (1951, 1962, 1983, 1989)
- Rio Red released 1978
- 2007 - 27,000 acres

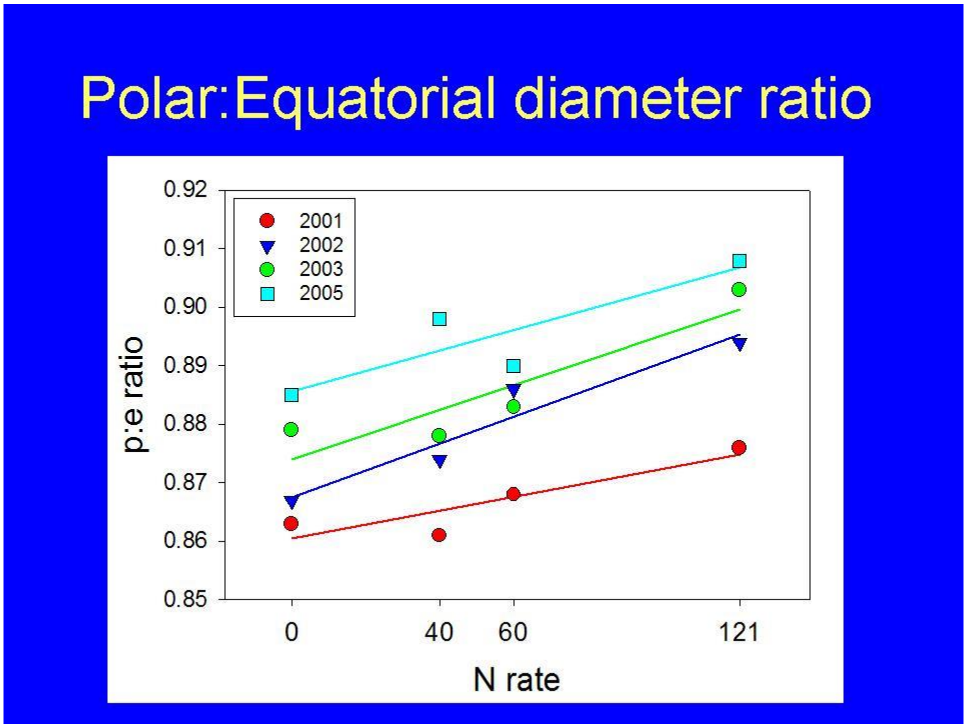


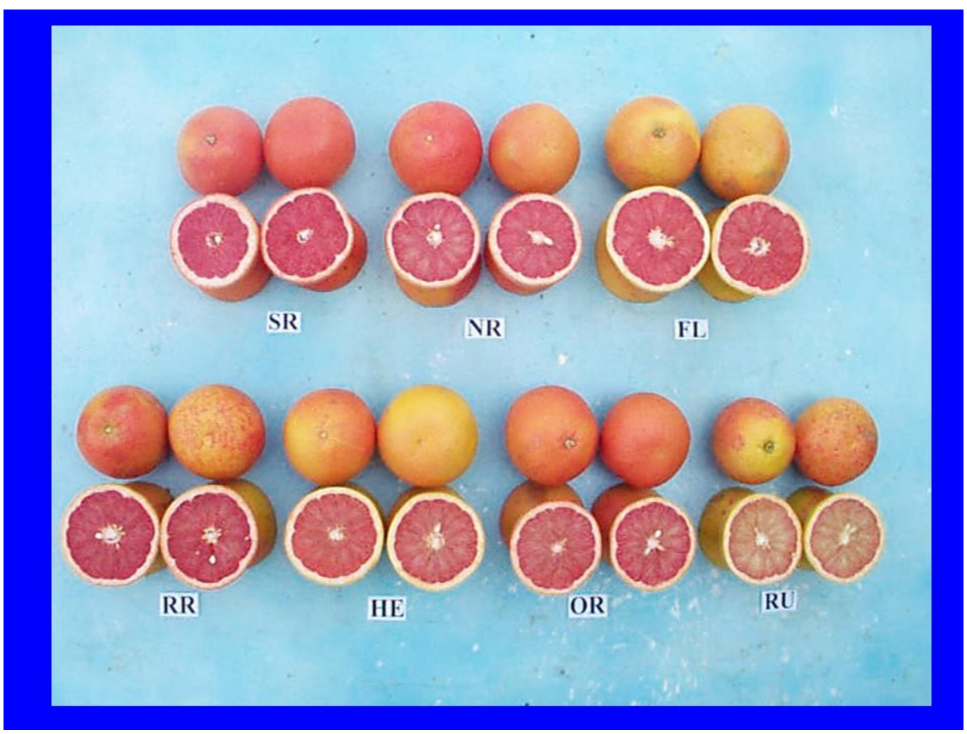

Texas Citrus Hectarage
Grapefruit
Oranges
35000
30000
25000
20000
15000
10000
5000
0
1919-20
1929-30
1939-40
1949-50
1959-60
1969-70
1979-80
1989-90
1999-00
YEARS

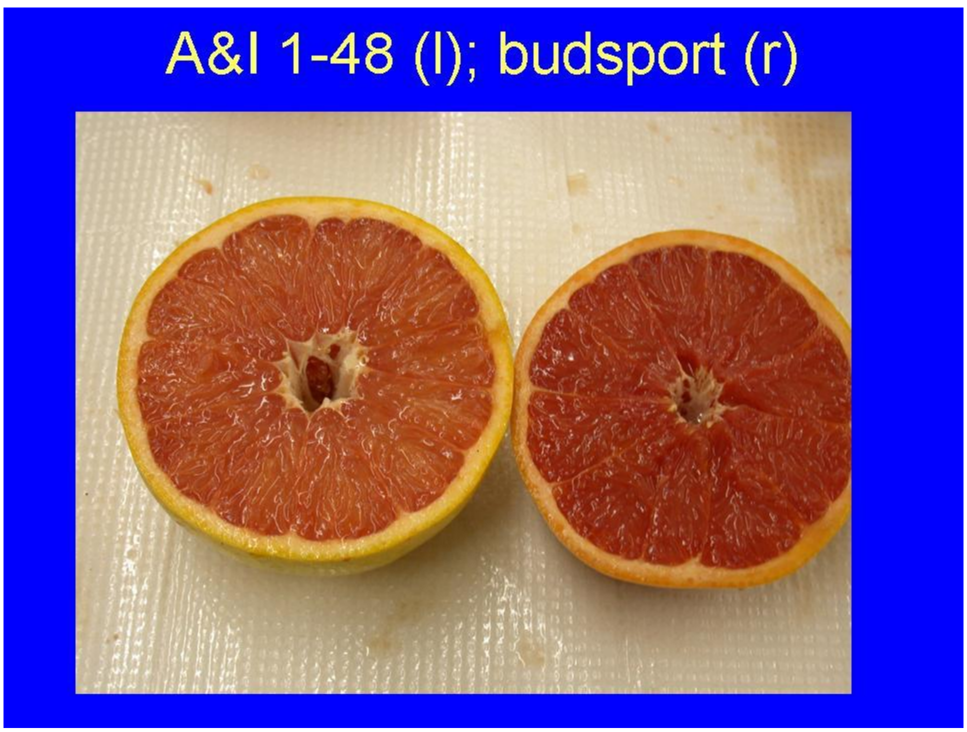

Rio Red
TEXAS


Pummelo X Sweet Orange - Barbados
17-18th century
Grapefruit
Jamaica/Cuba/Bahamas?
Seedlings – 18-19th century
Grapefruit
FL – seedlings 1809
Duncan
FL – seedling 1830
Marsh
FL – seedling 1850
Walters FL – seedling 1887
Foster FL - budsport 1907
Ballard Red, Stanfield Red
TX - budsports 1930's
Thompson FL – budsport
1913
Shambar
CA – budsport 1936
Hudson
TX – budsport
1930
Ruben Pink
ARG – budsport
1963
Ganganagar Red
IND - budsport
Riddle Red Gold, Shary
Red, Curry Red,
Langford Red, Fawcett
TX - budsports 1930's
Burgundy
FL - budsport 1943
Ruby Red TX
budsport 1929
Redblush TX
budsport 1931
Star Ruby TX – irradiated
seed 1959
CES Redblush CA - seedling 1945
Ruby Jaguey
CUBA - seedling
Wilsher Red,
Longwell Red,
Dittman – TX
budsports 1970's
Rouge La Toma
ARG – budsport
1970
Henderson
TX - budsport
1973
Ray Ruby
TX - budsport
1970
A&I 1-48 – TX
irradiated
budwood 1971
Star Ruby
SA – seedling
1972
Cant Star Ruby
AUS – seedling
1984
Oran Red
ARG – seedling
1989
Flame
FL – seedling
1983
Nel Ruby
SA – seedling
1987
Rio Red
TX – budsport
1976

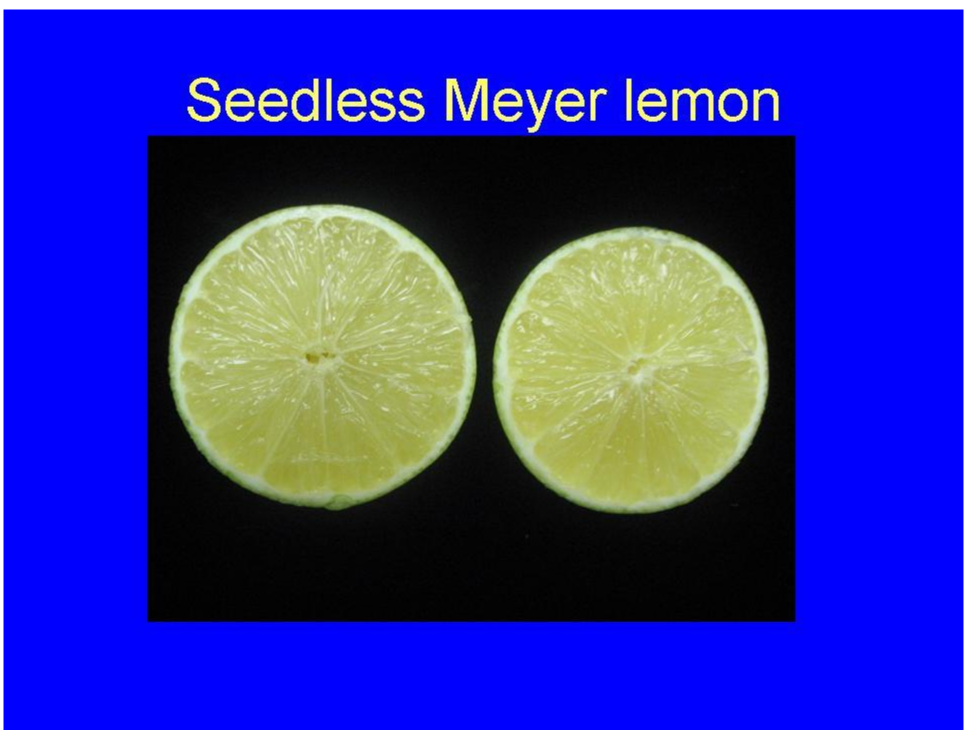
Sheepnose

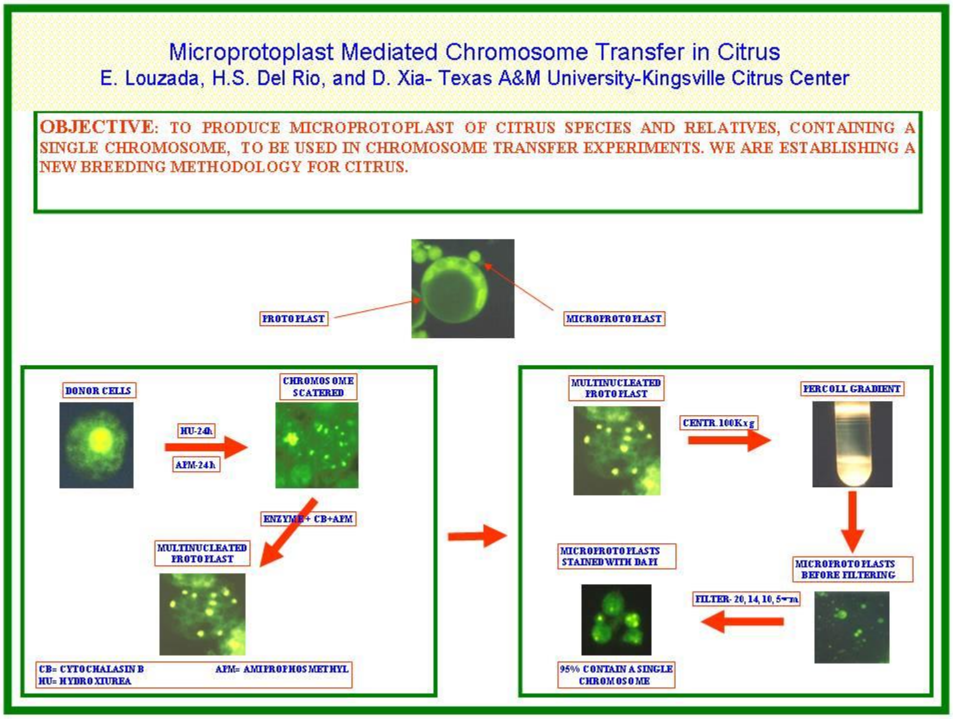

Polar:Equatorial diameter ratio
0.92
0.91
0.90
0.89
0.88
0.87
0.86
0.85
p:e ratio
2001
2002
2003
2005
0
40
60
121
N rate

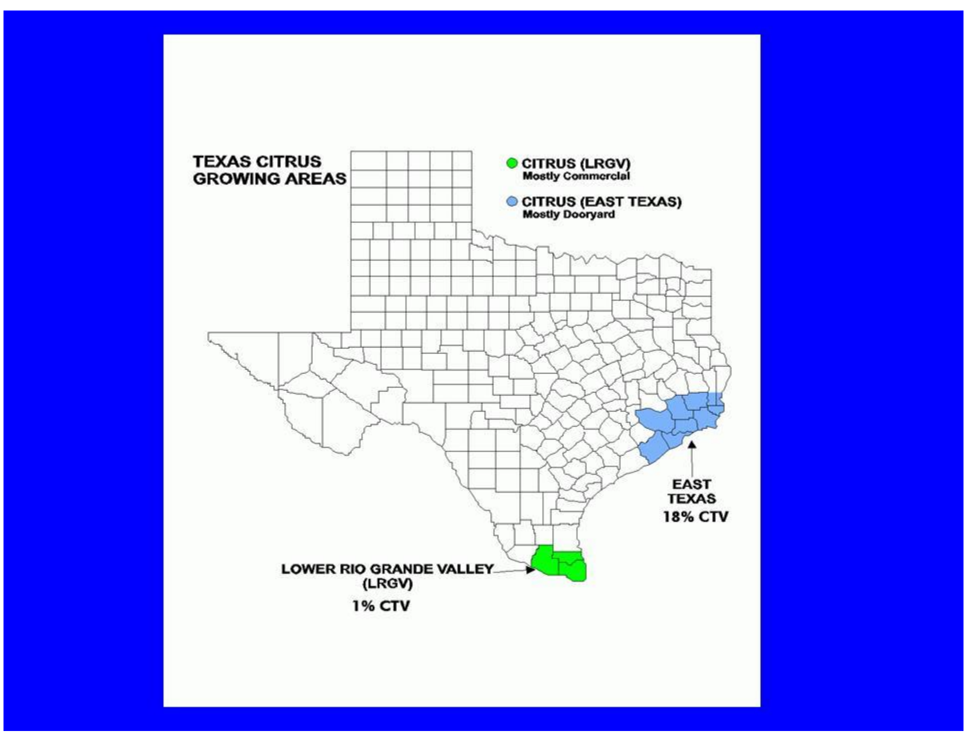

SR
NR
FL
RR
HE
OR
RU

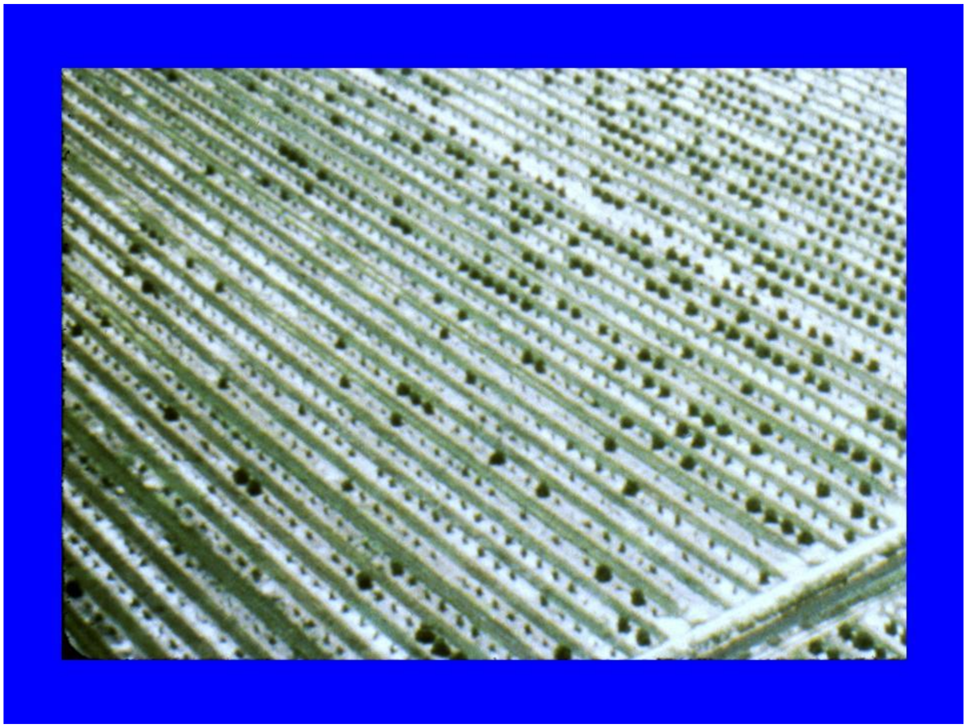

A&I 1-48 (l); budsport (r)


"Texas Red"


Seedless Meyer lemon


Microprotoplast Mediated Chromosome Transfer in Citrus
E. Louzada, H.S. Del Rio, and D. Xia- Texas A&M University-Kingsville Citrus Center
OBJECTIVE: TO PRODUCE MICROPROTOPLAST OF CITRUS SPECIES AND RELATIVES, CONTAINING A SINGLE CHROMOSOME, TO BE USED IN CHROMOSOME TRANSFER EXPERIMENTS. WE ARE ESTABLISHING A NEW BREEDING METHODOLOGY FOR CITRUS.
PROTOPLAST
MICROPROTOPLAST
DONOR CELLS
HU-24h
APM-24h
CHROMOSOME SCATERED
ENZYME+ CB+APM
MULTINUCLEATED PROTOPLAST
CB= CYTOCHALASIN B
HU= HYDROXIUREA
APM= AMIPROPHOS METHYL
MULTINUCLEATED PROTOPLAST
CENTR. 100Kxg
PERCOLL GRADIENT
MICROPROTOPLASTS BEFORE FILTERING
FILTER- 20, 14, 10, 5 m
MICROPROTOPLASTS STAINED WITH DAPI
95% CONTAIN A SINGLE CHROMOSOME


TEXAS CITRUS GROWING AREAS
CITRUS (LRGV)
Mostly Commercial
CITRUS (EAST TEXAS)
Mostly Dooryard
EAST TEXAS
18% CTV
LOWER RIO GRANDE VALLEY (LRGV)
1% CTV




Brown citrus aphid

Rio Red on C22

Rootstock Trial- Lb/tree

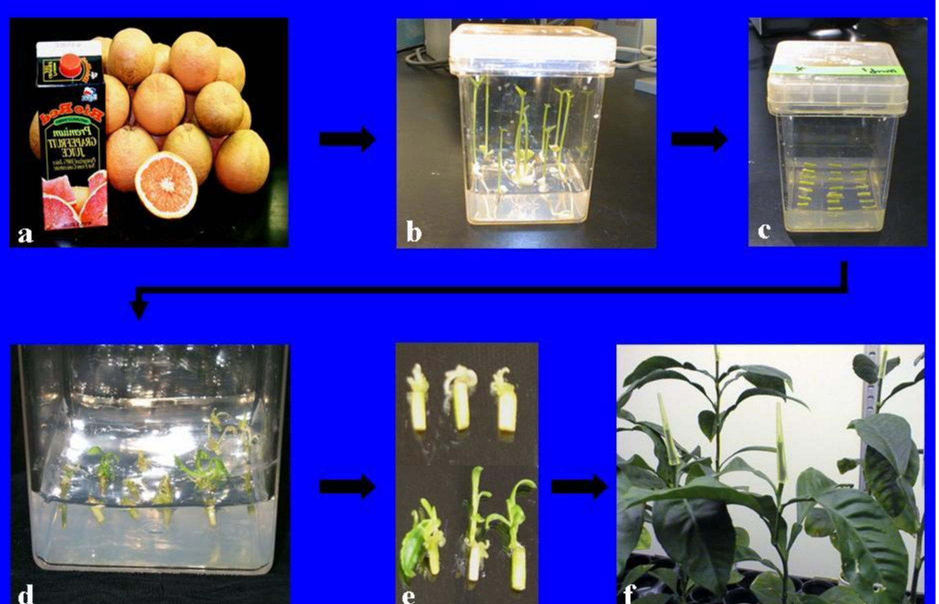
		Production- Average lb/tree				
	2006	2005	2004	2003	Average	ton/acre
C-22	563	574	627	505	567	34
C-146	506	536	558	412	503	30
C-57	403	509	576	385	468	28
Afr. Shad.	517	464	568	321	467	28
Sour Or.	329	344	423	362	364	21
Troyer	486	348	489	255	394	23
GouTou	310	313	418	164	301	18


Stem pitting

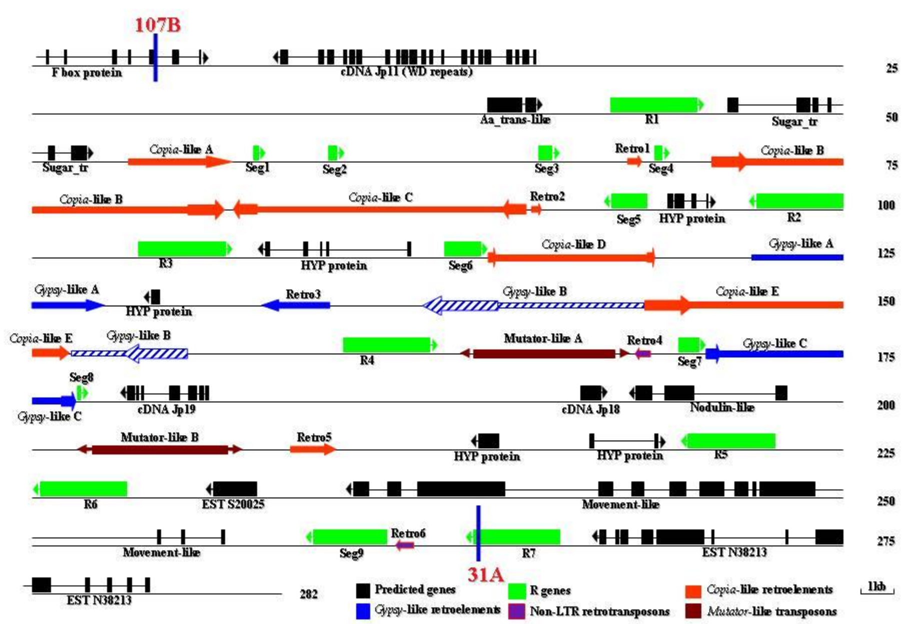

Virus-free foundation trees

	H33	VT	NUagA	SY568	T385	T30	T36
H33	1.000	0.958	0.952	0.953	0.921	0.919	0.925
VT	---	1.000	0.965	0.965	0.925	0.924	0.928
NUagA	---	---	1.000	0.983	0.931	0.930	0.927
SY568	---	---	---	1.000	0.933	0.931	0.934
T385	---	---	---	---	1.000	0.995	0.931
T30	---	---	---	---	---	1.000	0.930
T36	---	---	---	---	---	---	1.000

Similarity matrix of pair wise comparisons of ORF 7 of CTV from seven isolates, with 1.000 being 100% identity.



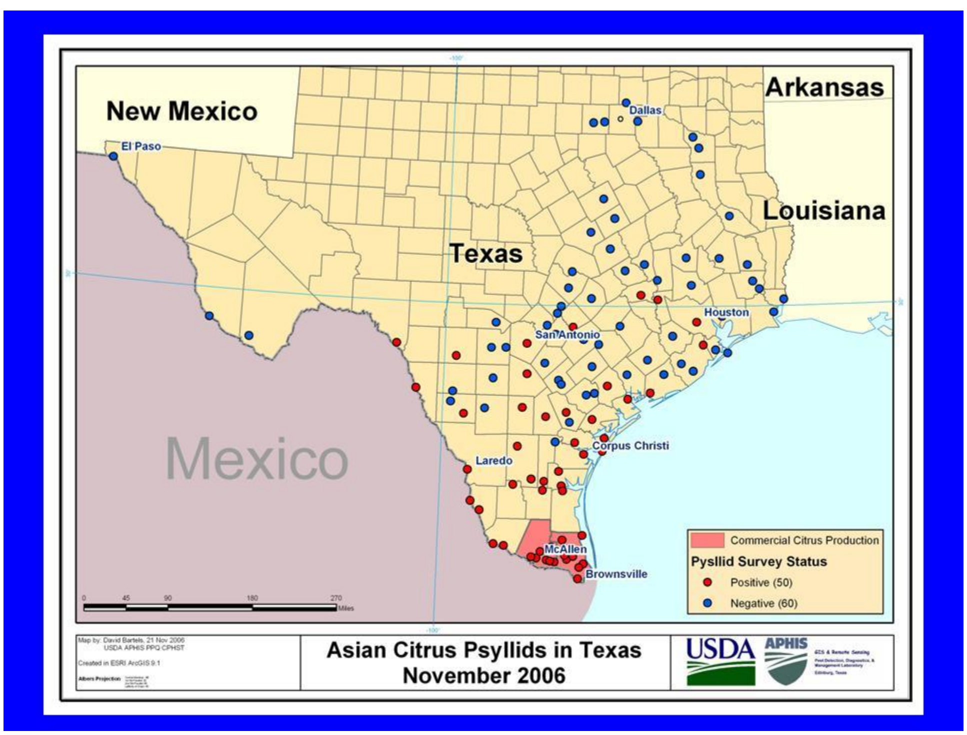
Transgenic citrus

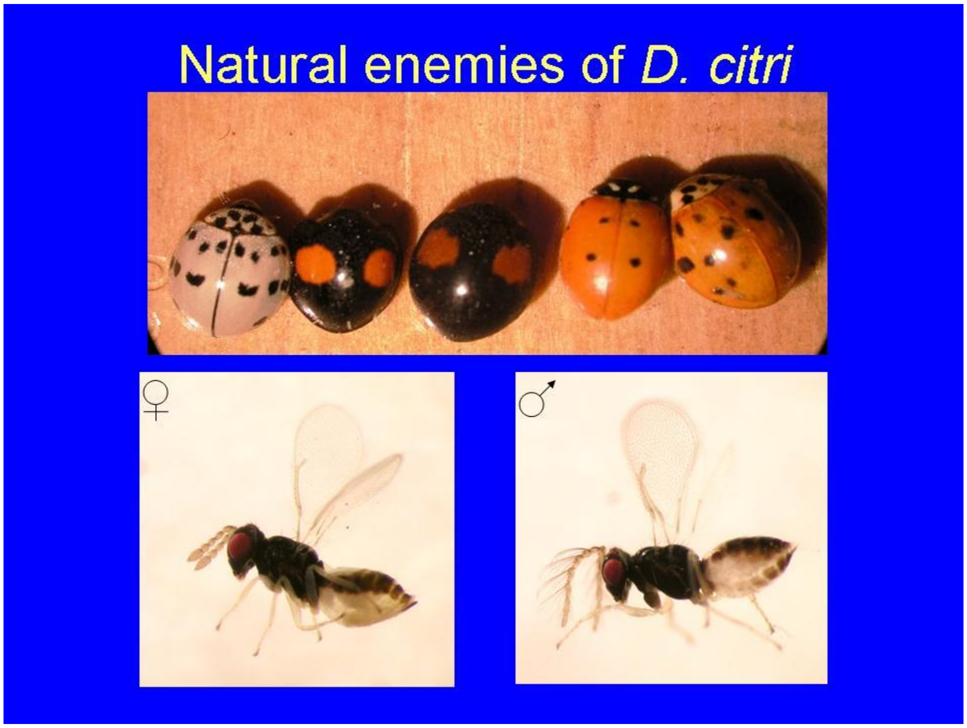



Blotchy Mottle symptoms of
Greening

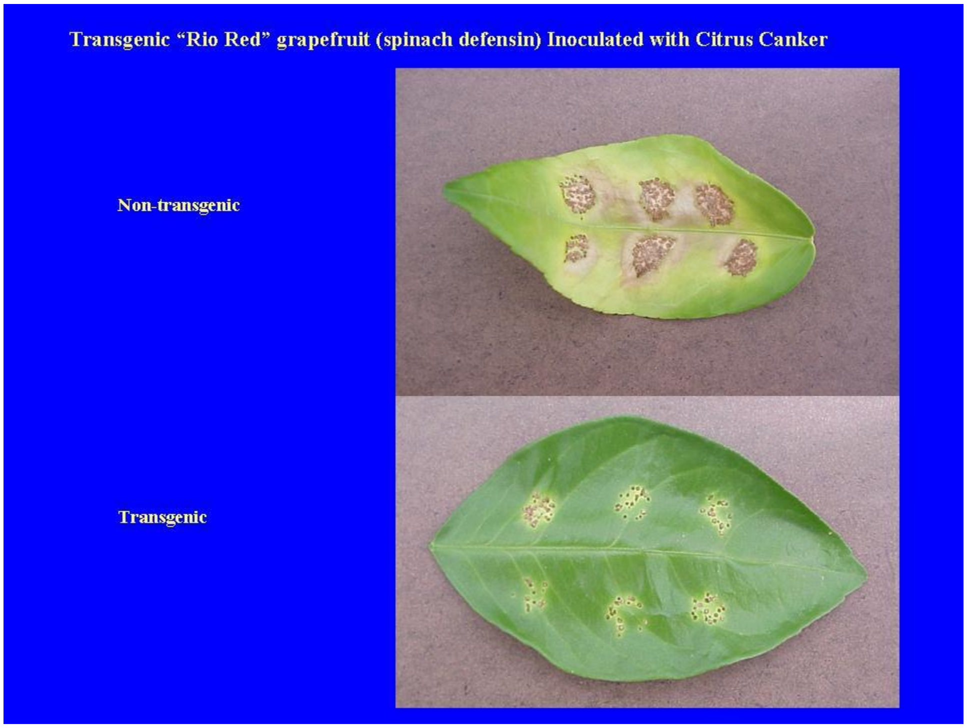

Pummelo with greening - FL

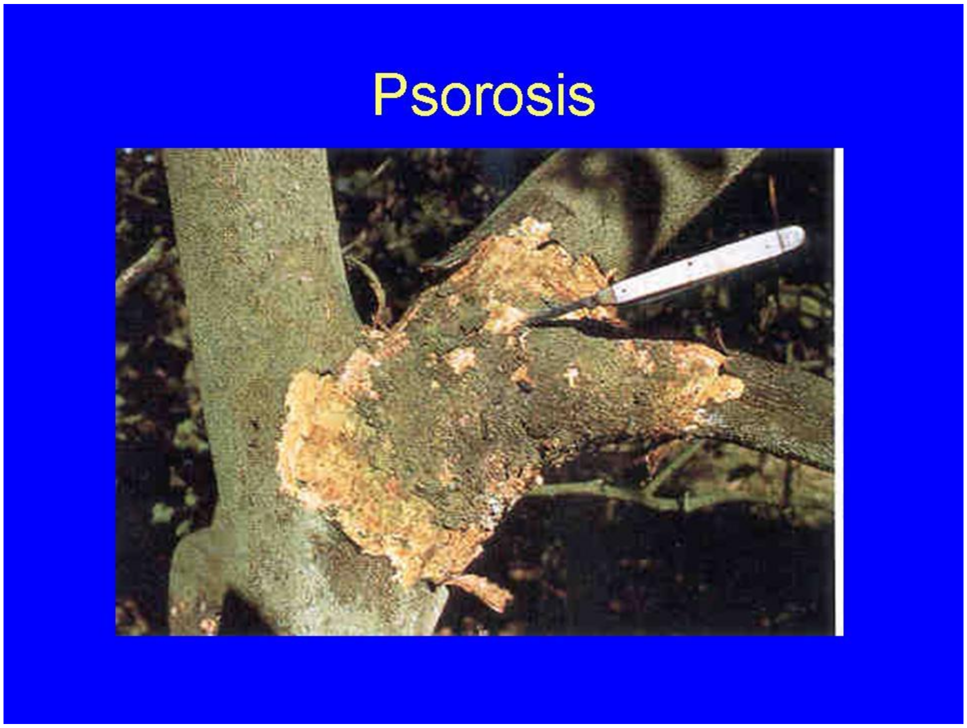

Diaphorina citri

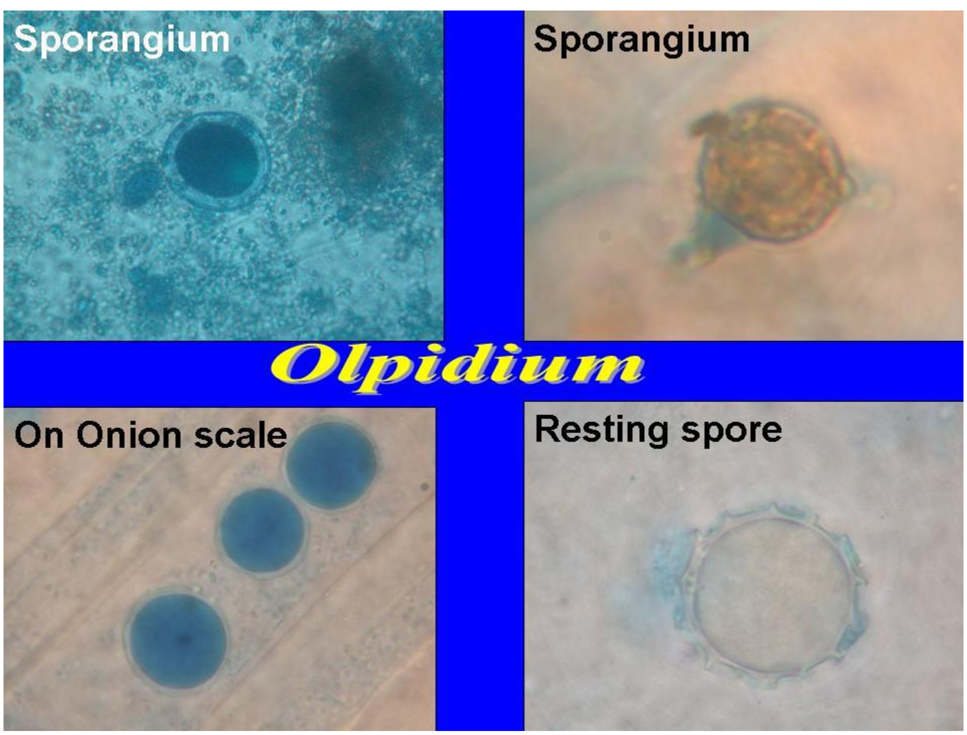

New Mexico
Arkansas
Louisiana
Texas
Mexico
El Paso
Dallas
San Antonio
Houston
Corpus Christi
Laredo
McAllen
Brownsville
Commercial Citrus Production
Pysllid Survey Status
Positive (50)
Negative (60)
0
45
90
180
270
Miles
Map by: David Bartels, 21 Nov 2006
USDA APHIS PPQ CPHST
Created in ESRI ArcGIS 9.1
Albers Projection
Asian Citrus Psyllids in Texas
November 2006
USDA
APHIS

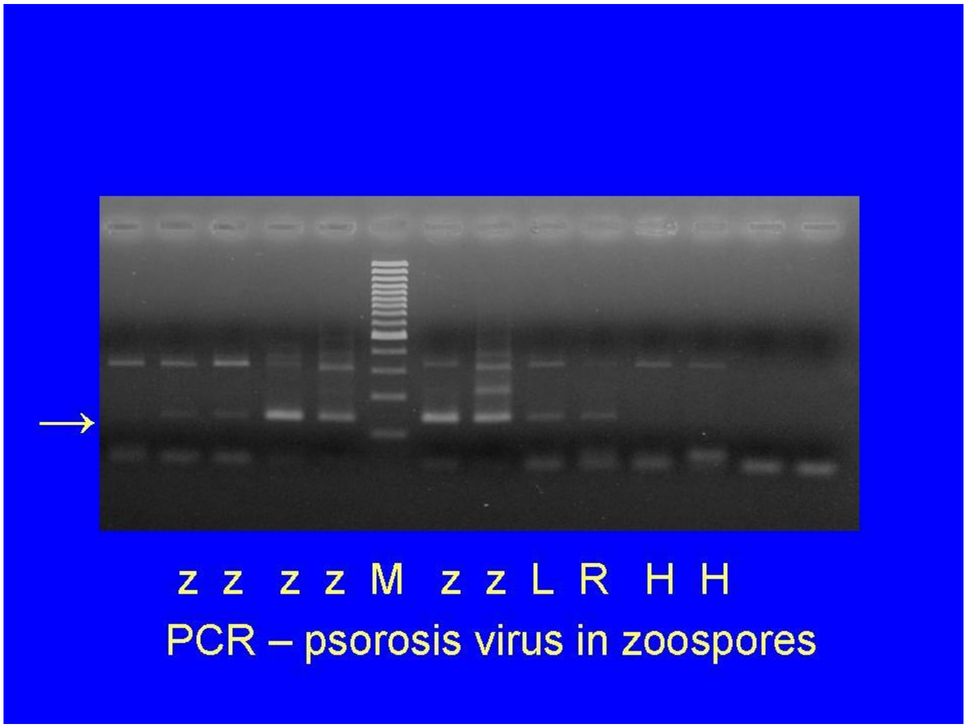

Natural enemies of D. citri
♀
♂

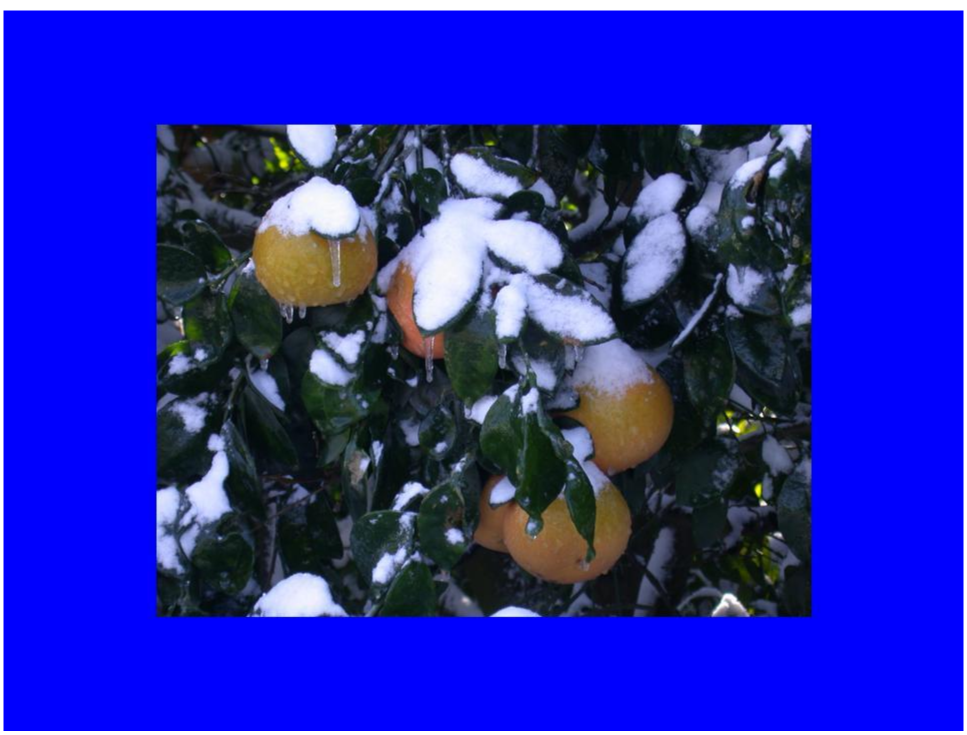

Microbudded citrus – 2 year production
Ready to graft
3 months
Field
Marrs orange
Rio Red


Transgenic "Rio Red" grapefruit (spinach defensin) Inoculated with Citrus Canker
Non-transgenic
Transgenic

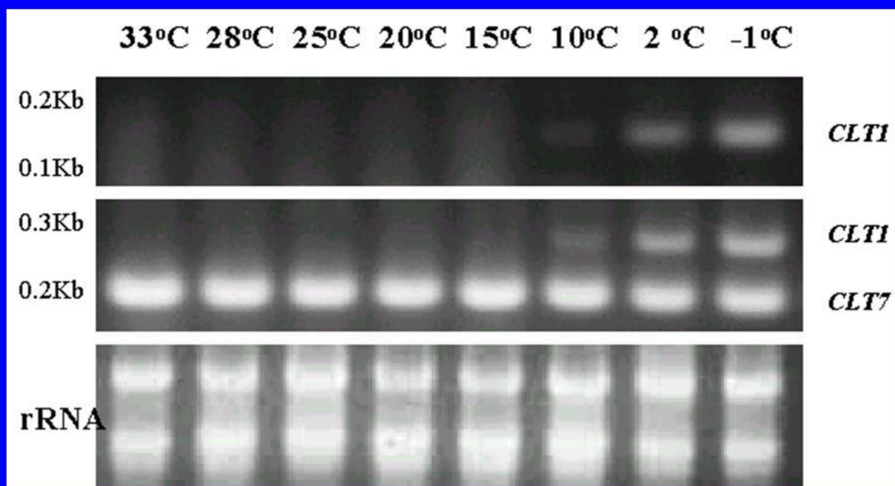

Psorosis


Sporangium
Sporangium
Olpidium
On Onion scale
Resting spore


z z z z M z z L R H H
PCR – psorosis virus in zoospores



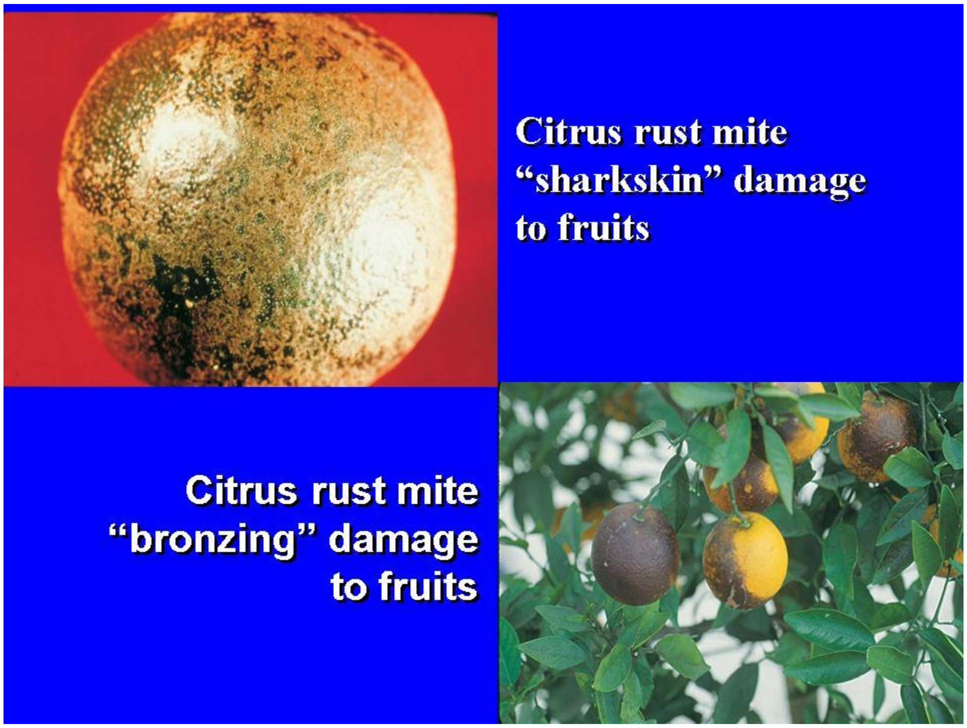
Expression analysis using Quantitative PCR

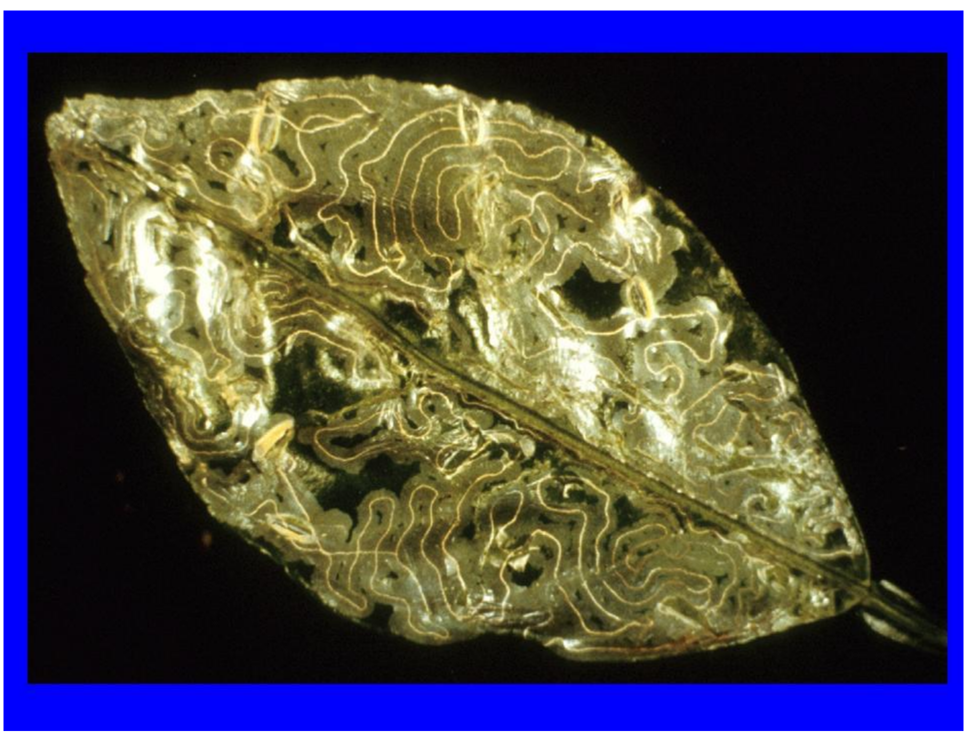


Ranking of Texas Citrus Pests 2005

By J. V. French (IPM Texas Citrus Manual)

#1 Citrus Rust Mite
#2 California Red Scale
#3 Citrus Blackfly
#4 Mexican Fruit Fly
#5 False Spider Mite
#6 Chaff Scale
#7 Texas Citrus Mite
#8 Root Weevil Complex
#9 Citrus Leafminer
#10 Asian Citrus Psyllid


Citrus rust mite
“sharkskin” damage
to fruits
Citrus rust mite
“bronzing” damage
to fruits



Health Promoting Compounds

- Carotenoids
- Vitamins
- Flavonoids
- Pectin / Fiber
- Monoterpenes / Essential oils
- Coumarins
- Sterols

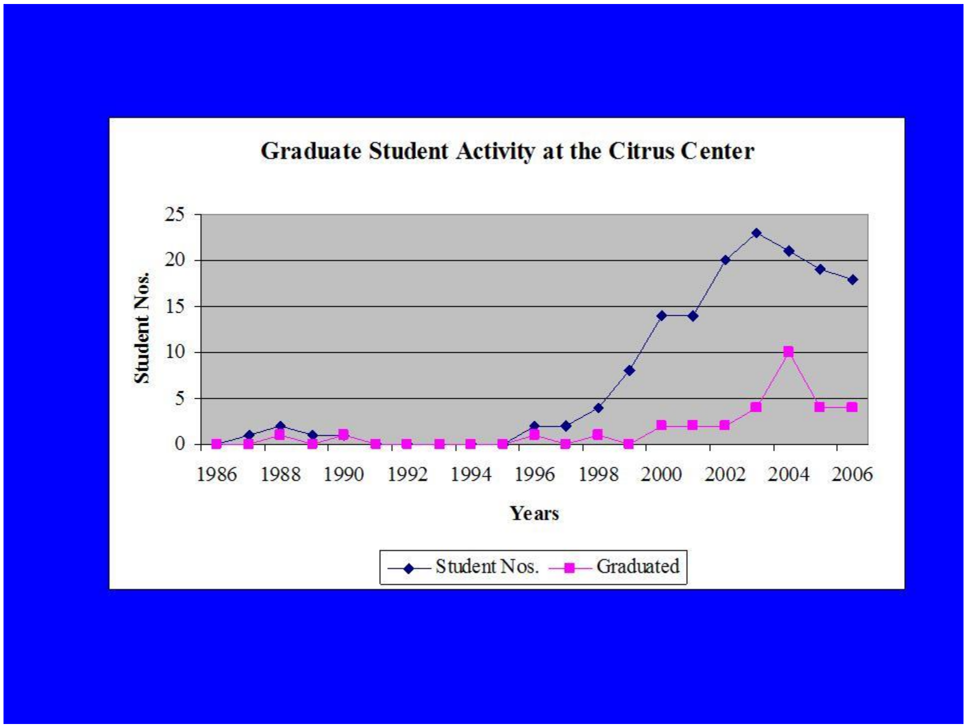
Potential benefits

- Colon cancer
- Breast cancer
- Prostrate cancer
- Osteoporosis
- Cholesterol levels
- Obesity

Drug Interaction ?

- Concurrent administration of grapefruit juice increases the plasma concentrations of statin drugs
- Furocoumarins
- Inhibit drug metabolizing enzyme cytochrome P-450 in intestine
- Increase in absolute bioavailability and plasma concentration

Affected drugs:
eg. Lipitor, Zocor, … and



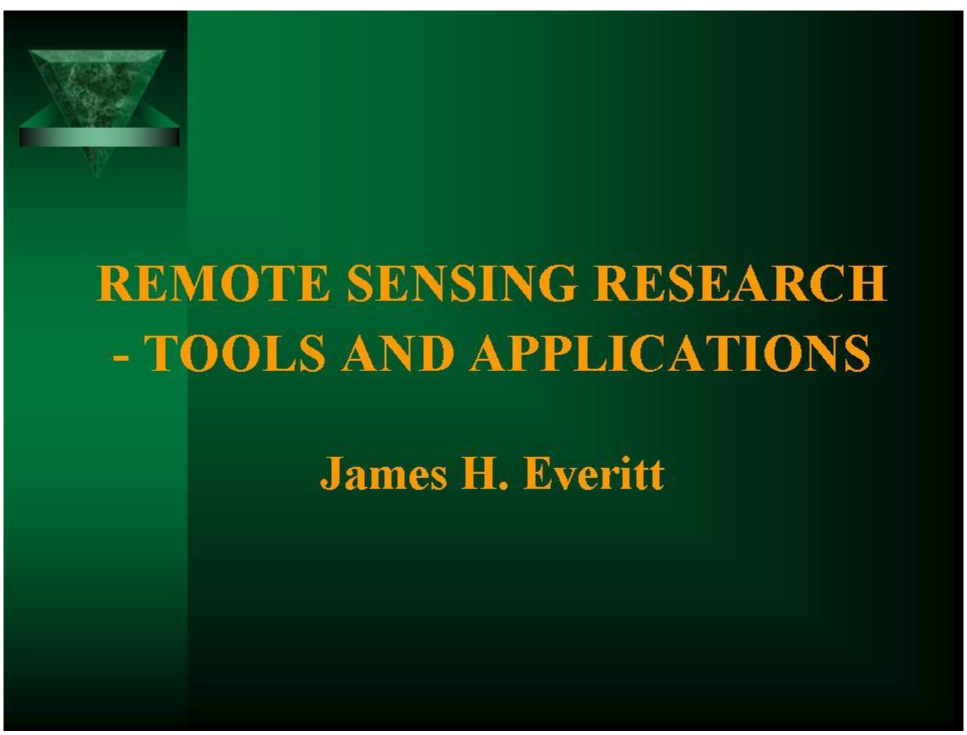
Graduate Student Activity at the Citrus Center
Student Nos.
25
20
15
10
5
0
1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006
Years
Student Nos.
Graduated

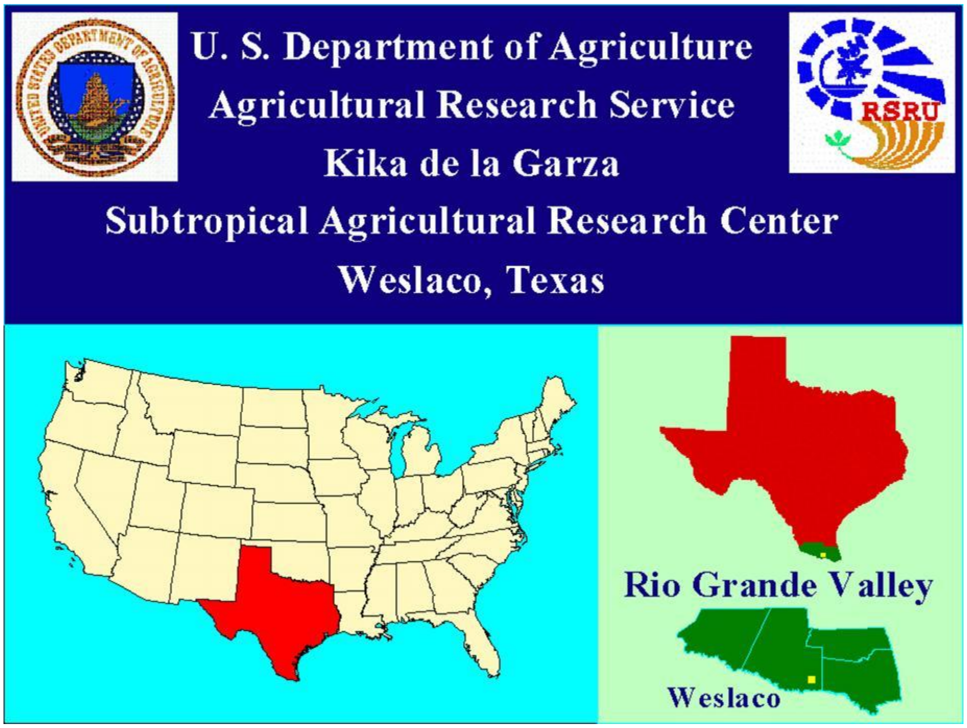
'Remote Sensing Research-Tools and Applications'

James H. Everitt
USDA-ARS, Integrated Farming and Natural Resources Research
Kika De La Garza Subtropical Agricultural Research Center
Weslaco, Texas

Abstract

United States Department of Agriculture (USDA), Agricultural Research Service (ARS) scientists at the Kika De La Garza Subtropical Agricultural Research Center at Weslaco, Texas, have been conducting research on the utilization of remote sensing techniques for assessing natural resources for over 40 years. The location has two fixed-wing aircraft used for acquiring airborne data. This presentation presents an overview on photographic and electronic imaging systems utilized by USDA, ARS scientists. Photographic equipment includes both large (23 cm) and small (70 mm) format cameras loaded with conventional color (400 to 700 nm) and color-infrared (400 to 900 nm) films. Electronic equipment includes digital video, true digital, and hyperspectral systems. These systems typically have visible/near-infrared (400 to 1000 nm) sensitivity. Imagery acquired with these systems has been used to detect or assess a variety of ecological ground variables including plant communities and species, crop yield, nutrient deficiencies, plant diseases, and weed and insect infestations.





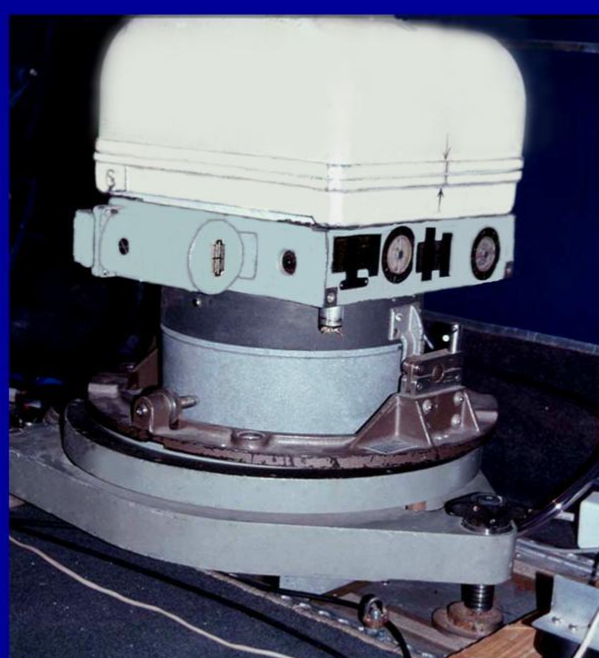
The primary objectives of the USDA-ARS Remote Sensing Laboratory in Weslaco, Texas are:

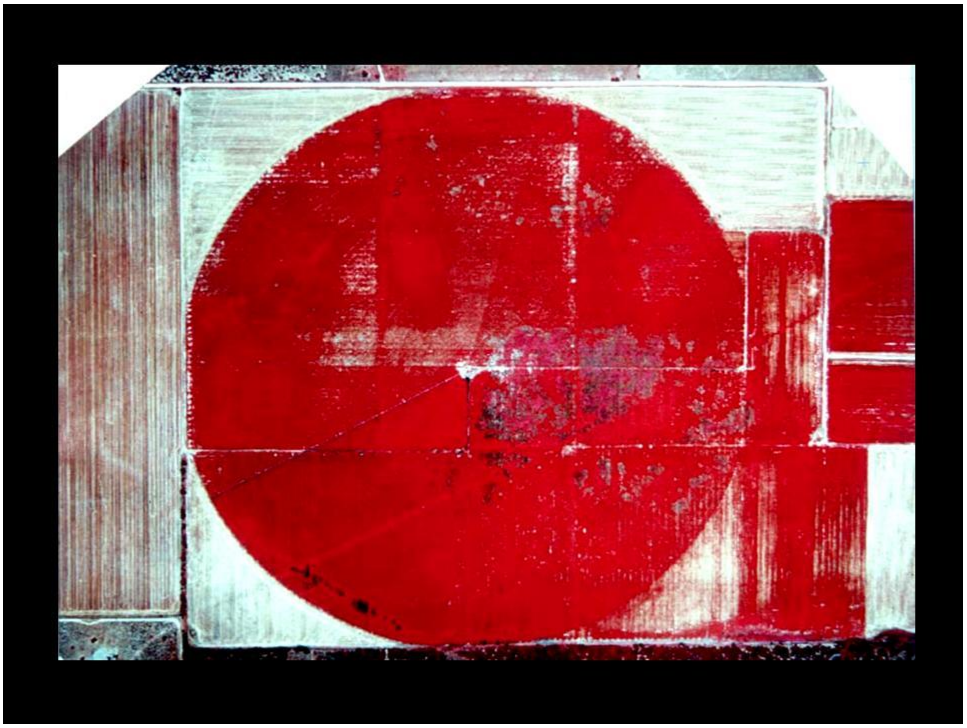
1. To develop and test cost-effective, high resolution airborne electronic imaging systems for agricultural and natural resources management
2. Integrate airborne multispectral and hyperspectral imagery, GPS, and GIS technologies with precision agriculture for mapping and managing within-field plant growth and yield variability
3. Develop methods and demonstrate the application of spatial information technologies for pest management and environmental assessment

AERIAL PHOTOGRAPHS

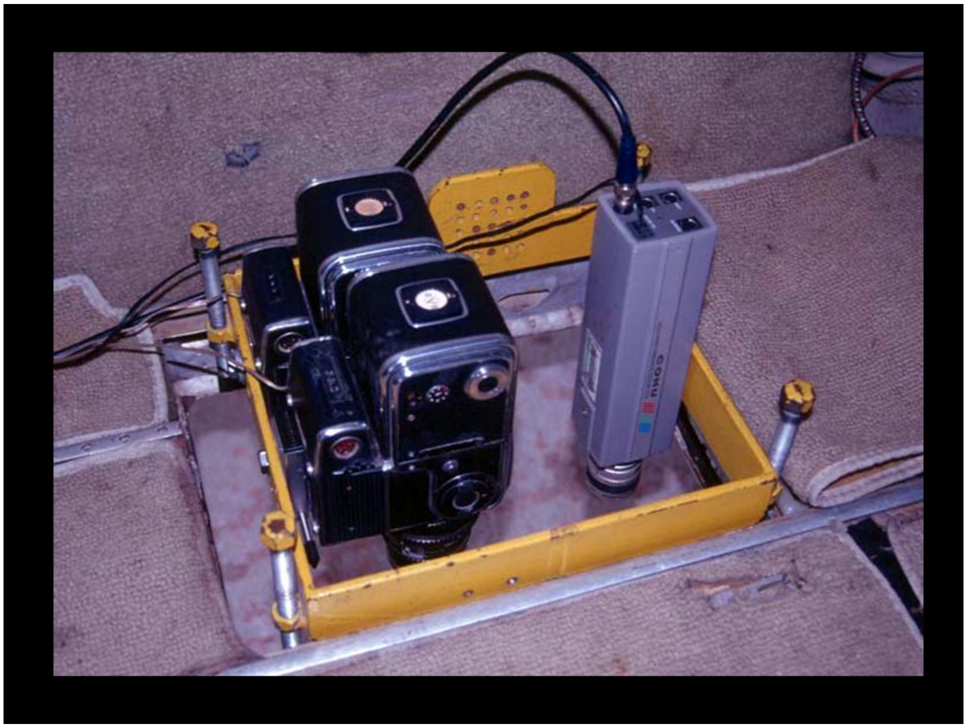
Color-infrared film (0.50 – 0.90 μm)
Conventional color film (0.40 - 0.70 μm)

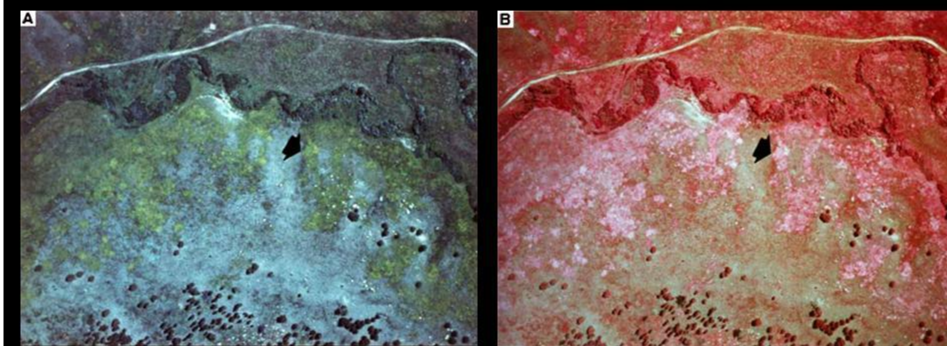
Large Format Photographic Camera



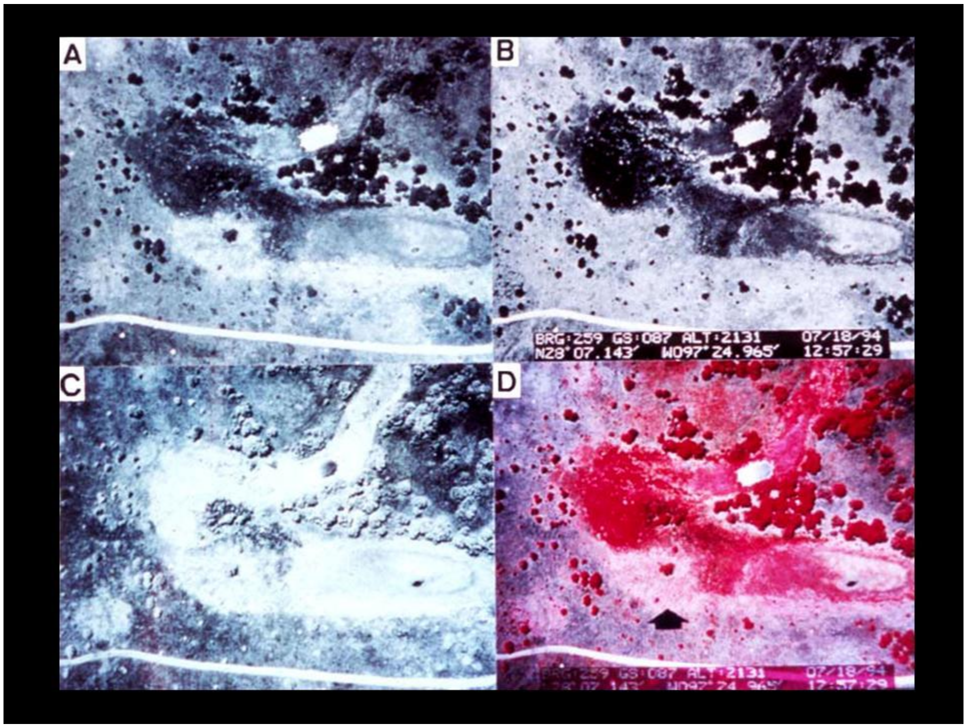


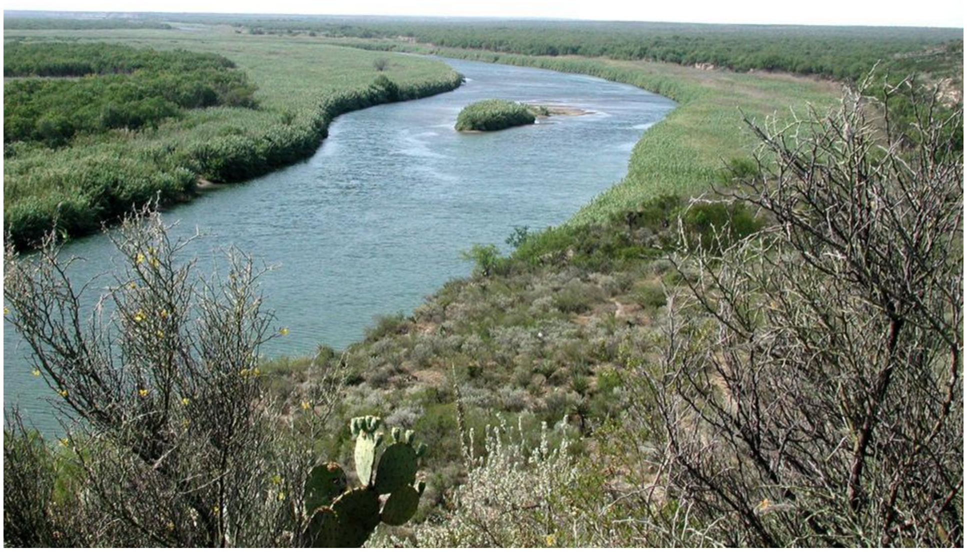
SMALL FORMAT PHOTOGRAPHIC TWIN CAMERAS

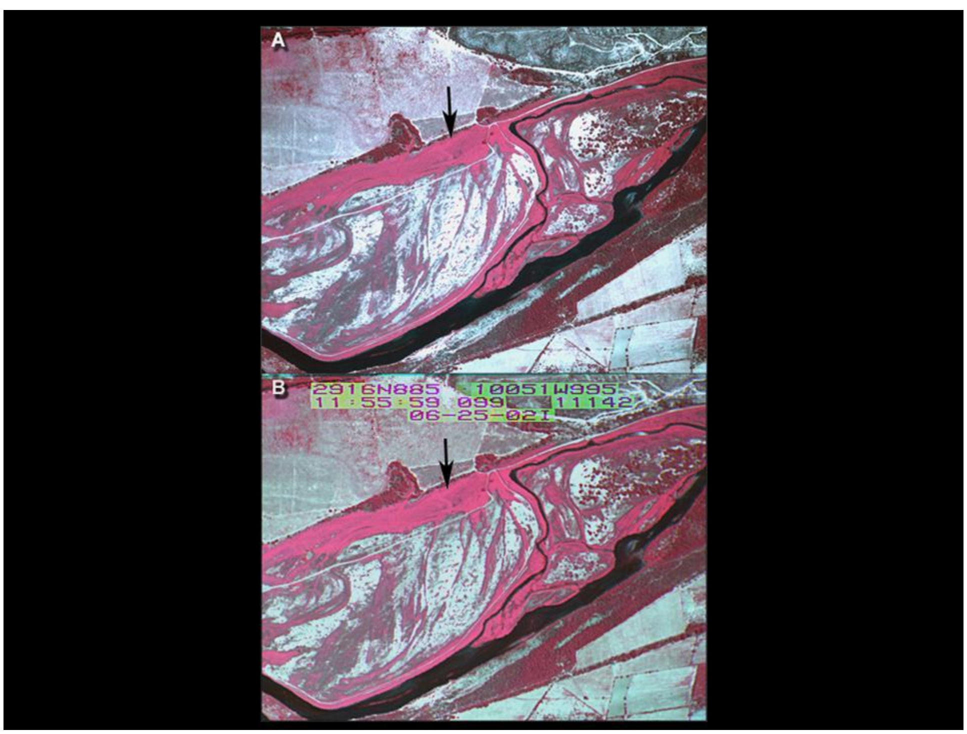

COHU

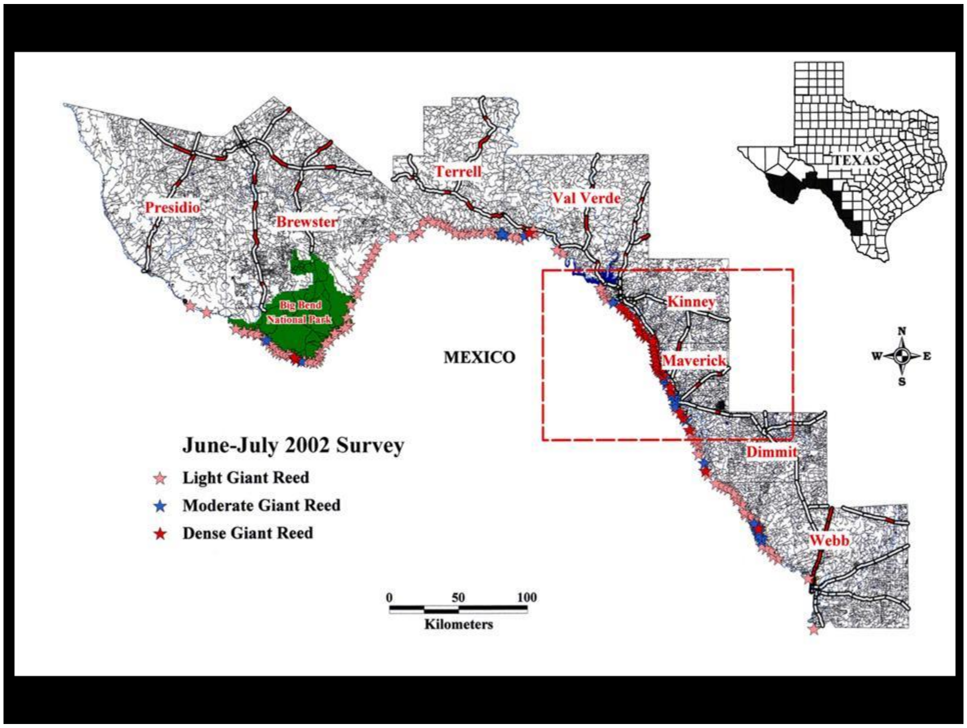


3-Camera Multispectral Digital Video Imaging System

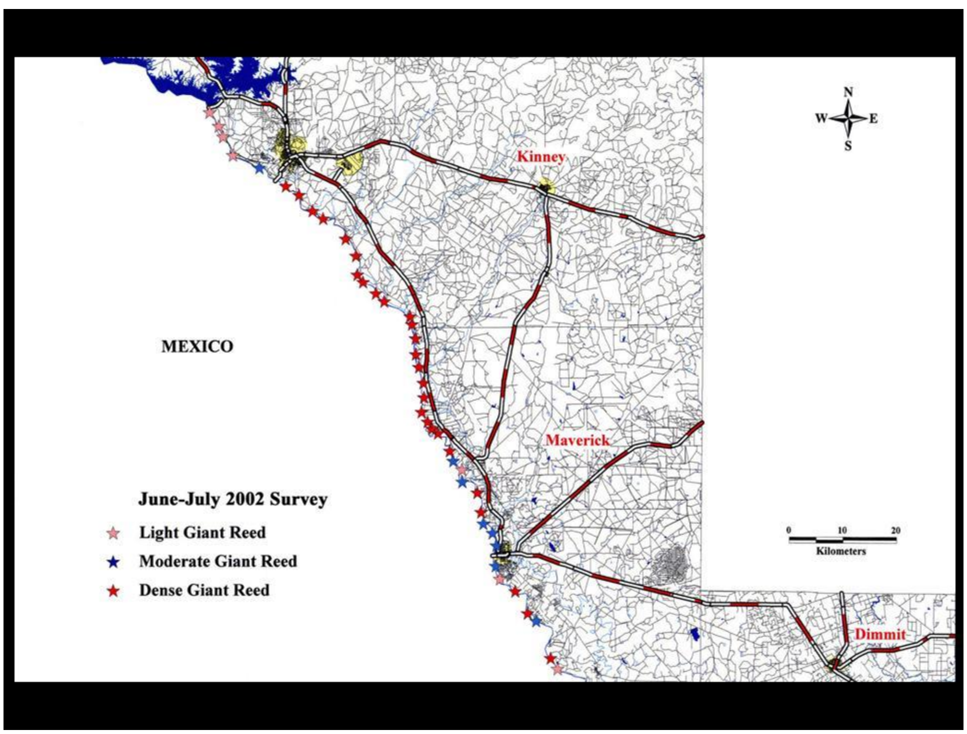

A
B
BRG:259 GS:087 ALT:2131 07/18/94
N28°07.143' W097°24.965' 12:57:29
C
D




A
B
2916N885 10051W995
11:55:59 099 11142
06-25-02I

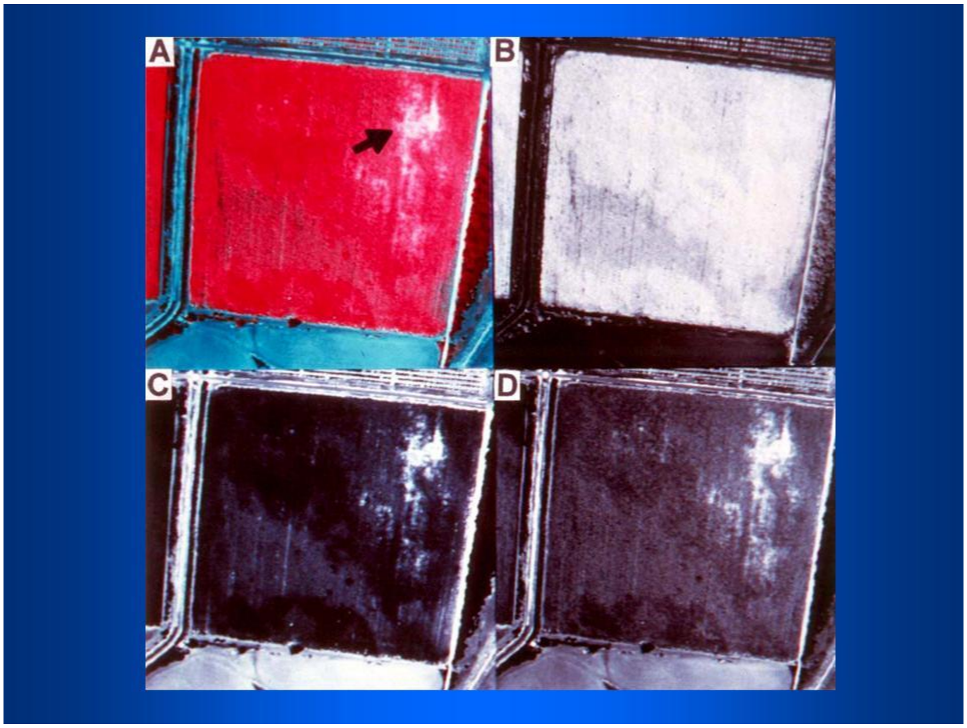


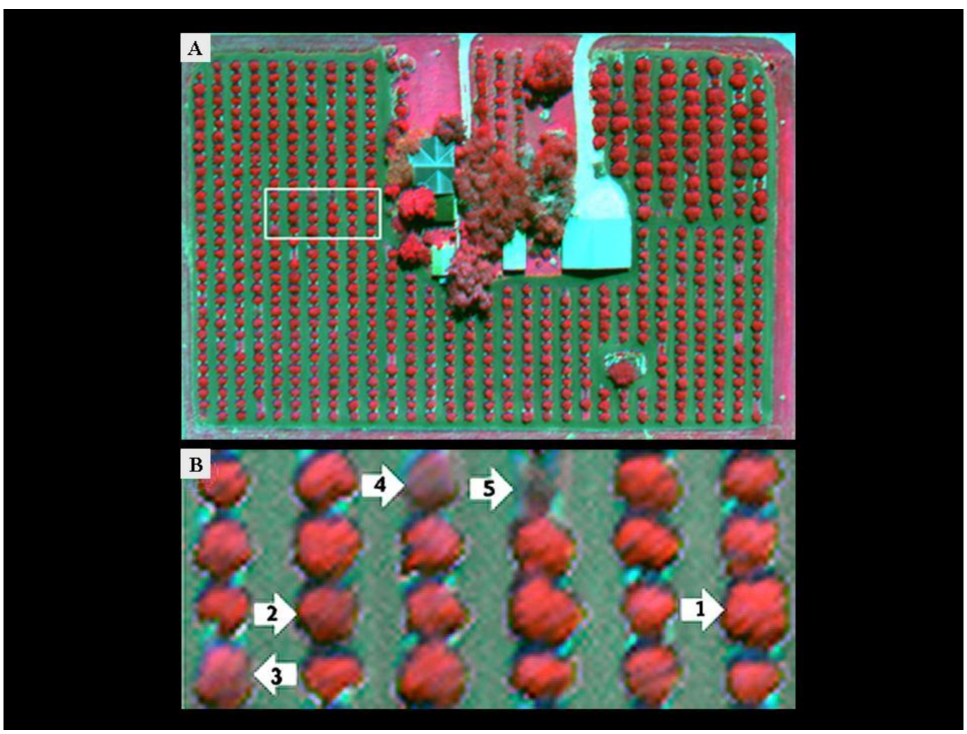
Presidio
Brewster
Terrell
Val Verde
TEXAS
Big Bend National Park
MEXICO
Kinney
Maverick
Dimmit
Webb
June-July 2002 Survey
Light Giant Reed
Moderate Giant Reed
Dense Giant Reed
0 50 100
Kilometers
N
W E
S

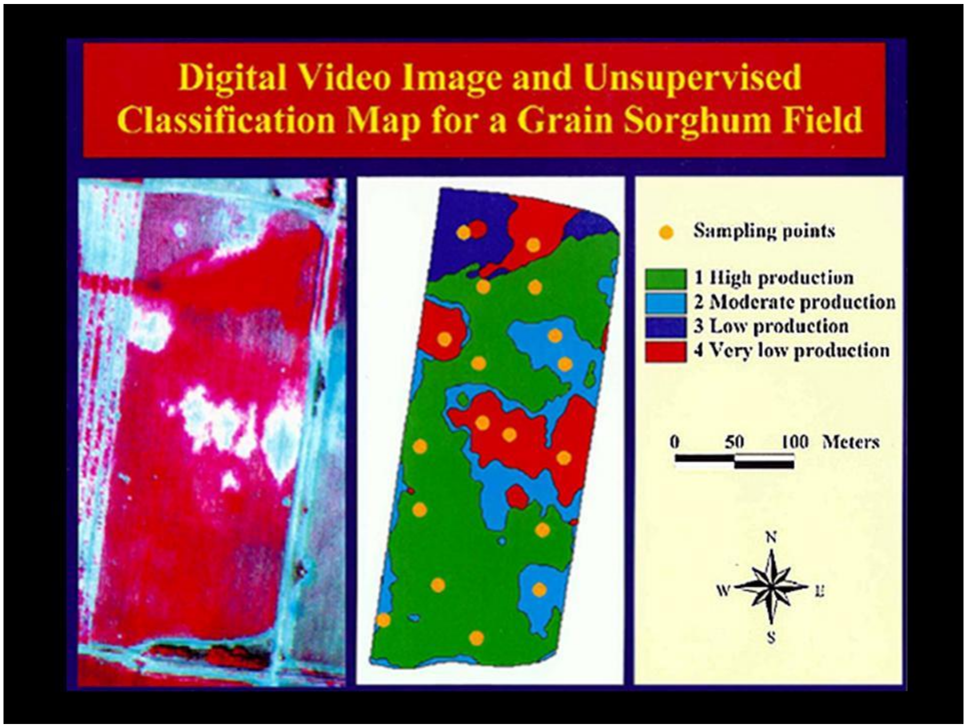


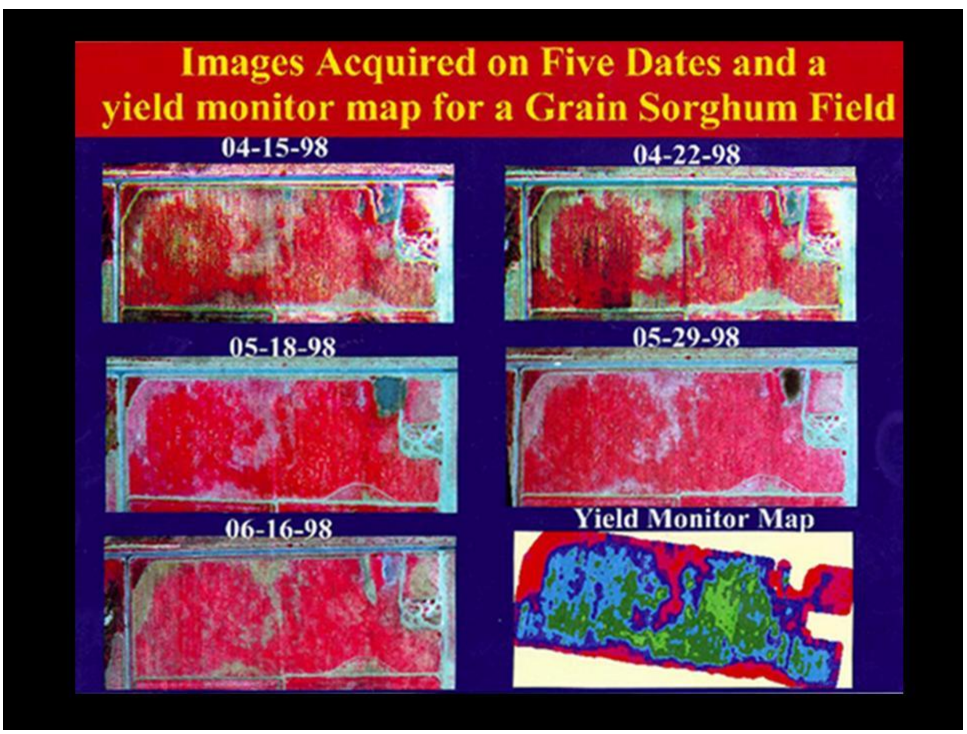
Kinney
MEXICO
Maverick
Dimmit
June-July 2002 Survey
Light Giant Reed
Moderate Giant Reed
Dense Giant Reed
0 10 20
Kilometers
N
W E
S

3-Camera True Digital Imaging System

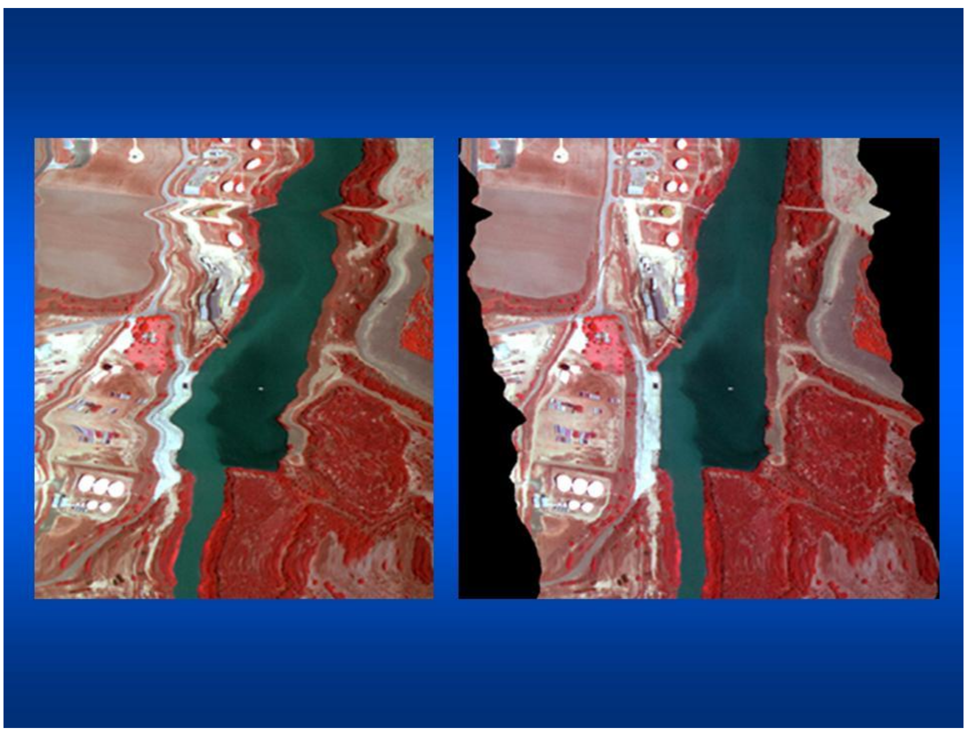

A
B
C
D

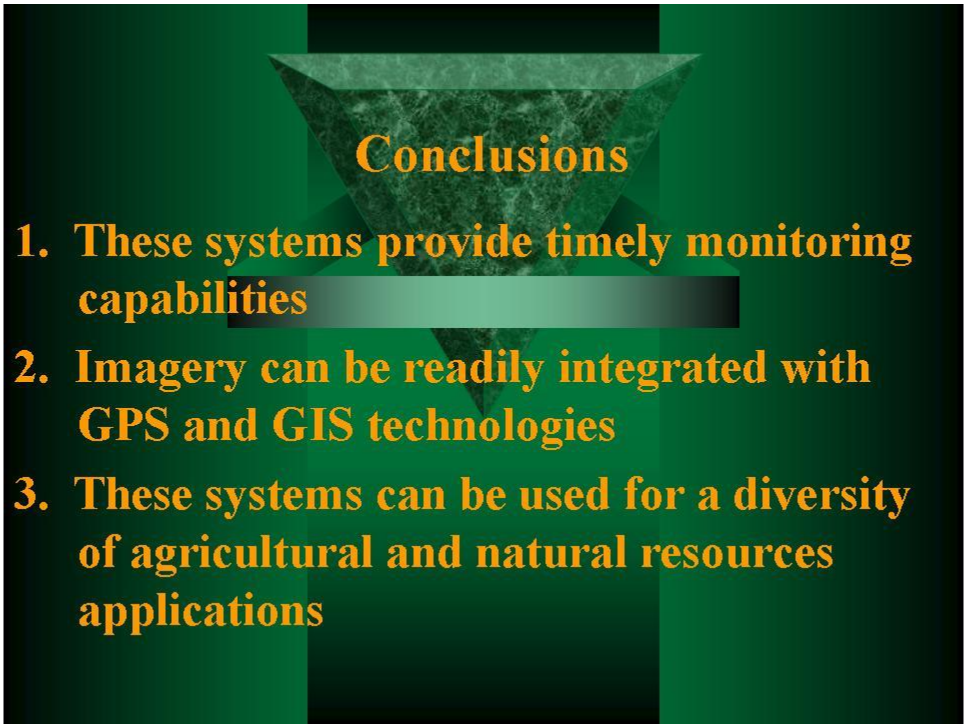

A
B
4
5
2
1
3


Digital Video Image and Unsupervised Classification Map for a Grain Sorghum Field
Sampling points
1 High production
2 Moderate production
3 Low production
4 Very low production
0 50 100 Meters
N
W
E
S


Images Acquired on Five Dates and a yield monitor map for a Grain Sorghum Field
04-15-98
04-22-98
05-18-98
05-29-98
06-16-98
Yield Monitor Map

Hyperspectral Imaging System

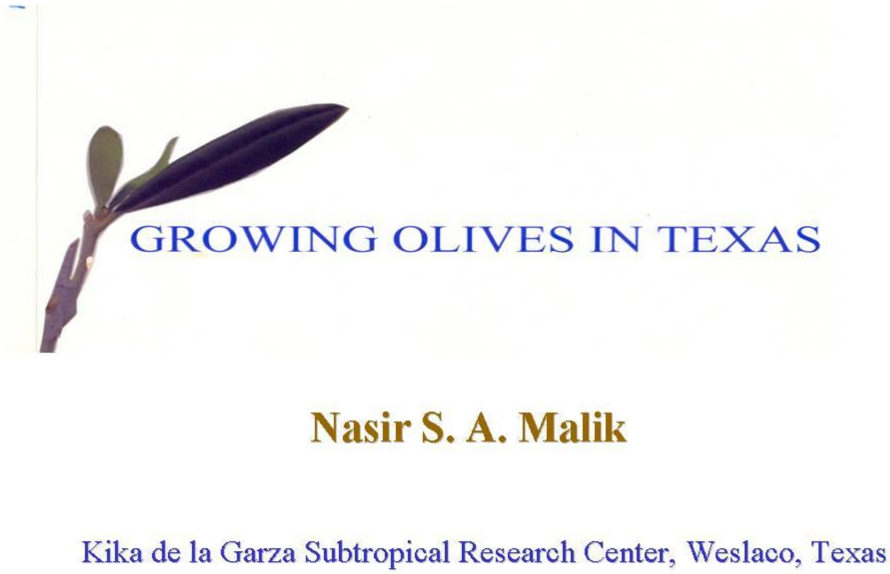



Conclusions
1. These systems provide timely monitoring capabilities
2. Imagery can be readily integrated with GPS and GIS technologies
3. These systems can be used for a diversity of agricultural and natural resources applications


Thank You

‘Growing Olives in Texas’

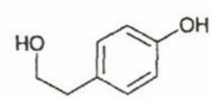
Nasir S.A. Malik, Assist Professor
Kika de la Garza Subtropical Research Center
Weslaco, Texas



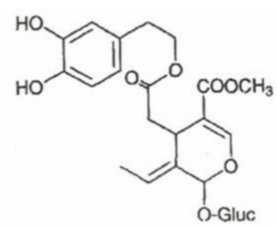
- First, let me explain that olive oil is actually a juice

- Thus, it contains several compounds (polyphenols) with notable health benefits

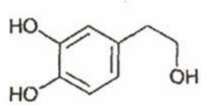
IT IS A JUICE



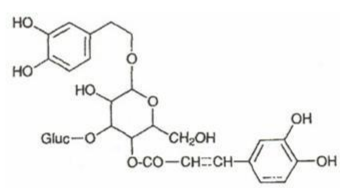
tyrosol



oleuropein

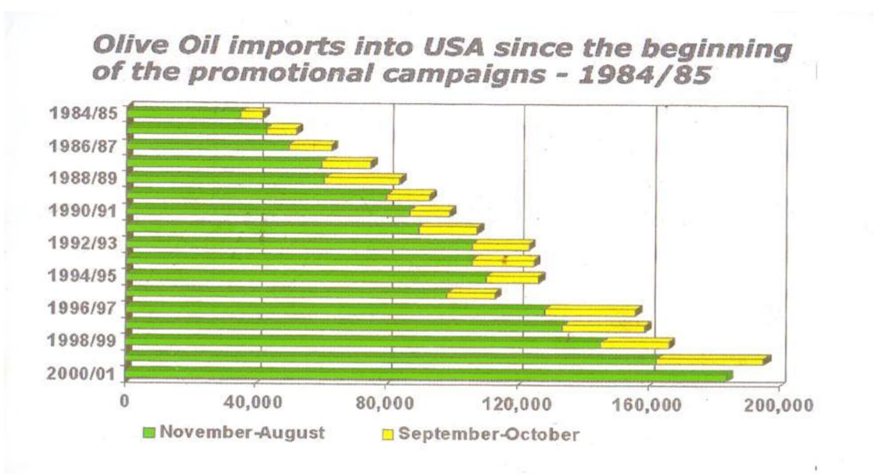


hydroxytyrosol



verbascoside

Due to enormous health benefits from olive oil, its consumption in America has been steadily growing



Los Angeles Times

BUSINESS

Friday, September 17, 2004

'You can make some money, but it won't be a killing.'

Antoinette Addison,
co-operator of Figueroa Farms, on the artisan olive oil business

SPENCER WEINER Los Angeles Times

QUALITY CONTROL: *Higher standards for what constitutes "extra virgin" are seen as a way of making California's olive oil industry more competitive. Above, Antoinette and Shawn Addison, who run Figueroa Farms in Santa Ynez, Calif.*

Pressing for Greater Olive Oil Oversight

Pressing for Greater Olive Oil Oversight

California producers want U.S. to tighten labeling standards

By JERRY HIRSCH
Times Staff Writer

When is a virgin not always a virgin?

When the "virgin" describes the type of olive oil sold in the United States.

In a rare case of a trade group asking the federal government for more regulation, the California Olive Oil Council is pressing the U.S. Department of Agriculture to tighten its grading standards. The council wants to prevent domestic and foreign producers from blending lower-grade olive oil, and even other oils such as canola, into what can be sold domestically as "extra virgin" olive oil.

The problem, said Bruce Golino, president of the trade group, is that the U.S. has no legal definition for extra virgin, which in other parts of the world denotes the highest grade of the product. This has created a loophole that allows producers to give their oils a premium label that doesn't truly reflect what's in the bottle, said Antoinette Addison, who with her husband, Shawn, operates olive orchard and mill **Figueroa Farms** in Santa Ynez, Calif.

Although some California producers market blended oils as extra virgin, the move to tighten the rules is aimed squarely at importers.

Olive oil grading standards are generally stricter in Europe, where most of the world's olive oil is produced. Rules in the U.S. allow foreign producers to ship lower-quality oil here under premium labels, California growers say. Their hope is that tightening U.S. standards will force importers to increase their quality and that as a result, "they will have to charge more," said Paul Vossen, a Santa Rosa, Calif.-based farm advisor with the University of California. "That will make our industry more competitive."

The North American Olive Oil Assn., the trade group representing the importers, also supports "updating the in-

[See Olive, Page C2]

Olive Oil Group Seeks Grading Change

[Olive, from Page C1]

dustry standards," said Bob Bauer, its president. But Bauer said mislabeling oil wasn't as big a problem as the California producers claimed. Although "there may be some smaller players" doing it, he said, the association has a testing program and has not heard of widespread incidents of lower-grade oil being sold as extra virgin.

The USDA will soon solicit

Oil Assn. said. About half of that is labeled "extra virgin."

Over the last decade, the industry has grown from a handful to more than 150 California olive oil brands, which typically are gourmet varieties produced in small quantities and sold for as much as $30 for a 500-milliliter bottle. Vossen estimates that California farmers last year planted 1,000 new acres of trees producing high-oil-content ol-

chards is going to make artisan production a difficult business, Vossen said. He said, however, that "we could compete quite well with the European imports if we moved to the big scale."

That would require high-density orchards on relatively flat land where a mechanical harvester could be used to collect the crop, Vossen said. So far there is just one operation that fits the requirements, he said:

Over the last five years, the state's oil production has nearly tripled to 400,000 gallons. Still, Vossen said, that was just a tiny drop of the 60 million gallons the U.S. consumes annually.

pending on the year.

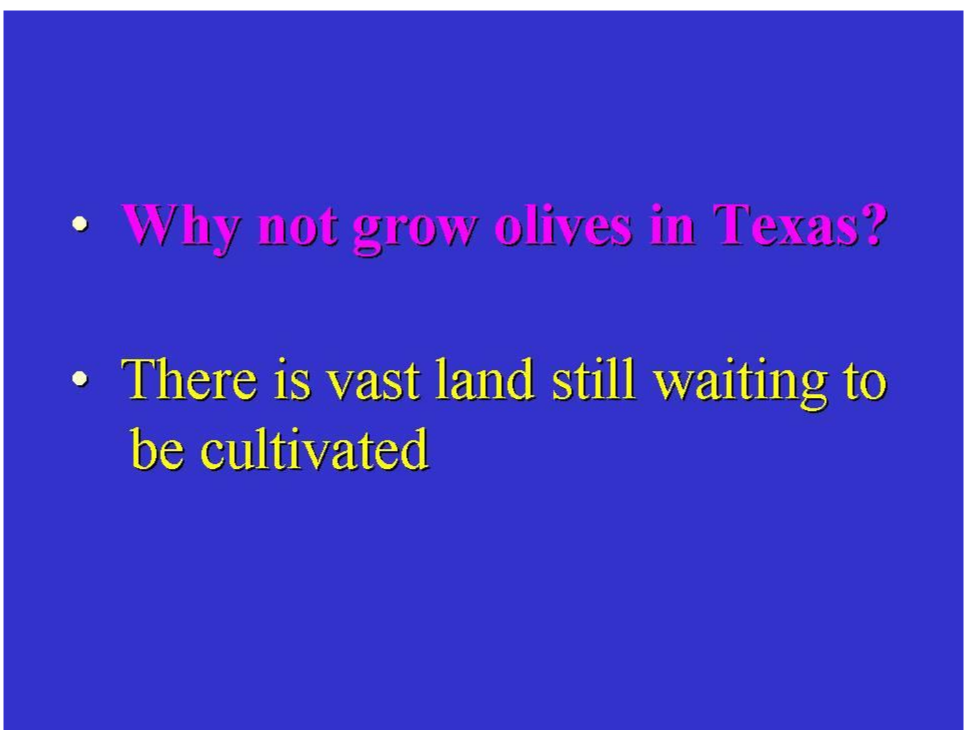
By comparison, the retail value of olive oil sales in the U.S. will be about $443 million this year, the North American Olive

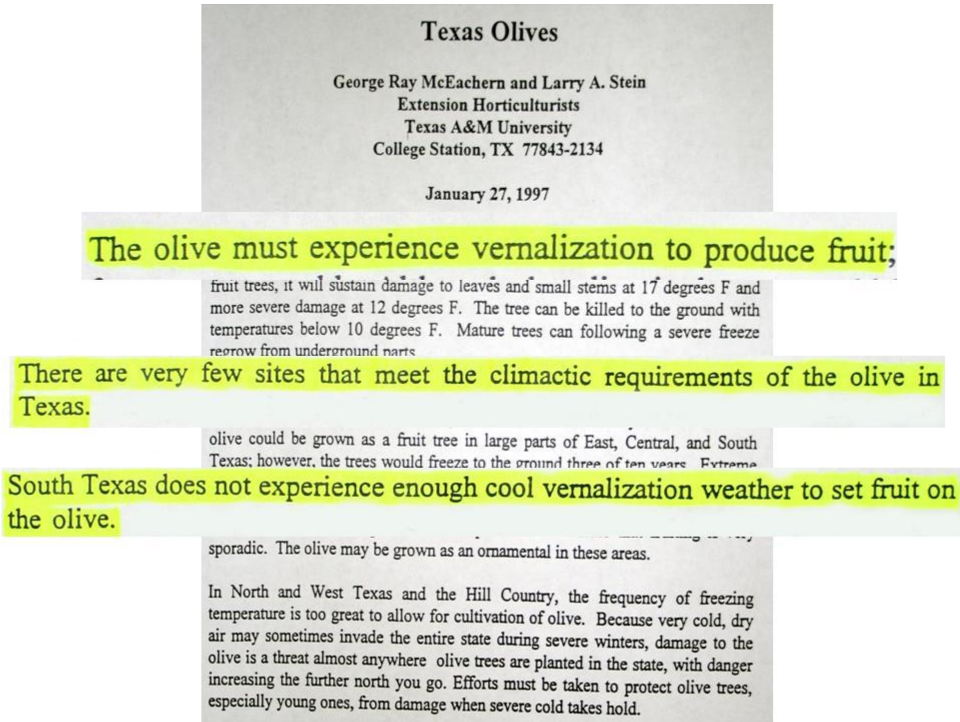
it won't be a killing," Antoinette Addison said.

In the long run, competition and the high cost of growing and handpicking olives in small or-

much lower than here," Hester said.

"In the international scheme of things," he said, "we are a nobody."




Texas Olives

George Ray McEachern and Larry A. Stein
Extension Horticulturists
Texas A&M University
College Station, TX 77843-2134

January 27, 1997

The olive must experience vernalization to produce fruit;

fruit trees, it will sustain damage to leaves and small stems at 17 degrees F and more severe damage at 12 degrees F. The tree can be killed to the ground with temperatures below 10 degrees F. Mature trees can following a severe freeze regrow from underground parts.

There are very few sites that meet the climactic requirements of the olive in Texas.

olive could be grown as a fruit tree in large parts of East, Central, and South Texas; however, the trees would freeze to the ground three of ten years. Extreme

South Texas does not experience enough cool vernalization weather to set fruit on the olive.

sporadic. The olive may be grown as an ornamental in these areas.

In North and West Texas and the Hill Country, the frequency of freezing temperature is too great to allow for cultivation of olive. Because very cold, dry air may sometimes invade the entire state during severe winters, damage to the olive is a threat almost anywhere olive trees are planted in the state, with danger increasing the further north you go. Efforts must be taken to protect olive trees, especially young ones, from damage when severe cold takes hold.

Cultivation of Olives in Texas was discouraged for the following reasons

- Lack of chilling for flowering in southern Texas

- Frost injury in northern Texas

Farming

An olive grove in Texas

The Economist
, FEBRUARY 18TH-24TH 1995

DALLAS

AMERICANS like olive oil. It is clean, it is healthy and it tastes good. According to the North American Olive Oil Association, olive-oil sales grew from 9.25m American gallons (35m litres) in 1989 to 12m gallons in 1993. Once seen chiefly on Italian shop shelves, it is now second in popularity only to soyabean oil. Yet a problem remains: olives, it seems, are exceedingly hard to grow in the United States.

Between 1982 and 1993 imports of olive oil almost quadrupled. This has given a spur to a band of pioneers, in California and Texas, who are convinced that olives can be an industry. Since the lat
group of vineyard owners in Calif
developed an olive-oil industry fr
ish trees, dating back to the early
which were abandoned when soy

took over the market in the 1950s. In Texas Kenneth Trigg Dealey, a Dallas oil and gas man, is struggling to get olives going.

He seemed at first to find an ally in Texas A&M University, which, in theory, helps anyone interested in growing anything in Texas, from apples to yams. In 1989 he read a study by George Ray McEachern, an A&M horticulturalist, which claimed that large ar-

> Ray McEachern told me point-blank there was no way I, or anyone else, was ever going to grow olives in Texas," says Mr Dealey. "He said that in all of Texas history it had never been done."

Dealey's delight

partment of Agriculture then put him in touch with Baxter Adams. Mr Adams is the founder of Love Creek Orchards in Medina, near San Antonio. Today Medina is the Apple Capital of Texas, with 150,000 trees growing within a radius of 150 miles. Yet in the late 1970s Mr McEachern of A&M told Mr Adams that it was impossible to grow apples there. As Mr Dealey puts it, "Hell, if it were up to [Mr McEachern], the only things we would be growing here in Texas are Johnson grass and cactus."

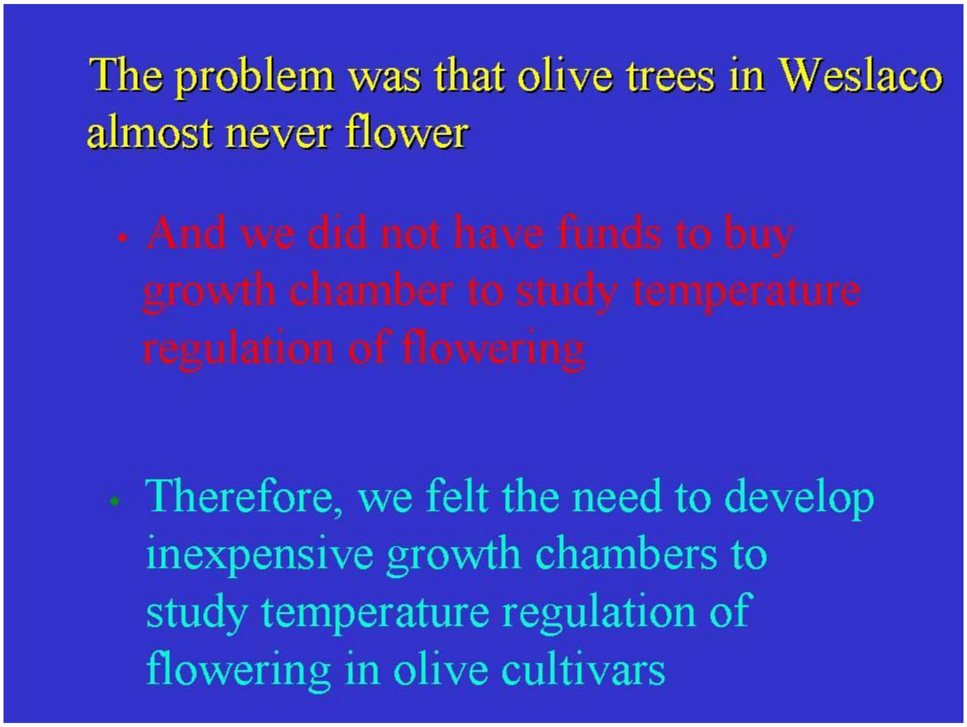
Yet Mr McEachern had a point. Texas is not a natural home to either the olive or the apple; it would be irresponsible of him, or of A&M, to encourage farmers to grow an inherently risky crop. The key is to find strains of either that will thrive. Mr Dealey has travelled far and wide to do so. In 1990 he went
re it was suggested that he plant
test trees. He has now done so,
0 imported trees in Mr Adams's
uth-east of San Antonio and in
uth of Austin. Then, in late 1992,
&M agricultural agent directed
the Holy Grail: a group of olive
d been growing and producing
th-western Texas, largely un-
the experts, for more than 70
unch had been right all along.
ley's imported trees have done
ve survived the winter. He has
d into olive contracts with several big growers in south-western Texas. He recently went into partnership with the Italian government to introduce a new genetic line of olive tree that will increase planting density by a full 50%, raising potential yield for a self-sustaining estate to more than $10,500-worth of olives a year. His goal is to have 5,000 acres (more than 1.5m trees) producing within ten years. "I'm already involved with Texas light crude," he says. "Why not South-West Texas Extra Virgin?"

THE ECONOMIST FEBRUARY 18TH 1995

- It shows that there is an intense interest among Texas growers for olive cultivation
- Four years ago, USDA decided to start a research project on growing olives in Texas

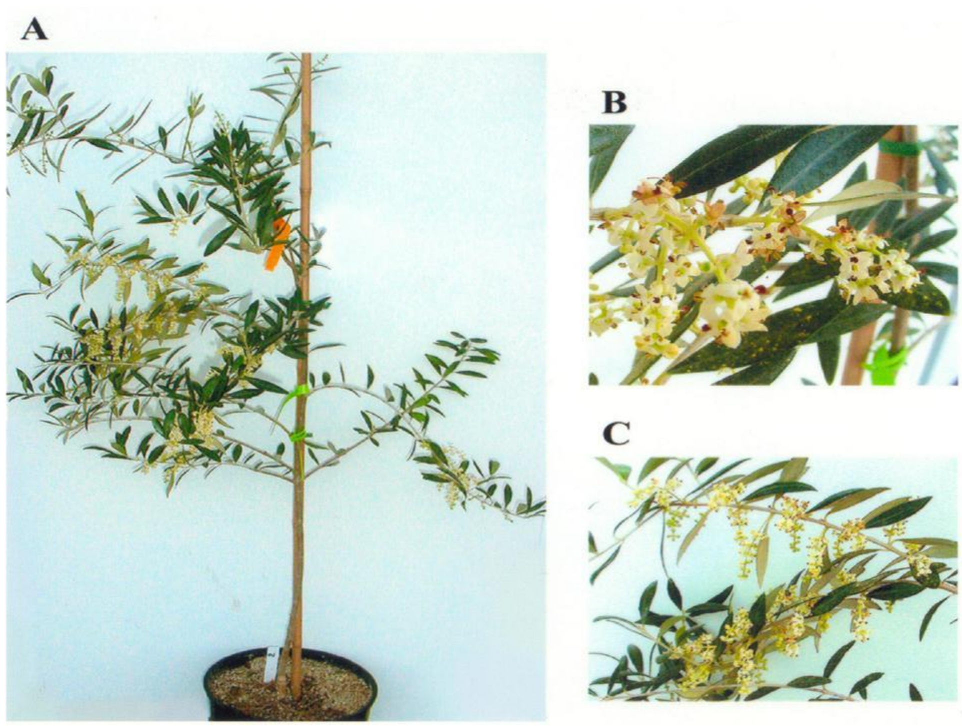
We recognized that:

- There are over 2000 0live cultivars
- Experimental research was never performed in Texas
- Research on regulation of flowering in olives is needed for Texas


The problem was that olive trees in Weslaco almost never flower
And we did not have funds to buy growth chamber to study temperature regulation of flowering
Therefore, we felt the need to develop inexpensive growth chambers to study temperature regulation of flowering in olive cultivars

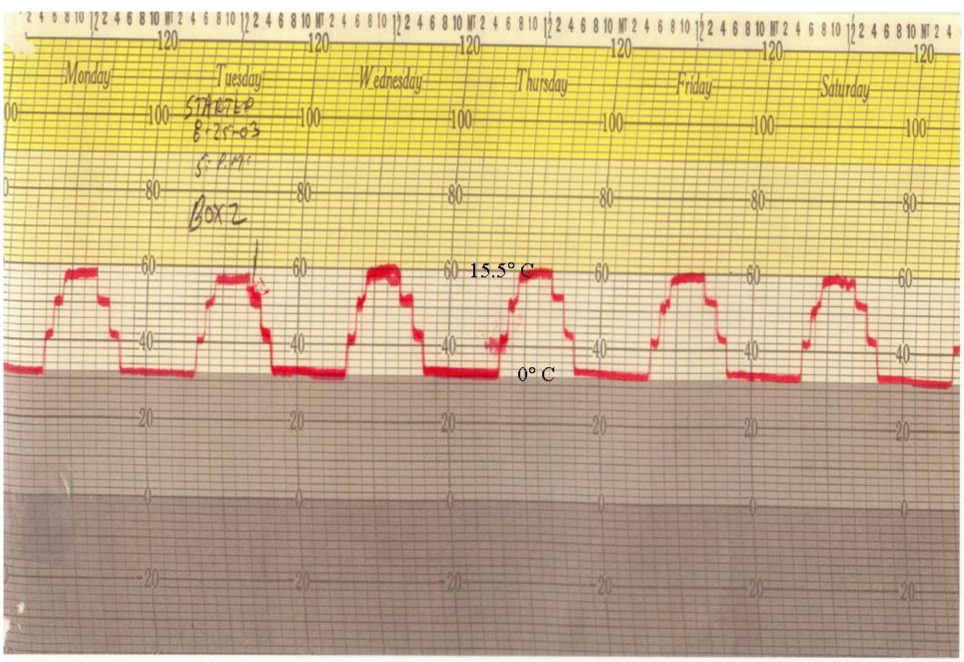

4
4
3


4


A
B
C

- The cost of construction for these growth chambers was around **$6000** compared to **$80,000-90,000** for commercial growth chambers

- In addition, these chambers provided stepwise increase and cooling to below 2°C that commercial chambers rarely do, and they utilize natural light

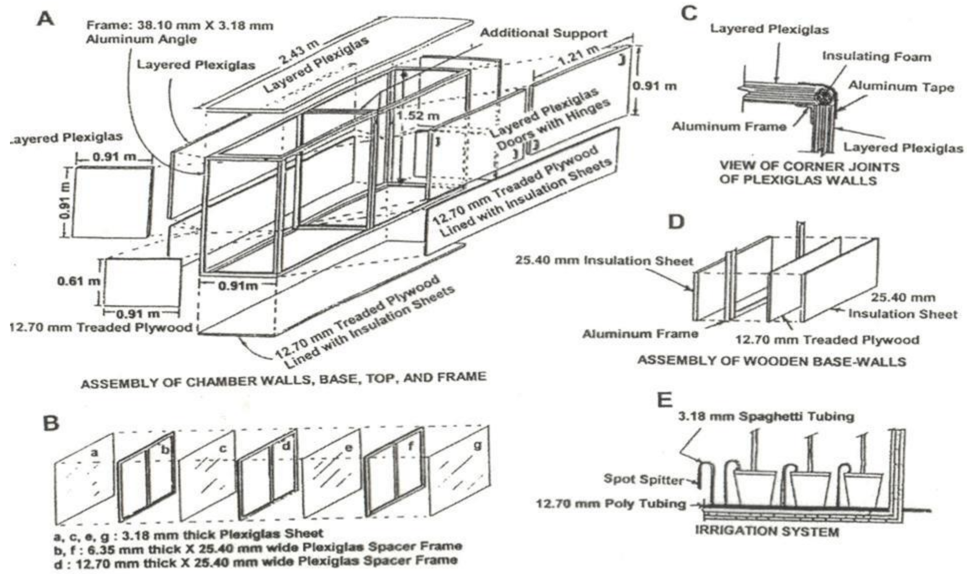


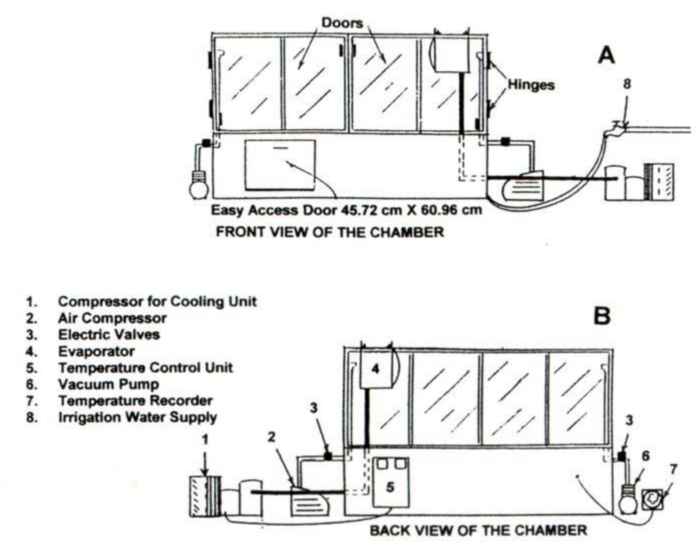
Tracing of actual changes in temperature.

HORTSCIENCE40(1):xxx-xxx. 2005.

Design and Construction of an Inexpensive Plexiglas Chilling Chamber to Study Flowering in Olives

Nasir S.A. Malik and Joe M. Bradford



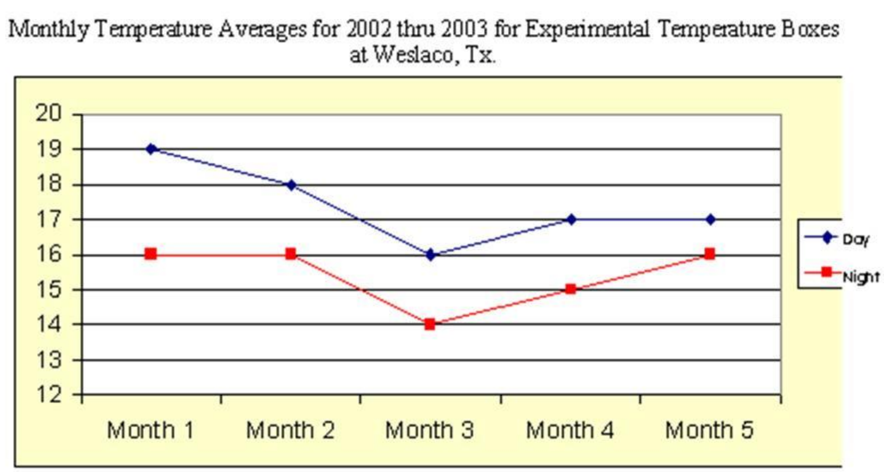


Diagrammatic look at front and back view of the chamber.

An unexpected finding

- Serendipitously, we found that olive cultivar 'Arbequina' could flower in the absence of typical chilling temperatures

Weslaco Box 1

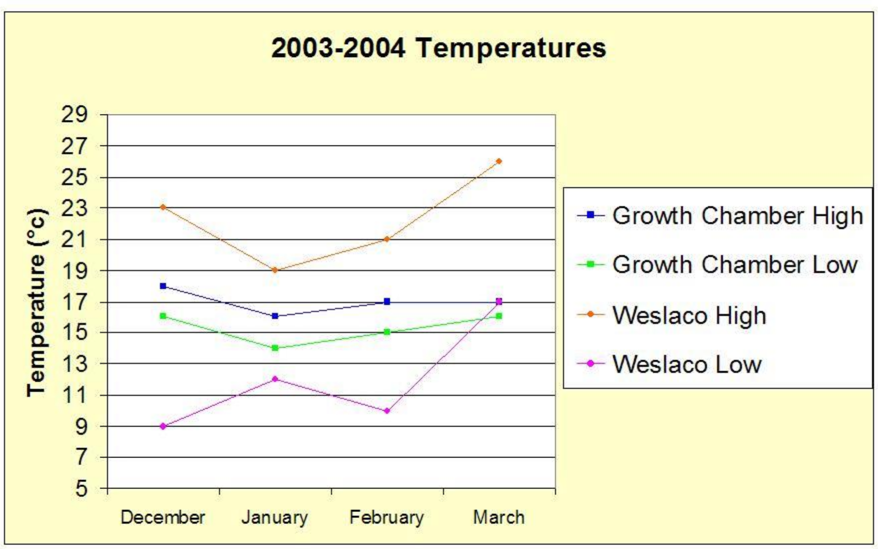


Flowering and fruiting in 'Arbequina' olive tree at mild temperature that never reached chilling conditions.

Treatment	Total no. of plants	Total no. of plants flowered	Avg. no. of inflorescence per tree	Avg. no of fruits per tree
"Mild 1"	8	8	504 ± 76.7	110 ± 21.4
"Mild 2"	8	7	316 ± 79.2	61 ± 11.2
Warm Temp. (Control)	8	0	0	0

Mild 1 Temperature up to 8°C
Mild 2 Temperature up to 10°C
Plant average height was 143cm and diameter average of 74cm.


A new paradigm for regulation of flowering in olives emerged
• Flowering and fruiting in olive can be achieved in the absence of typical chilling requirements
• If this is so then why olive trees don't flower in Weslaco?


2003-2004 Temperatures
Temperature (°c)
29
27
25
23
21
19
17
15
13
11
9
7
5
December
January
February
March
Growth Chamber High
Growth Chamber Low
Weslaco High
Weslaco Low

A new hypothesis developed

- Lack of flowering in southern Texas is due to high daytime temperatures in winter rather than insufficient chilling

To test our hypothesis an experiment was conducted where trees growing in Weslaco were either given shade or sprinkled with water during day to minimize inhibitory effects of high daytime temperatures during flower induction period in winter

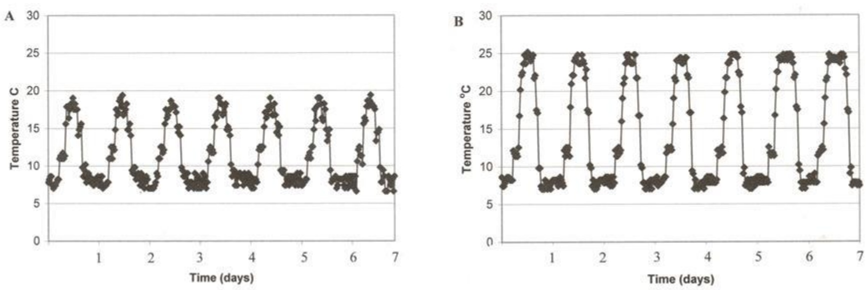
The effect of daytime cooling, with different levels of shading or through evaporative cooling, on flowering and fruiting in 'Arbequina' olives.

Treatment[1]	Total no. of plants flowered	Avg. no. of flowers per tree	Avg. no. of flowers per inflorescence	Avg. no of fruits per tree
Wet tent	6	2526 ± 1040	12 ± 3.1	99 ± 40.6
Water sprinkler	5	684 ± 238	18 ± 0.7	56 ± 20.6
Dry tent	5	619 ± 280	11 ± 3.1	22 ± 12.8
Open field	0	0 ± 0.0	0 ± 0.0	0 ± 0.0

Results proved our hypothesis

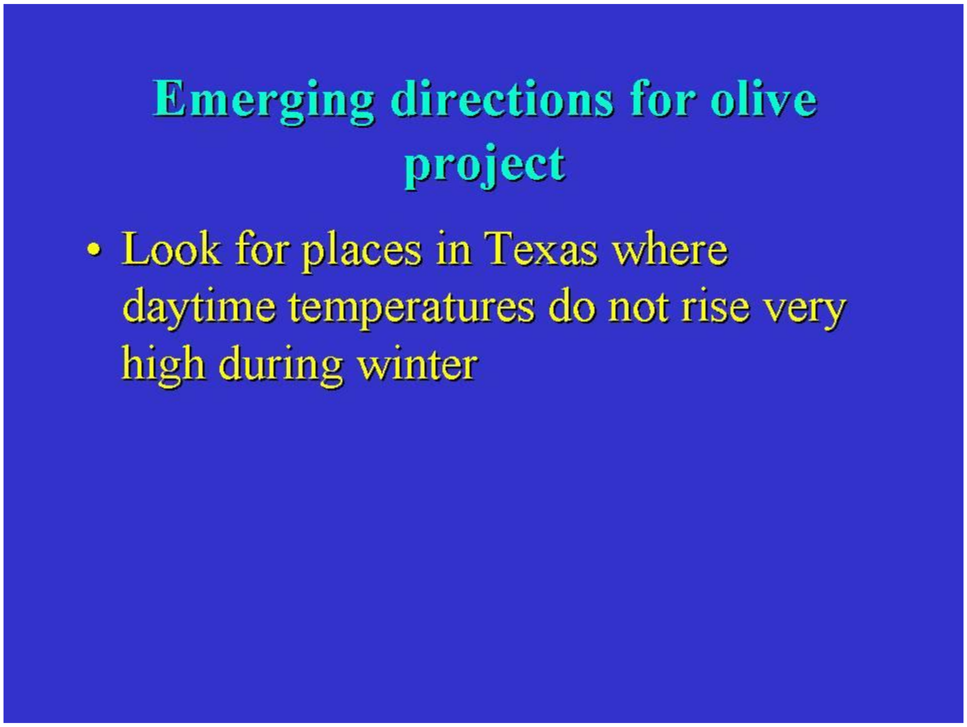
- Shading and water sprinkling experiments resulted in substantial fruiting in olives without typical chilling temperatures

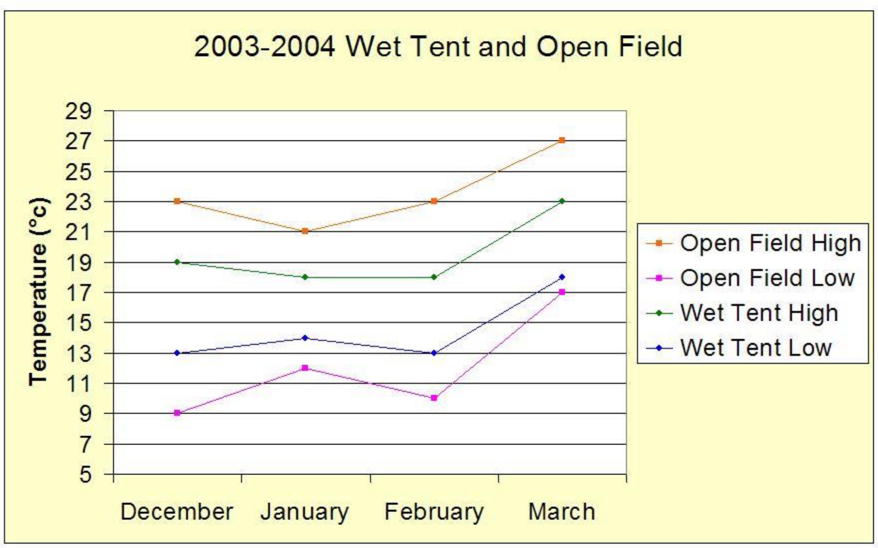
Another growth chamber experiment was conducted to test our hypothesis from another angle

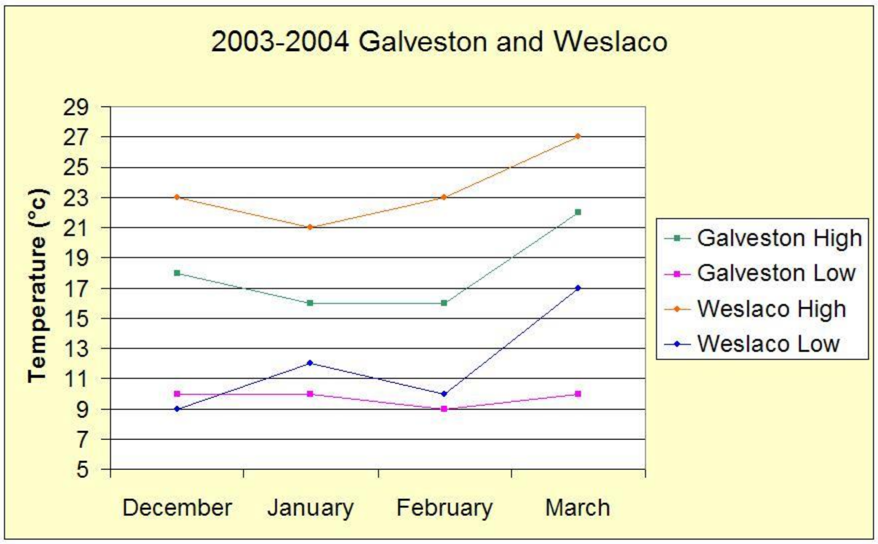


The effects of different daytime temperatures in chambers 1 and 2 on flowering in 'Arbequina' olive trees.

Treatment	Total no. of plants	Total no. of plants flowered	Avg. no. of blooms per inflorescence	Avg. no. of inflorescence per tree	Percent buds that flowered per tree
Chamber 1	10	10	23.9 ± 0.78	1466.7 ± 58.7	67.3 ± 3.1
Chamber 2	10	8	14.2 ± 0.46	35.2 ± 11.7	1.4 ± 0.4

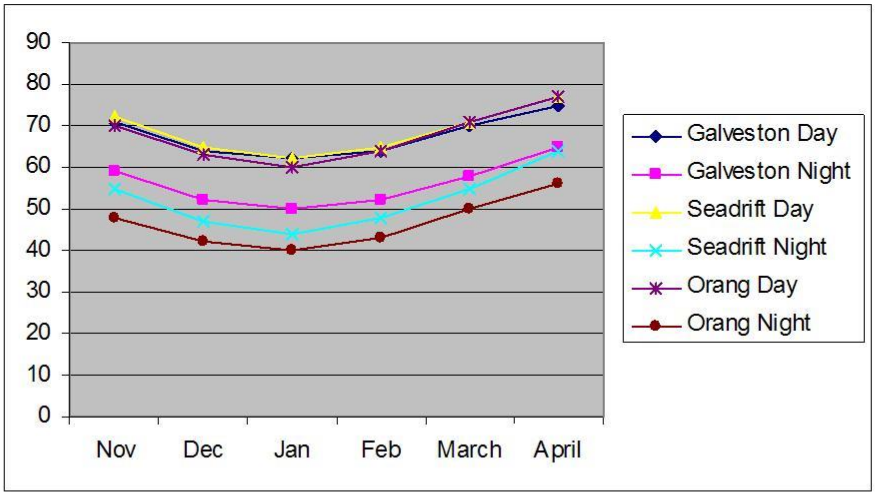

Emerging directions for olive project
• Look for places in Texas where daytime temperatures do not rise very high during winter


2003-2004 Wet Tent and Open Field
Temperature (°c)
29
27
25
23
21
19
17
15
13
11
9
7
5
December
January
February
March
Open Field High
Open Field Low
Wet Tent High
Wet Tent Low


2003-2004 Galveston and Weslaco
Temperature (°c)
29
27
25
23
21
19
17
15
13
11
9
7
5
December
January
February
March
Galveston High
Galveston Low
Weslaco High
Weslaco Low

Field validation of hypothesis

- Flowering and fruiting of olive trees in Galveston, Texas validated our hypothesis that it is the high daytime temperature rather than lack of nighttime chilling that impedes flowering in olive in southern Texas


90
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Nov
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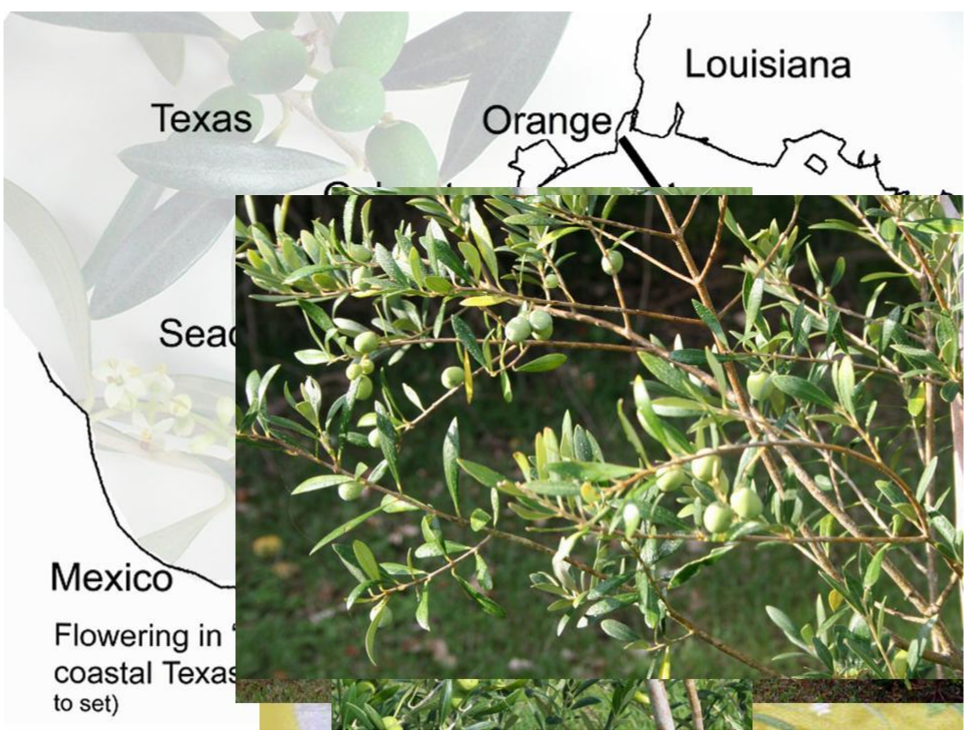
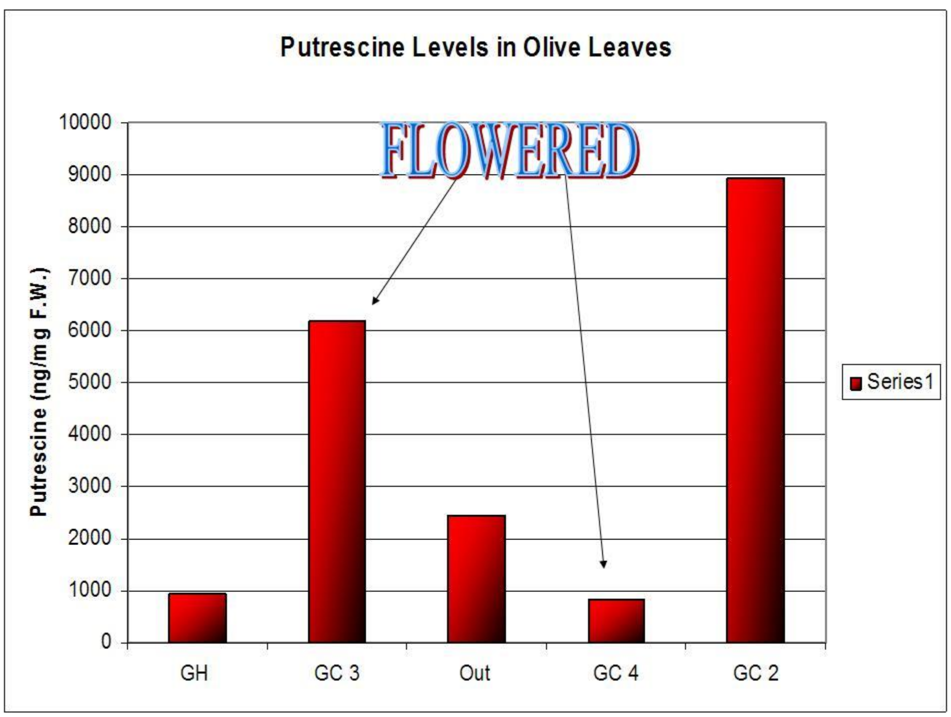
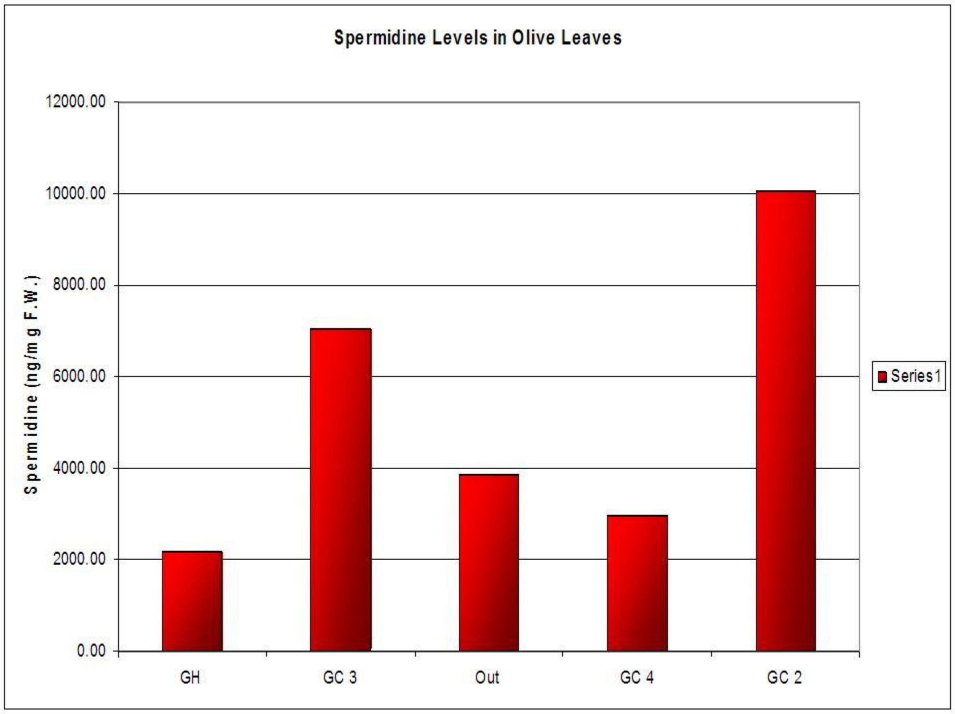
March
April
Galveston Day
Galveston Night
Seadrift Day
Seadrift Night
Orang Day
Orang Night

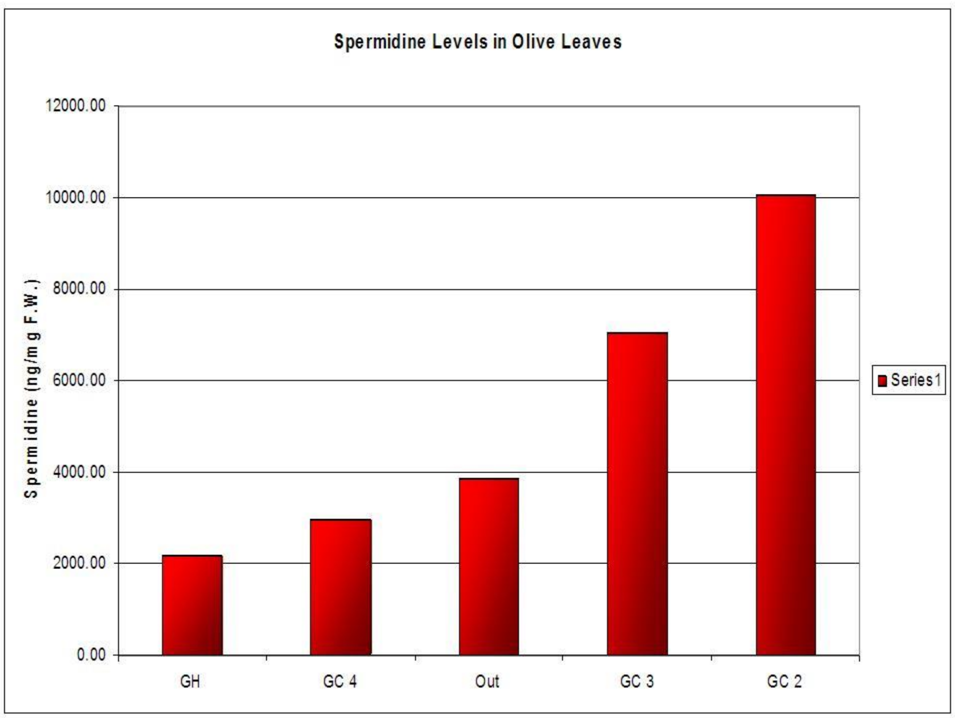

Louisiana
Texas
Orange
Mexico
Flowering in
coastal
to set)

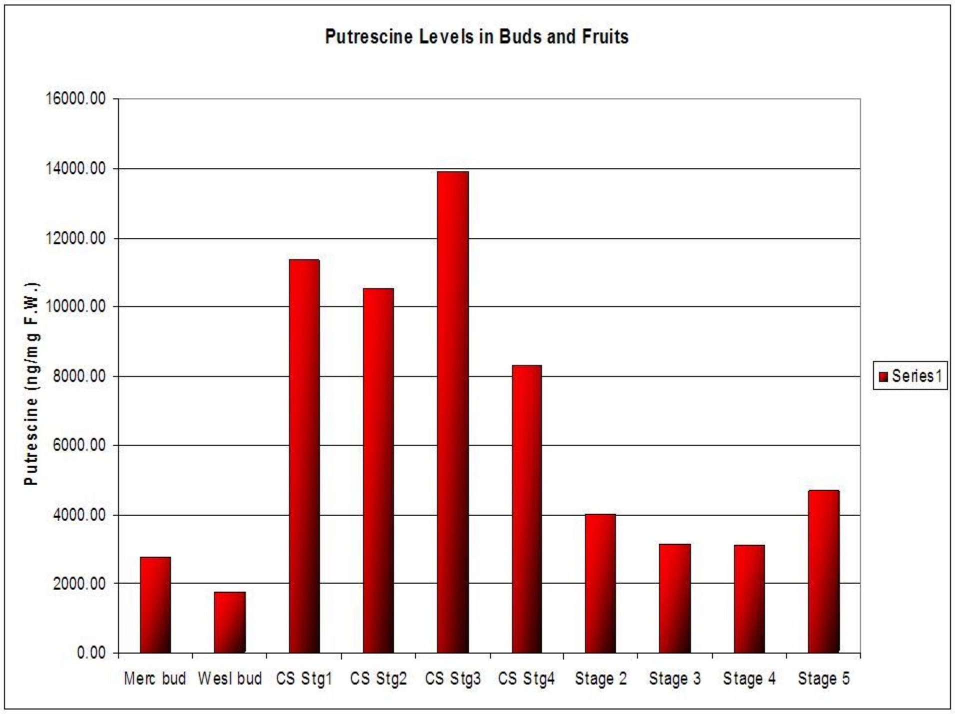
Final proof of concept

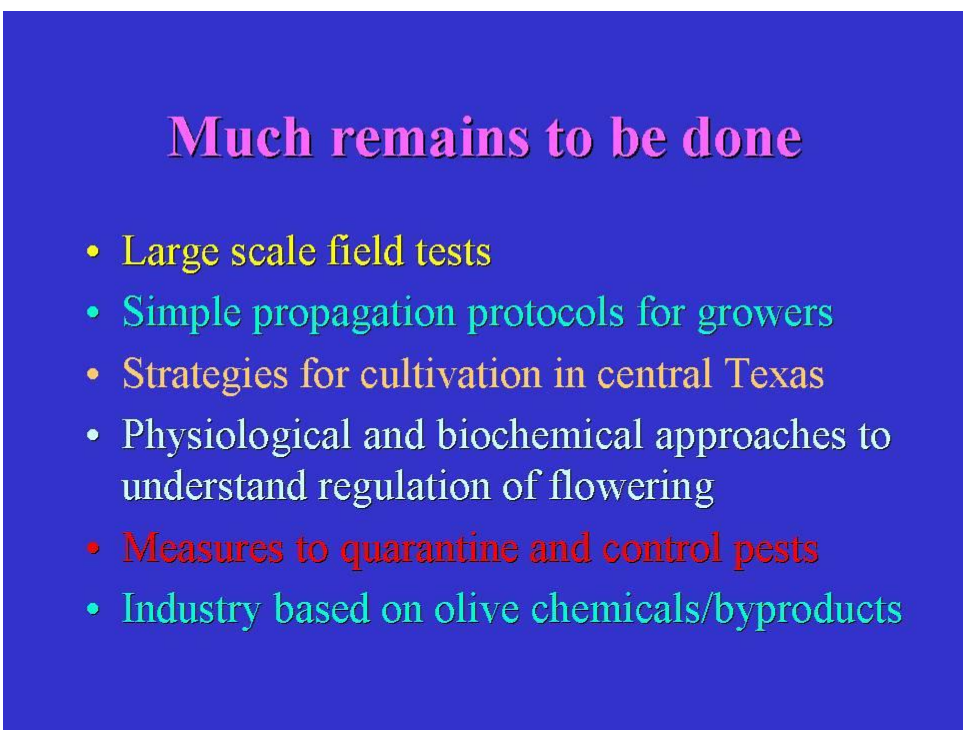
- These results powerfully proved our concept for cultivation of olives in Texas and extending into Louisiana

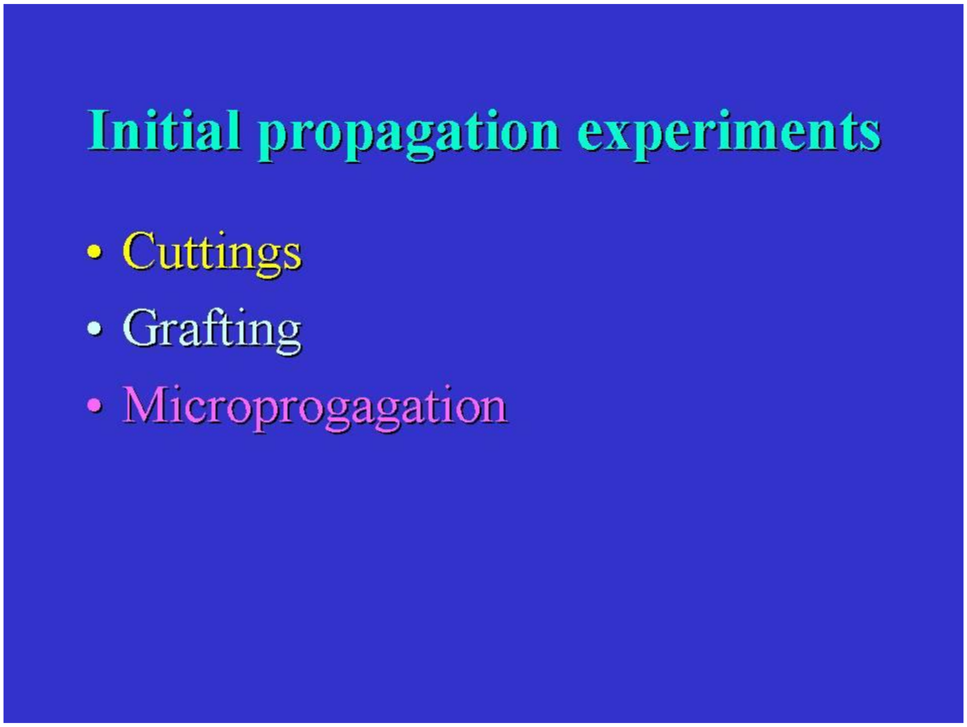


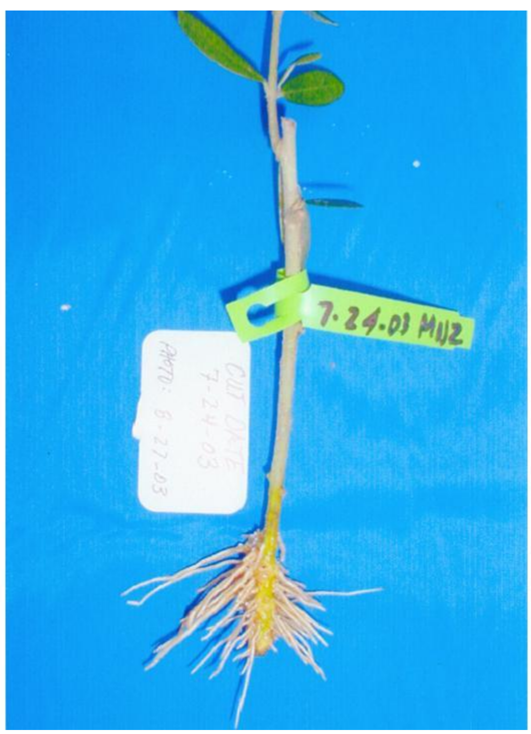

Spermidine Levels in Olive Leaves
12000.00
10000.00
8000.00
6000.00
4000.00
2000.00
0.00
Spermidine (ng/mg F.W.)
GH
GC 3
Out
GC 4
GC 2
Series1

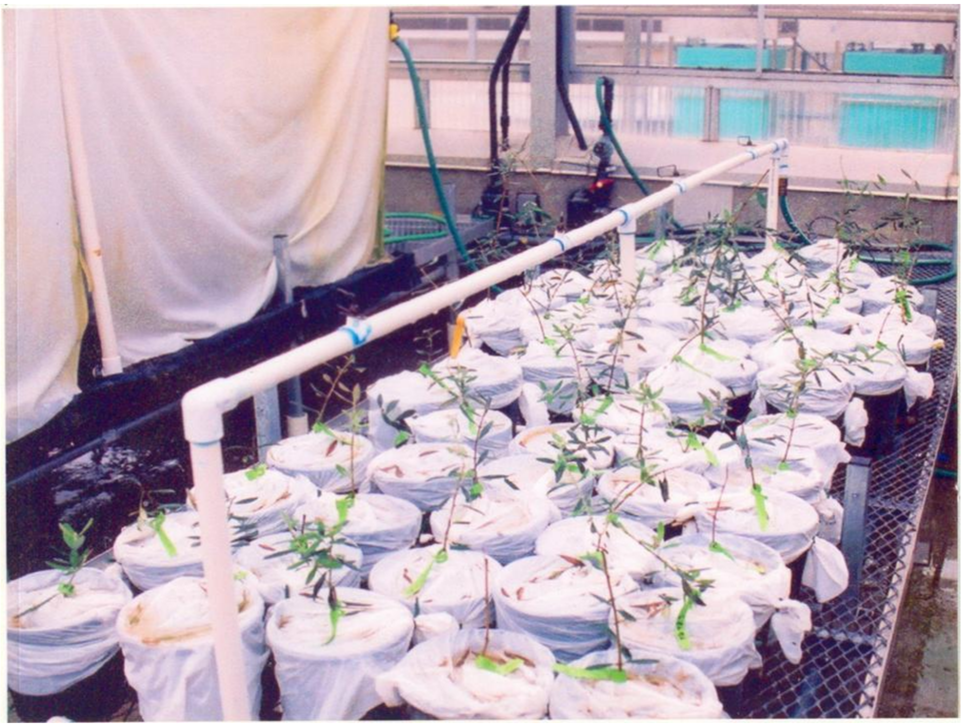

Spermidine Levels in Olive Leaves
12000.00
10000.00
8000.00
6000.00
4000.00
2000.00
0.00
Spermidine (ng/mg F.W.)
GH
GC 4
Out
GC 3
GC 2
Series1


Putrescine Levels in Buds and Fruits
Putrescine (ng/mg F.W.)
16000.00
14000.00
12000.00
10000.00
8000.00
6000.00
4000.00
2000.00
0.00
Merc bud
Wesl bud
CS Stg1
CS Stg2
CS Stg3
CS Stg4
Stage 2
Stage 3
Stage 4
Stage 5
Series1


Much remains to be done
• Large scale field tests
• Simple propagation protocols for growers
• Strategies for cultivation in central Texas
• Physiological and biochemical approaches to understand regulation of flowering
• Measures to quarantine and control pests
• Industry based on olive chemicals/byproducts


Initial propagation experiments
• Cuttings
• Grafting
• Microprogagation


7-24-03 MNZ
CUT DATE
7-24-03
PHOTO: 8-27-03

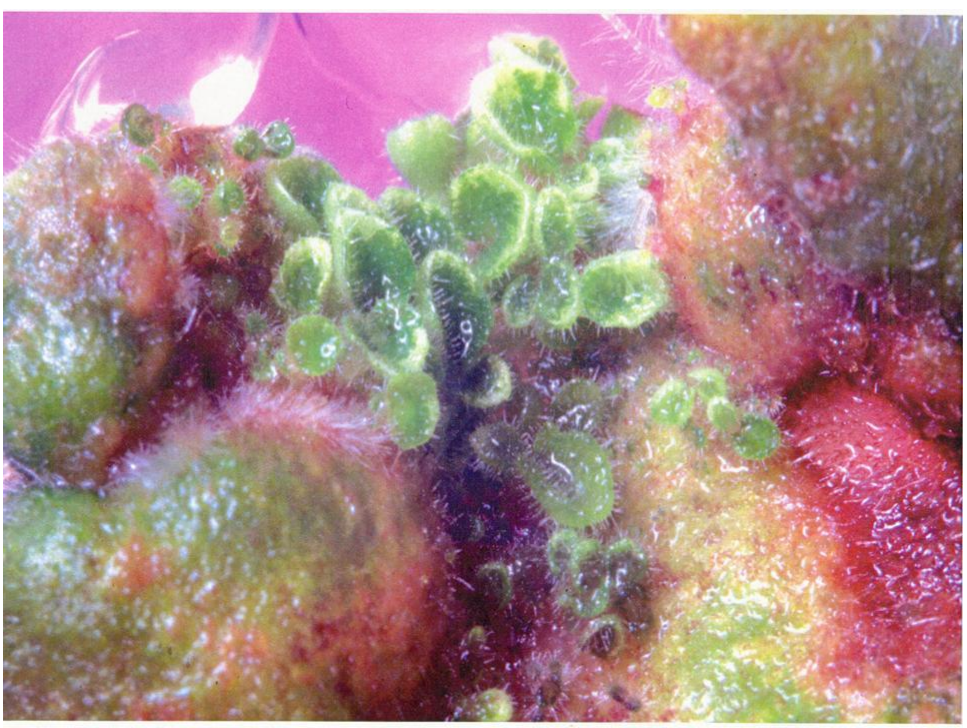


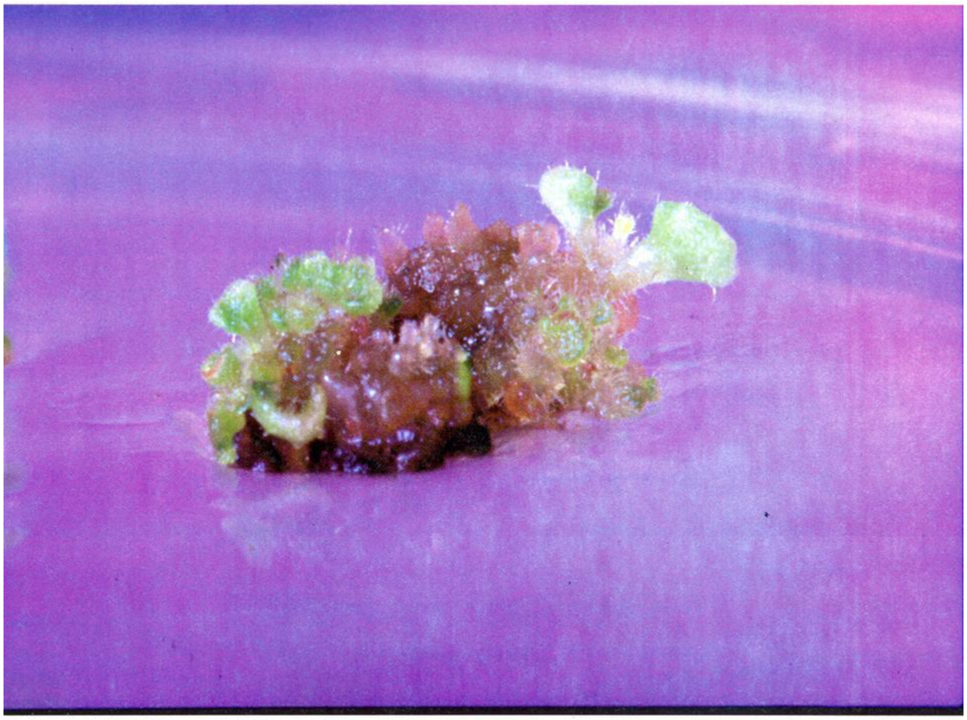
Grafting

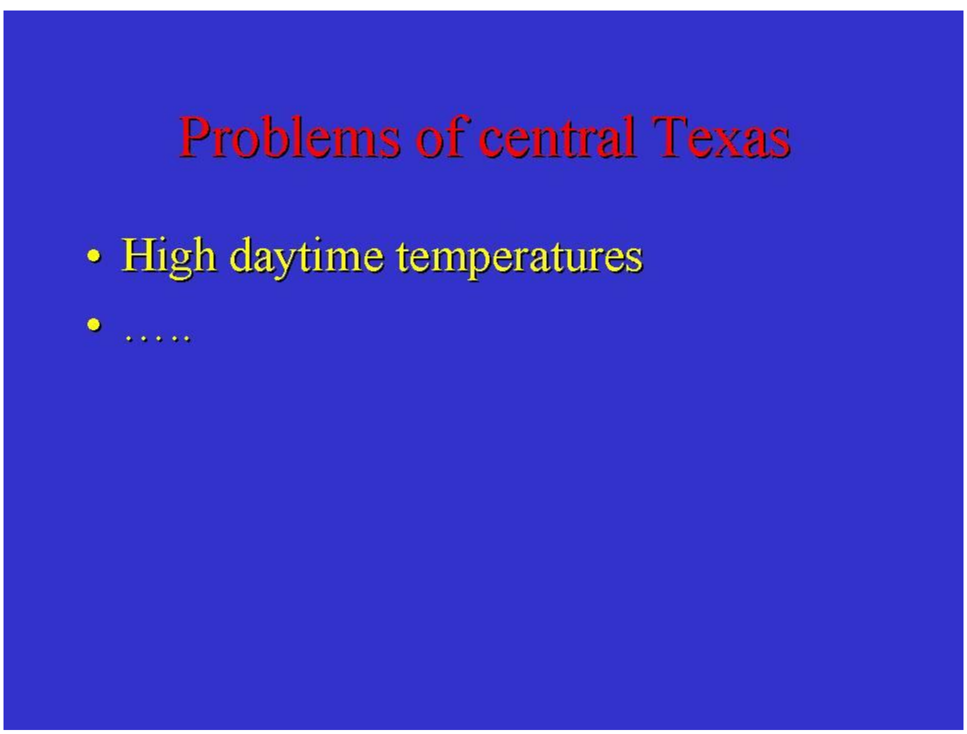
- Some cultivars are hard to root and therefore grafting is another mode of vegetative propagation
- Some cultivars are sensitive to root fungi (verticillium) and therefore grafting on resistant rootstocks would be important

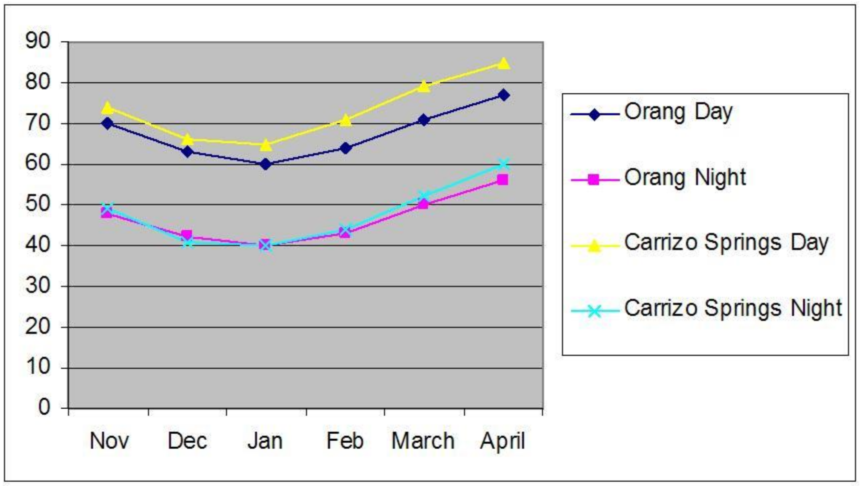
Micro-propagation

- A need for mass production






Problems of central Texas
• High daytime temperatures
• …..



90
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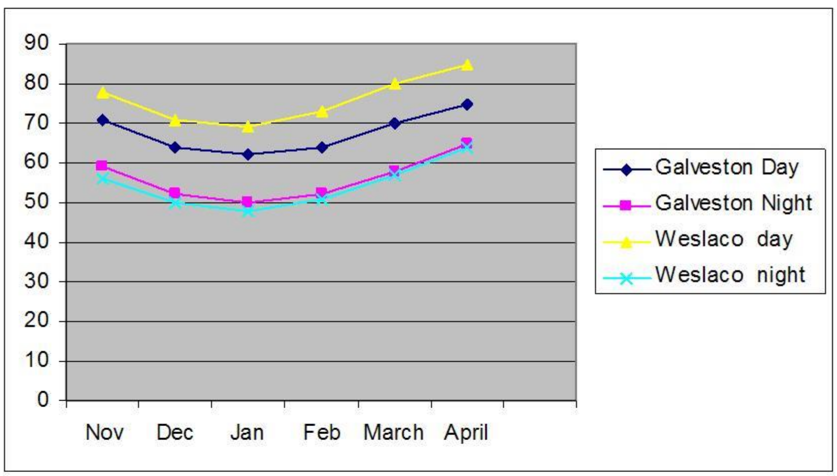
March
April
Orang Day
Orang Night
Carrizo Springs Day
Carrizo Springs Night



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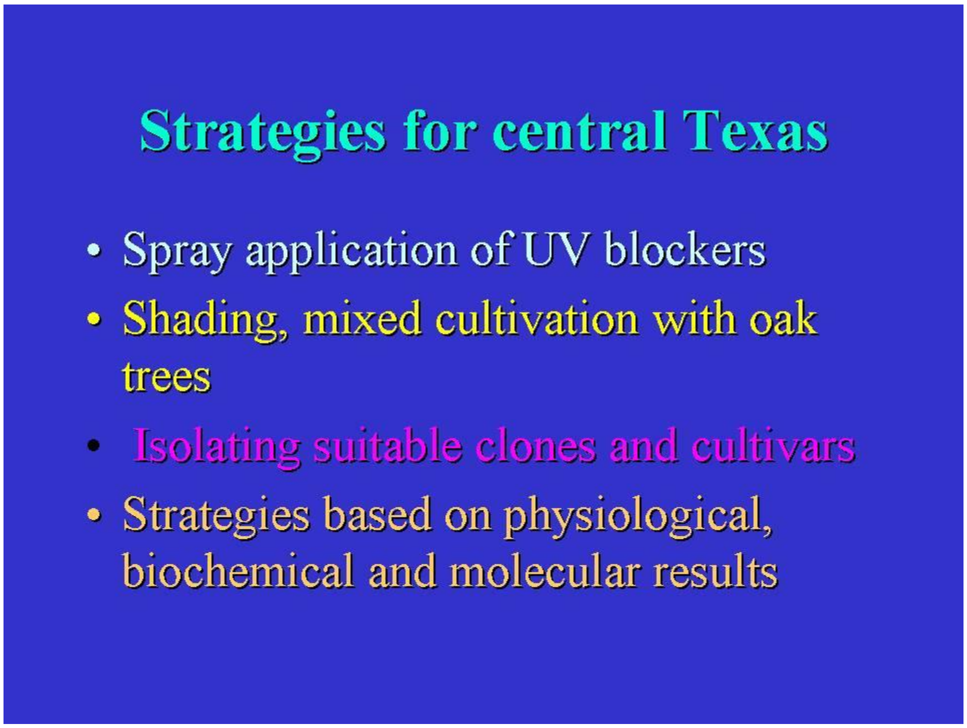
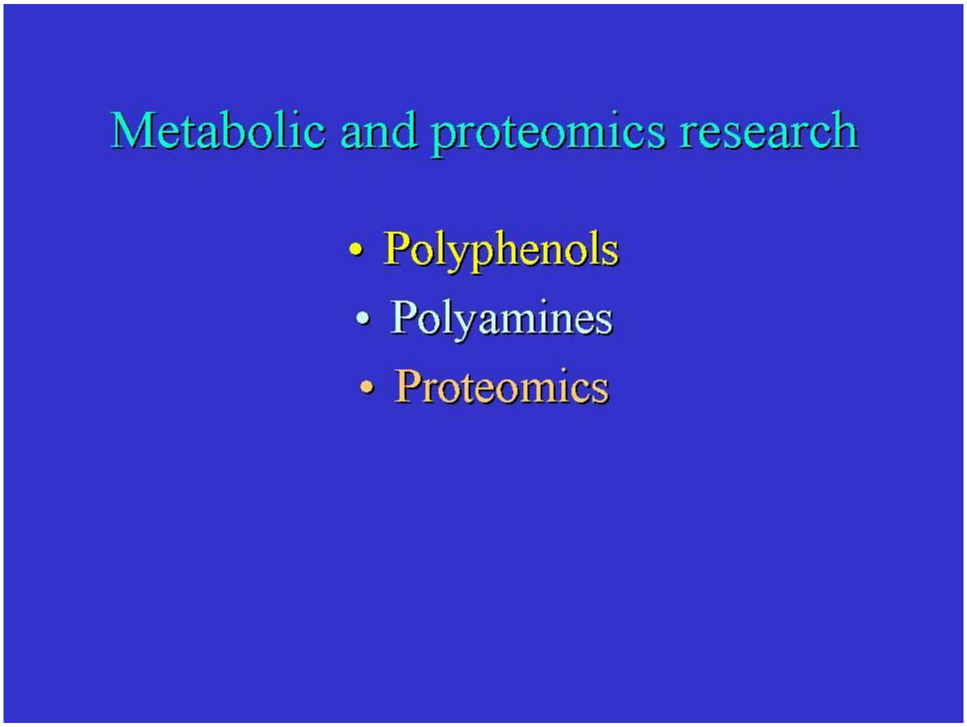
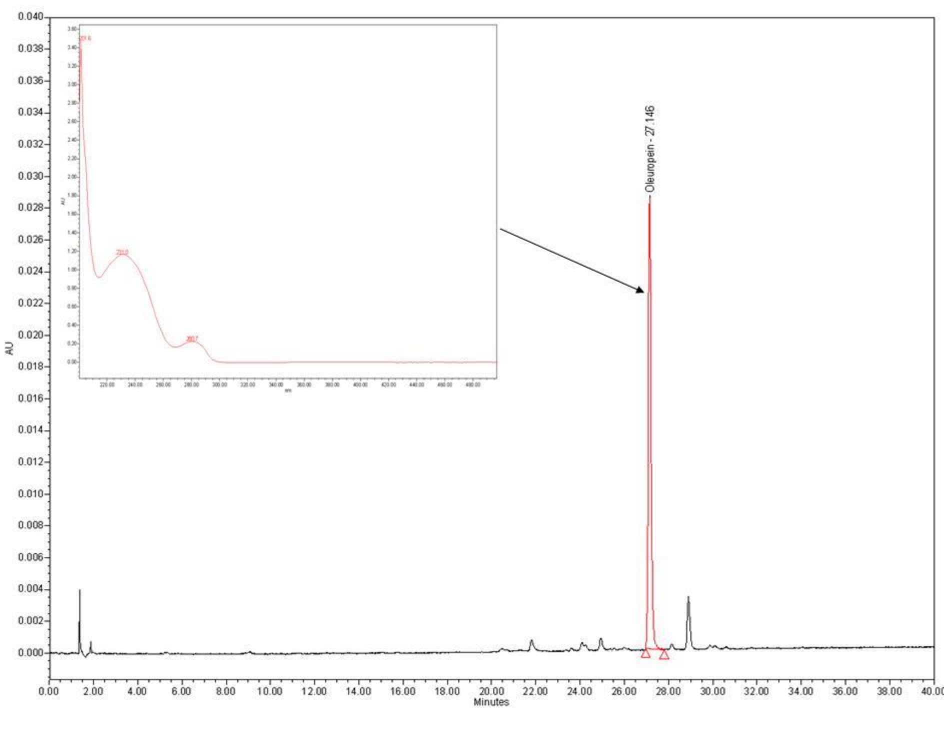
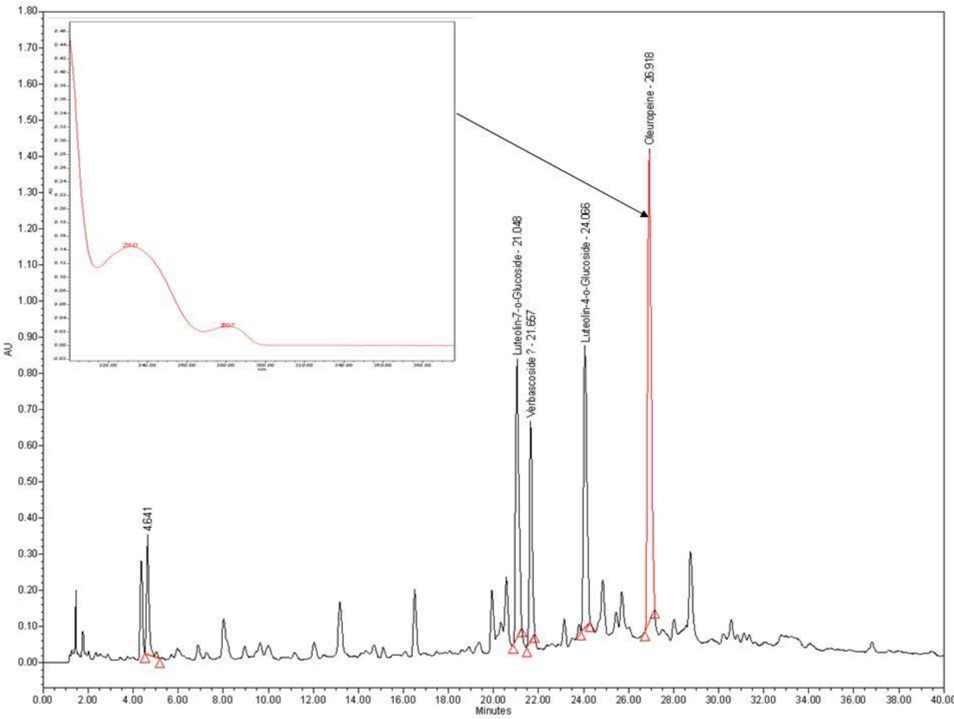
March
April
Galveston Day
Galveston Night
Weslaco day
Weslaco night

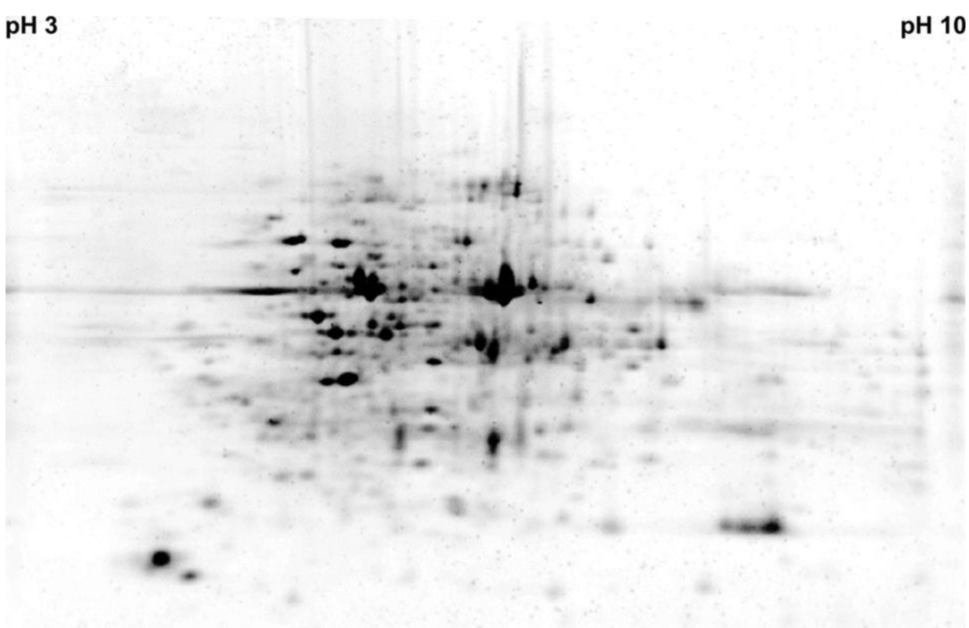

Strategies for central Texas
• Spray application of UV blockers
• Shading, mixed cultivation with oak trees
• Isolating suitable clones and cultivars
• Strategies based on physiological, biochemical and molecular results

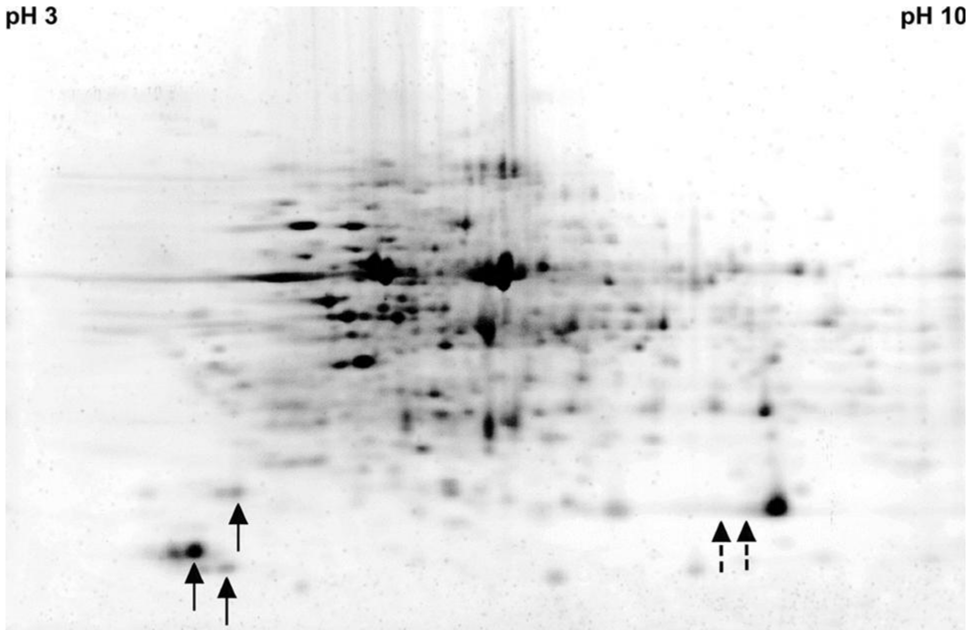

Metabolic and proteomics research
• Polyphenols
• Polyamines
• Proteomics

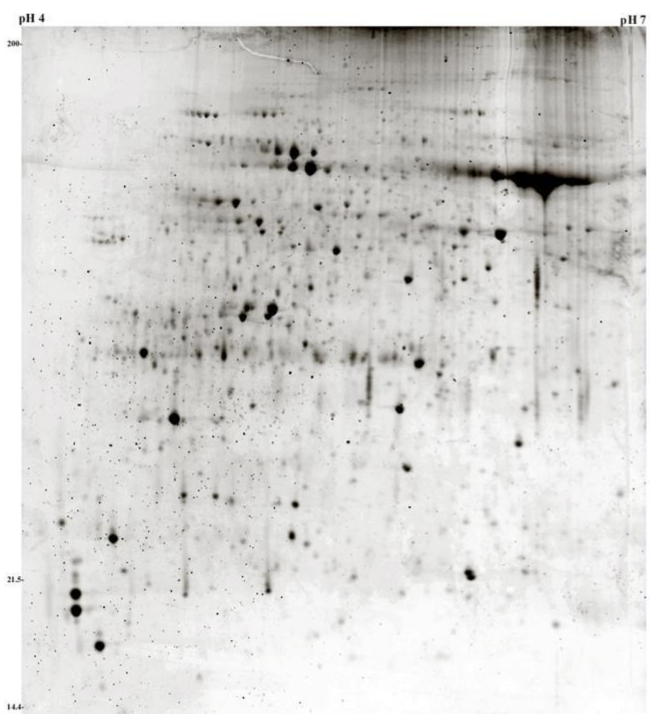

AU
Minutes
Oleuropein - 27.146



Type of sample	Oleuropein (mg/g) fresh wt.	Total phenols (mg/g) fresh weight	Oleuropein as % of veg. buds	Total phenols as % veg. buds
Vegetative buds	58.36 ± 1.74	265.48 ± 4.39	100	100
Flowering buds	15.70 ± 0.92	109.05 ± 3.71	27	41
Flowers (complete)	20.99 ± 0.15	63.67 ± 2.53	36	24
Flowers (staminate)	15.32 ± 0.24	41.74 ± 0.95	26	16
Fruit stage 1 2-3 mm diameter	50.82 ± 1.88	121.79 ± 3.18	87	46
Fruit stage2 5-7 mm diameter	40.07 ± 1.96	69.76 ± 3.47	69	26
Fruit mature green 10-13 mm diameter	13.65 ± 0.48	57.58 ± 2.17	23	22
Fruit mature black 10-13 mm diameter	0.0 ± 0.0	48.51 ± 2.10	0	17


pH 3
pH 10


pH 3
pH 10


pH 4
pH 7
200-
21.5-
14.4-

Peer Reviewed Publications

- 1 **Malik, N. S. A**, and Bradford, J. M. Reciprocal grafting between early maturing and normal maturing olive varieties: Preliminary effects on the nature of juvenility and flowering. J. Food Agric. Environ. 2:197-200. 2004.
- 2. **Malik, N. S. A**, and Bradford, J. M. Genetic diversity and clonal variation among olive cultivars offer hope for selecting cultivars for Texas. J. Am. Pom. Soc. 58:203-209. 2004.
- 3. **Malik, N. S. A**, and Bradford, J. M. Design and construction of an inexpensive plexiglas chilling chamber to study flowering in olives (*Olea europaea* L.). Hort.Science 40:496-497. 2005.
- 4. **Malik, N. S. A**, and Bradford, J. M. A simple protein extraction method for proteomic studies on olive leaves. J. Food Agric. Environ. 3:246-248. 2005.
- 5. **Malik, N. S. A**, and Bradford, J. M. Is chilling a prerequisite for flowering and fruiting in "Arbequina" olives? Accepted by Int. J. Fruit Sci. May 2005, to appear in vol 5 issue 3 .

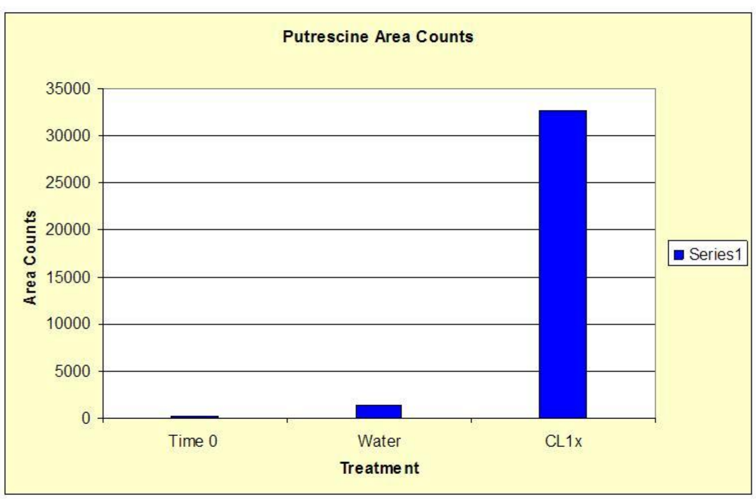
Peer Reviewed Publications

Continued

- 6. **Malik, N.S.A**, and Bradford, J.M. Flowering in 'Arbequina' olives in subtropical climate where olives normally remain vegetative. Accepted by Int. J. Fruit Sci. May 2005, to appear in vol 5 issue 4
- 7. **Malik, N.S.A**, and Bradford, J.M. Regulation of flowering in 'Arbequina' olives under non-chilling conditions: the effect of high daytime temperatures on Blooming. Accepted by J. Food Agric. Environ on Jan. 2006.
- 8. **Malik, N.S.A**, and Bradford, J.M. Plant growth regulatory effects of chicken litter extract. Accepted by J. Sustainable Agric. Feb. 2006.
- 9 **Malik, N.S.A**. and Bradford, J. M. Changes in oleuropein levels during differentiation and development of floral buds in 'Arbequina' olives. Scientae Horticulturae (Accepted, in Press)
- 10. Malik, N.S.A. and Bradford, J.M. Different flower inducing conditions elicit different response for polyamine levels in olive leaves (in Review)

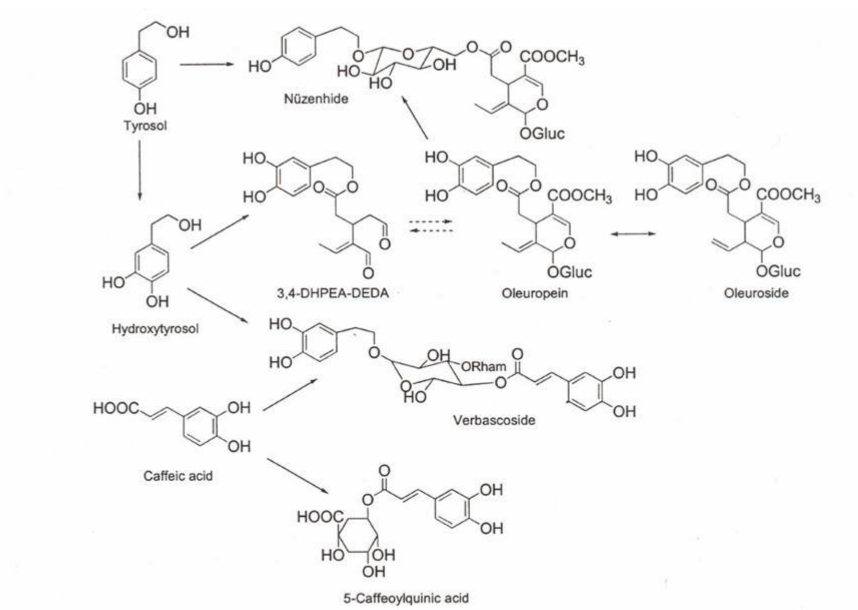
Resources

- Currently **$5K** from March to October (7-8 months)
- One field oriented biological science technician and a part-time student


Putrescine Area Counts
35000
30000
25000
20000
15000
10000
5000
0
Area Counts
Time 0
Water
CL1x
Treatment
Series1

Areas that need attention

1. Efficiency
    a. Logistics (distance to test sites, time)
    b. Academic access (distance to academic centers)
2. Resources, visibility, and marketing
    a. Funds
    b. Marketing

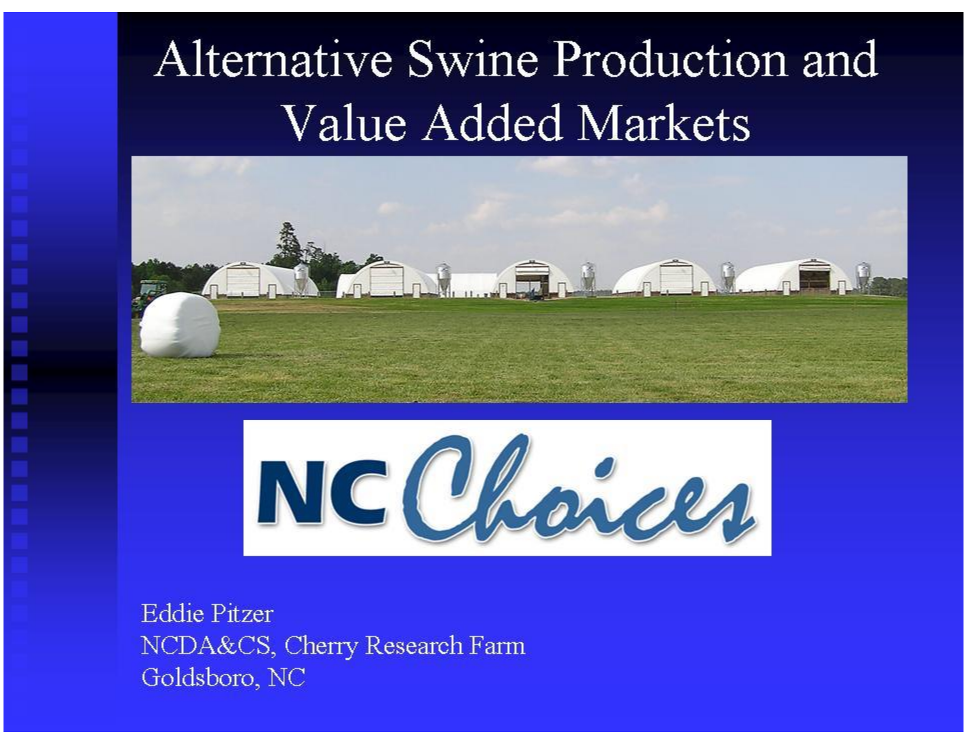

Tyrosol
Nüzenhide
Hydroxytyrosol
3,4-DHPEA-DEDA
Oleuropein
Oleuroside
Verbascoside
Caffeic acid
5-Caffeoylquinic acid

'Alternative Swine Production and Value Added Markets'

Mr. Eddie Pitzer, Superintendent
Cherry Research Farm
Goldsboro, North Carolina

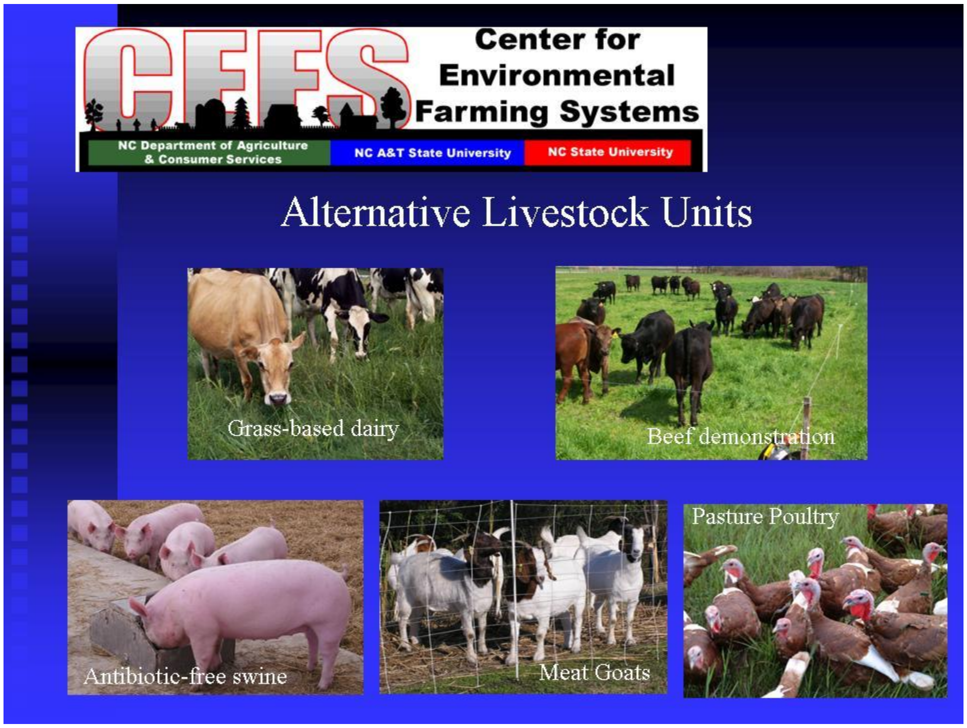
Abstract

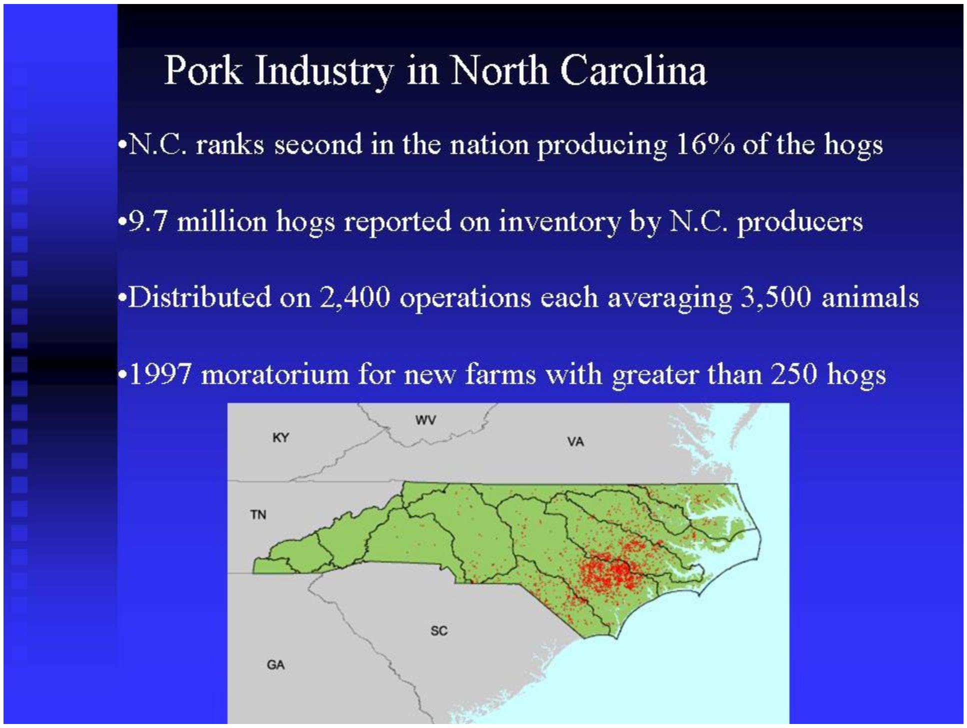
The Cherry Research Farm, located in Goldsboro, NC, is host to the Center for Environmental Farming Systems (CEFS). CEFS is dedicated to the development of farming systems that are environmentally, economically and socially sustainable. One of the most controversial issues facing pork production today is the use of antibiotics. Cherry Research Farm recently completed construction on four swine finishing hoop houses, one gestation hoop house and a bedding storage hoop. These facilities will be used to build a herd of one hundred antibiotic free sows. The antibiotic free swine herd has huge potential for researchers. From genetic differences in meat quality between heritage breeds to different pest management strategies, the facility will allow the integration between animal and crop systems as well as testing rotational crops. The swine herd not only has the researcher in mind, but also demonstration of BMP's for the alternative farmer. There is an increasing demand for niche pork products in NC. Alternative swine production is well suited for small, limited resource farmers. "NC Choices" managed through CEFS is funded by the W.K.Kellogg Foundation to enable independent NC farmers to include pork production as part of a diversified enterprise. NC Choices provides marketing, production and logistical support to directly connect the farmer with the consumer.



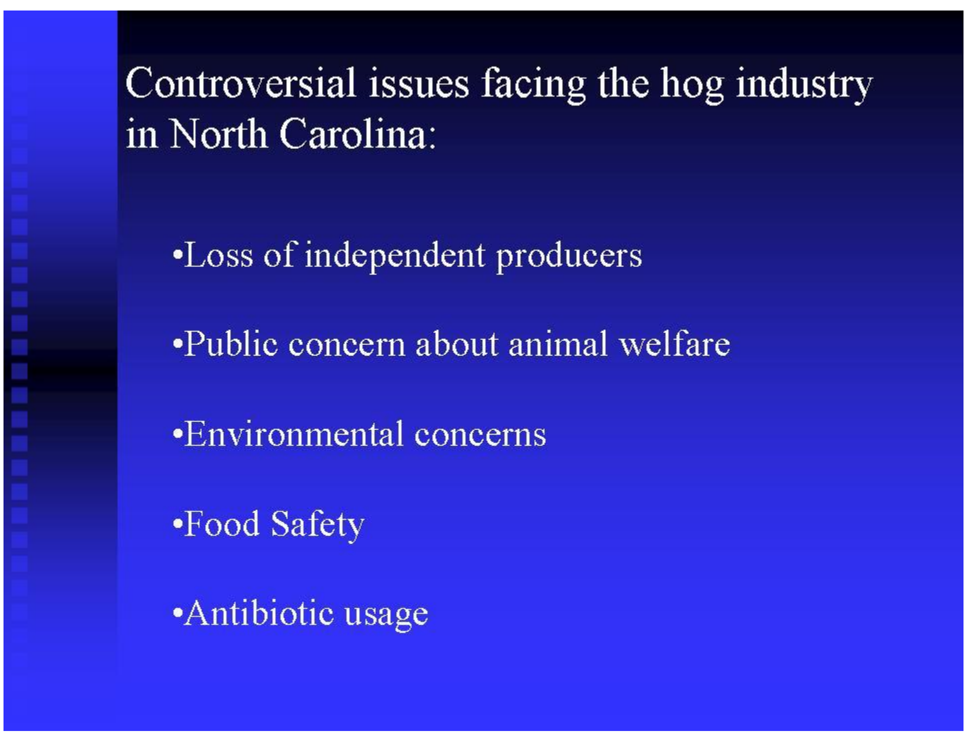
2000 acres facility. Located in the Neuse River basin, 5th largest river basin in the state. Diversity of soils are typical of farms in other river basins in eastern NC.

Large scale, long term projects. Farming systems study involves 220 acres in five treatments with 3 replications. BMP system compares convention and no-till treatments. Integrated Crop and Animal systems involves a 5 year rotation between crop land and pastures. Transition from conventional to organic practices is one of the nested projects in the Organic system. Forestry is an important industry to NC landowners. Successional is a baseline comparison of what happens in the other treatments.

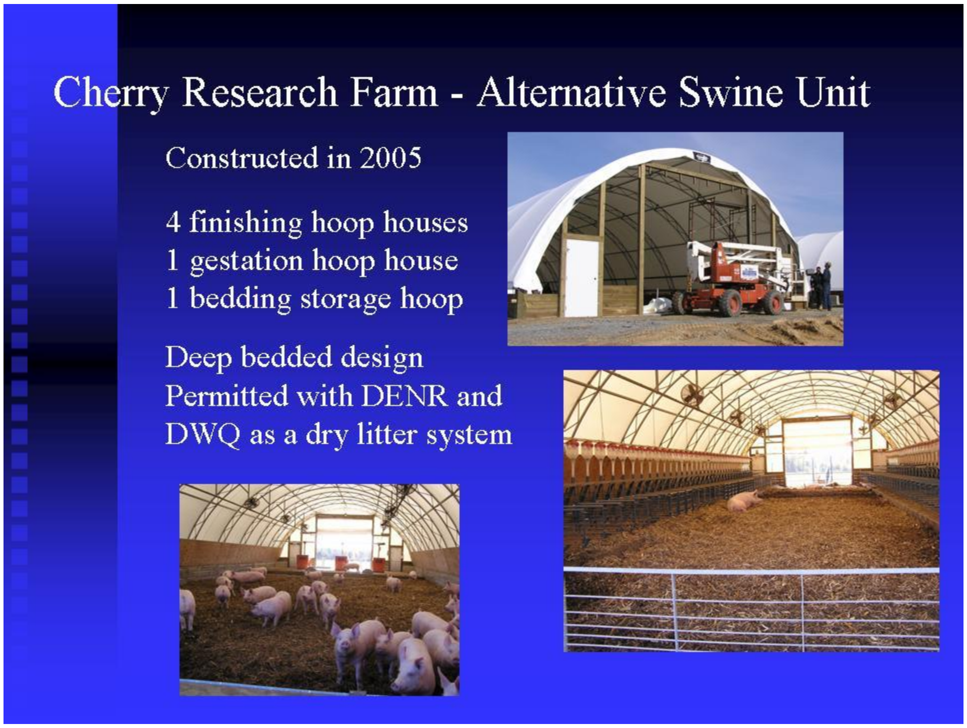




1997 moratorium also include the expansion of any existing swine facility. Moratorium was extended for an additional four years in 2003.



In 1986 there was 15,000 hog farmers in the state, by 2000 there was only 3600 hog farms remaining. NC hogs produce over 50,000 lbs of waste every day



Previous site of a 350 sow confinement farrow to feeder pig operation. Had a 90’x400’ lagoon that was closed after Hurricane Floyd in 1999. Finishing hoop are 39’x90’. Corn stubble is used for bedding. Waste Permit was one of the first for NC. Used a Poultry Dry Litter permit application to apply for the Waste Management Plan. Data from Iowa State University was used to calculate the amount and concentration of waste. Gestation hoop has individual crates for feeding, herd health and breeding programs. Sow are not confined in the crates.

Cherry Research Farm - Alternative Swine Unit

- Farrow 20 sows per house in 6'x 8' pens
- Sows move in and out of pens for feed and water
- Pens and sows are removed from house when pigs are weaned
- Pigs are finished in the house

Cherry Research Farm - Alternative Swine Unit

Potential Research Projects

- Genetic differences in meat quality, heritage breeds
- Pest management strategies
- Integration of animal and crop systems
- Rotational grazing systems
- Mortality and waste system composting

Alternative Swine Production potential:

•Increasing demand for local grown, niche pork products.

•Demand is expected to exceed the current supply.

•There are currently an estimated 100 small producers in N.C. using outside production systems.

•Alternative hog production systems are well suited for small and limited resource farmers.

•Production systems can be reasonably managed with a limited amount of resources.

Consumer Trends of Organic products

•Organic foods industry grew 16.2 % in 2005

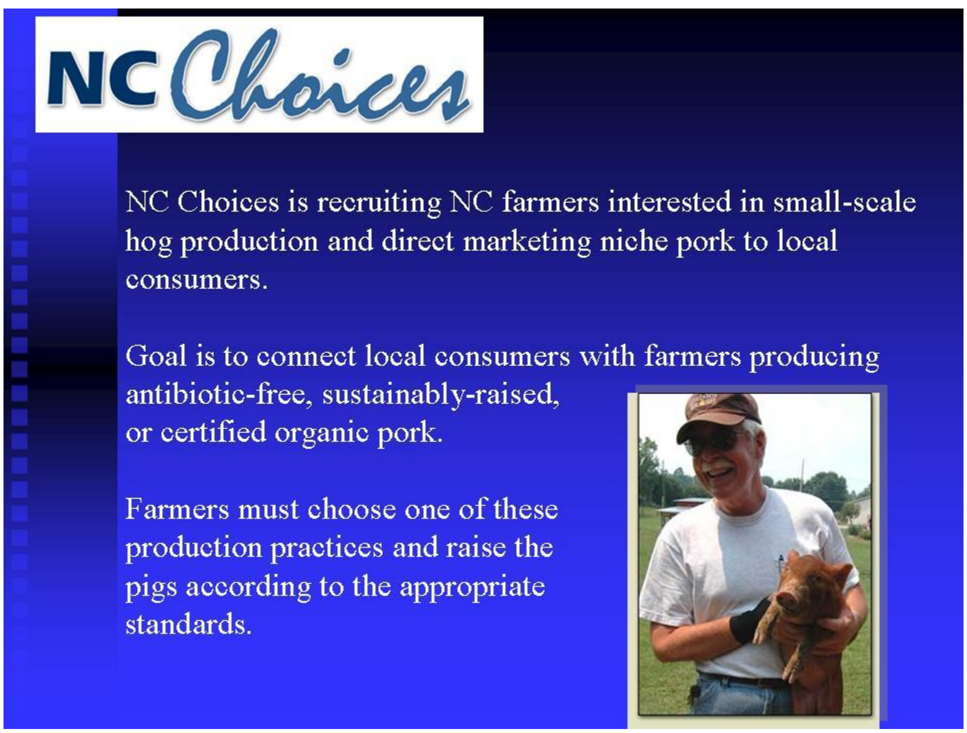
•Organic foods have shown a consistent growth rate of 15% to 21% since 1997

•Accounted for $13.8 billion in consumer sales

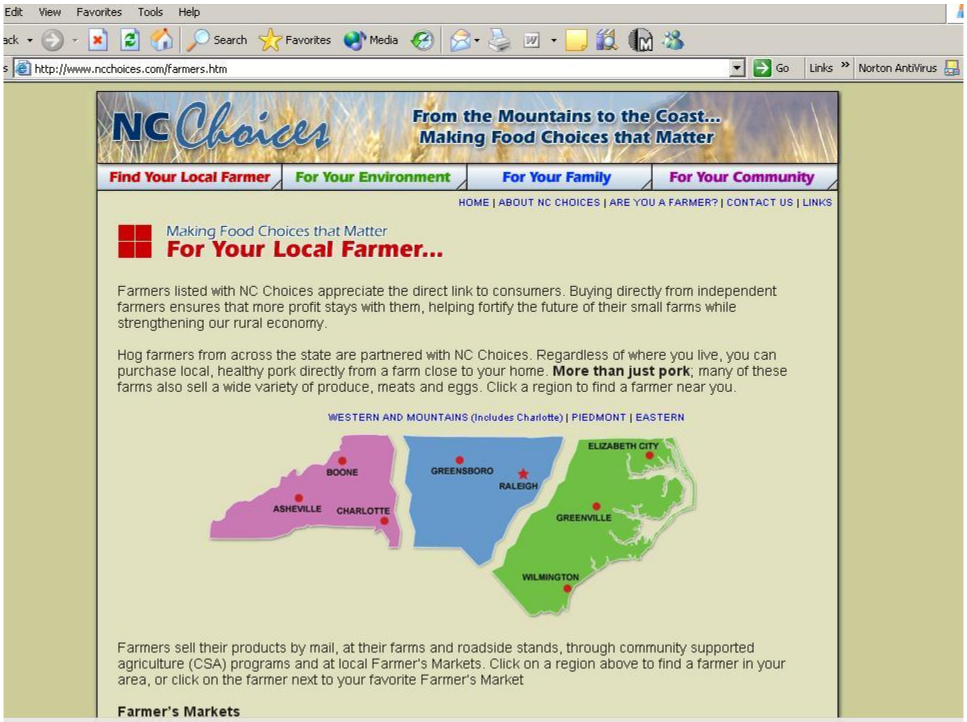
•Organic food represented 2.5% of the total US food sales in 2005

•46% of organic food sales was through mass-markets

•7% was made up of farmers markets and direct sales



Sustainably raised is a generic term that does not have a written standard but more a balance between animal compassion issues and environmental standards. NC Choices does not have any organic producer at the time due to the cost and lack of available organic grains. All but one of their farmers use outdoor facilities to produce pork.



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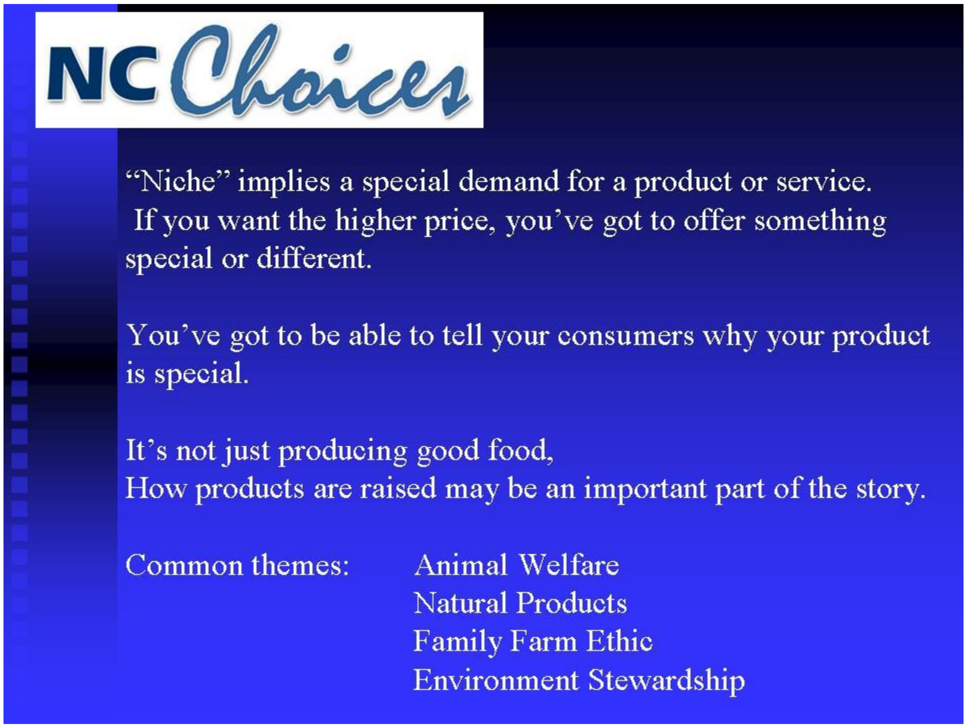
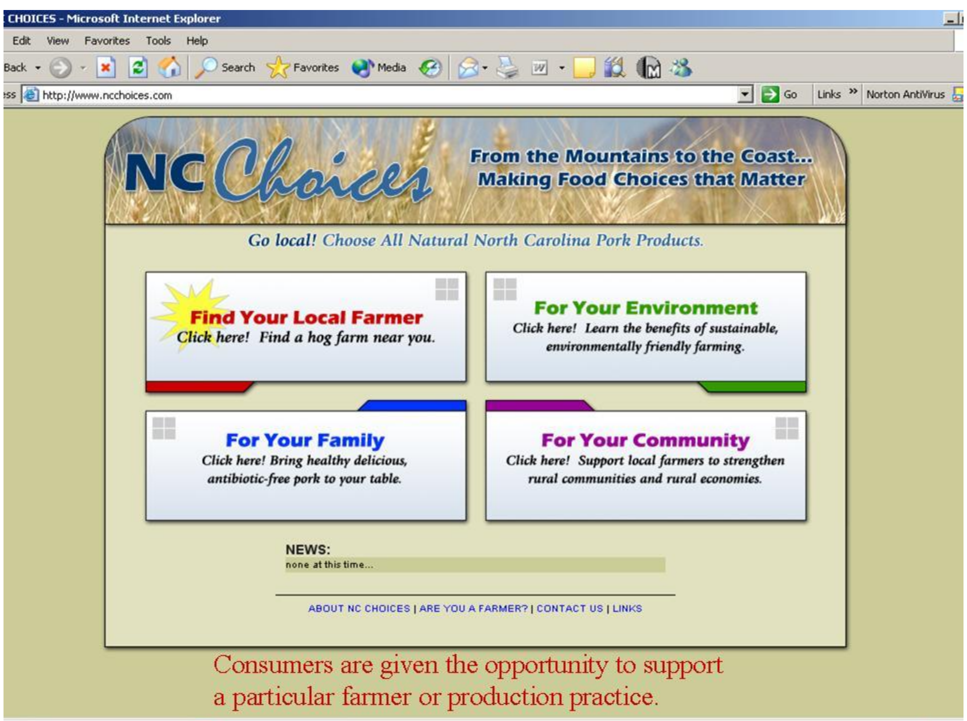
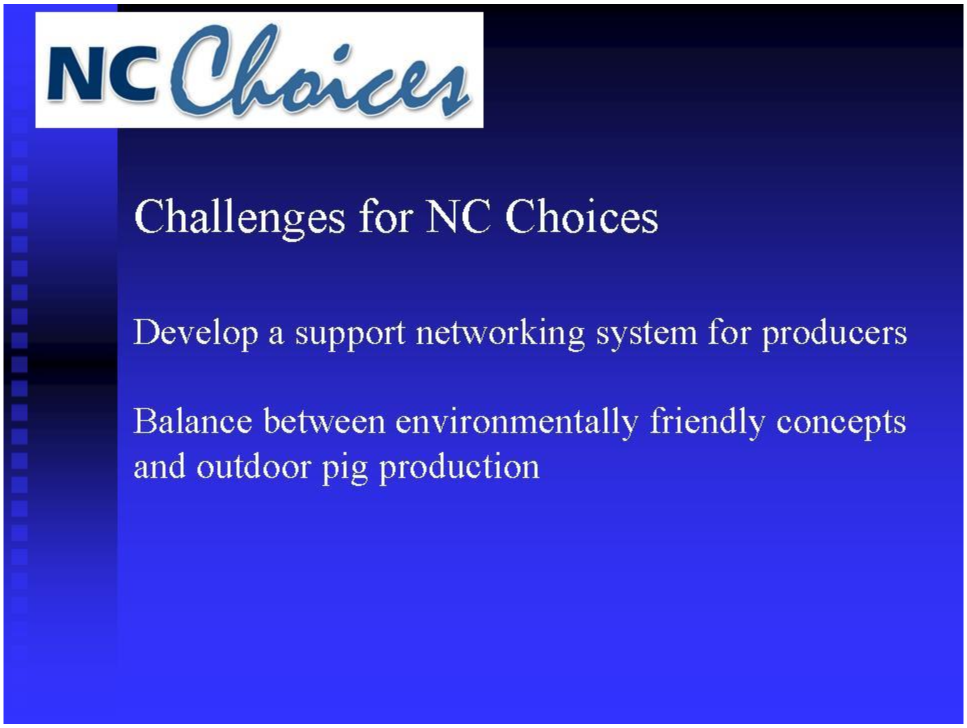
Search Favorites Media
http://www.ncchoices.com/farmers.htm
Go Links Norton AntiVirus
NC Choices
From the Mountains to the Coast...
Making Food Choices that Matter
Find Your Local Farmer
For Your Environment
For Your Family
For Your Community
HOME | ABOUT NC CHOICES | ARE YOU A FARMER? | CONTACT US | LINKS
Making Food Choices that Matter
For Your Local Farmer...
Farmers listed with NC Choices appreciate the direct link to consumers. Buying directly from independent farmers ensures that more profit stays with them, helping fortify the future of their small farms while strengthening our rural economy.
Hog farmers from across the state are partnered with NC Choices. Regardless of where you live, you can purchase local, healthy pork directly from a farm close to your home. More than just pork; many of these farms also sell a wide variety of produce, meats and eggs. Click a region to find a farmer near you.
WESTERN AND MOUNTAINS (Includes Charlotte) | PIEDMONT | EASTERN
BOONE
ASHEVILLE
CHARLOTTE
GREENSBORO
RALEIGH
ELIZABETH CITY
GREENVILLE
WILMINGTON
Farmers sell their products by mail, at their farms and roadside stands, through community supported agriculture (CSA) programs and at local Farmer's Markets. Click on a region above to find a farmer in your area, or click on the farmer next to your favorite Farmer's Market
Farmer's Markets

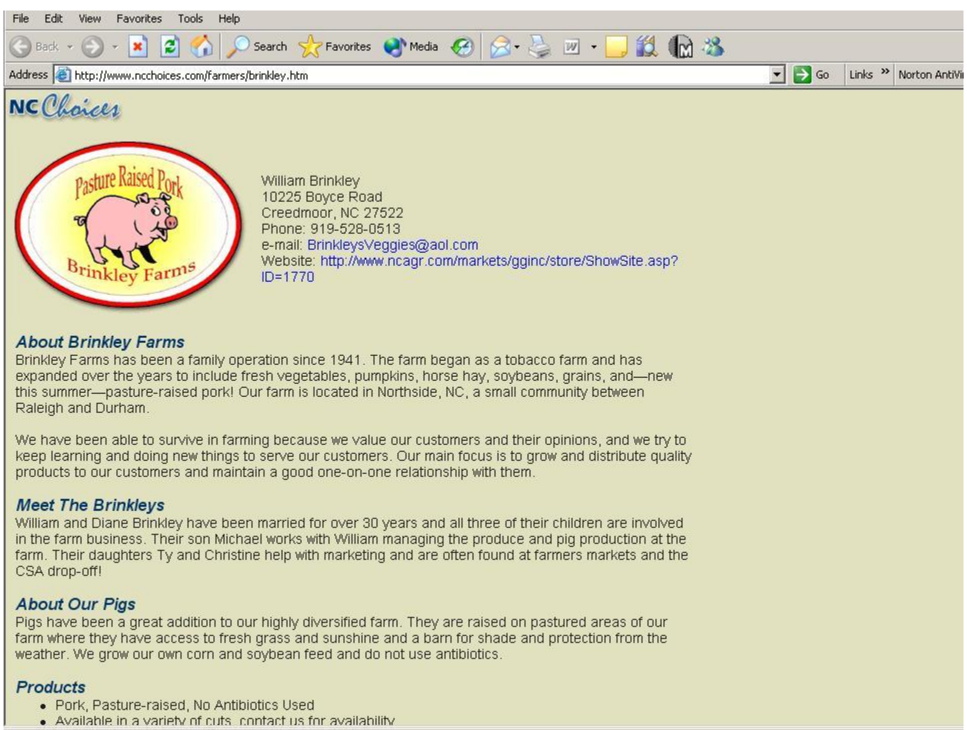
NC Choices
Provides marketing support by developing and managing a website where consumers can learn more about the farm and how to purchase products.
Provide production support included information on best management practices.
Provide logistical support including finding access to processing facilities and delivery options.
Provides advertising support by conducting a large consumer campaign.





According to Jennifer Curtis, Project Manager for NC Choices 20 outdoor producer are currently involved with the project. Not all are listed on the website at this time. They continue to develop their program.


NC Choices
Challenges for NC Choices
Develop a support networking system for producers
Balance between environmentally friendly concepts and outdoor pig production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Back Search Favorites Media
Address http://www.ncchoices.com/farmers/brinkley.htm
Go Links Norton AntiVi
NC Choices
Pasture Raised Pork
Brinkley Farms
William Brinkley
10225 Boyce Road
Creedmoor, NC 27522
Phone: 919-528-0513
e-mail: BrinkleysVeggies@aol.com
Website: http://www.ncagr.com/markets/gginc/store/ShowSite.asp?ID=1770
About Brinkley Farms
Brinkley Farms has been a family operation since 1941. The farm began as a tobacco farm and has expanded over the years to include fresh vegetables, pumpkins, horse hay, soybeans, grains, and—new this summer—pasture-raised pork! Our farm is located in Northside, NC, a small community between Raleigh and Durham.
We have been able to survive in farming because we value our customers and their opinions, and we try to keep learning and doing new things to serve our customers. Our main focus is to grow and distribute quality products to our customers and maintain a good one-on-one relationship with them.
Meet The Brinkleys
William and Diane Brinkley have been married for over 30 years and all three of their children are involved in the farm business. Their son Michael works with William managing the produce and pig production at the farm. Their daughters Ty and Christine help with marketing and are often found at farmers markets and the CSA drop-off!
About Our Pigs
Pigs have been a great addition to our highly diversified farm. They are raised on pastured areas of our farm where they have access to fresh grass and sunshine and a barn for shade and protection from the weather. We grow our own corn and soybean feed and do not use antibiotics.
Products
Pork, Pasture-raised, No Antibiotics Used

Brinkley Farms, Creedmoor, NC
William Brinkley and family

CSA package: 50 different veggies from lettuce to pumpkins
Spring/Summer – 12 weeks@ $18.00/week
Summer/Fall – 12 weeks@ $24.00/week

5 different Farmers Markets locations plus local restaurants

Pork products sales:
25 pigs per month

Beef products sales:
1 head = 2 weeks of sales

Farm fresh eggs

Brinkley Farms

Pigs raised on open pasture, never confined
Fed home grown grain
No antibiotics, hormones or animal by-products

Current prices:

Fresh Cuts:

Sausage -	$4.00/lb
Pork Chops -	$5.00/lb
Boneless Pork Loin -	$6.00/lb
Ham Steaks -	$4.00/lb

Cured:

Country Ham -	$10.00/lb
Bacon -	$7.50/lb

Brinkley Farms

Pasture raised beef, free of antibiotics and hormones, and all feed is grown on their farm.

Current prices:

Ground Beef -	$4.50/lb
New York Strip -	$12.50/lb
Round Steak -	$4.50/lb
Ribeye Steak -	$14.00/lb
Sirloin Steak -	$10.00/lb
Stew Beef -	$5.00/lb

Brinkley Farms

Offers the consumer the opportunity to get to know the farmer and the production practices

Focuses on family values

Makes truthful claims

CSA program offers a variety and selection of products with weekly orders

Quarterly newsletter for producers upcoming. Website is connection to consumers. Support in production guidelines and workshops. Availability of resources. How do we balance the issue that having pigs on the ground in regard to environmental issues in soil erosion, ground cover, runoff, forage management.

Working Together for One Cause

NCDA&CS • NC STATE UNIVERSITY

RESEARCH STATIONS DIVISION

Eddie Pitzer, Superintendent Cherry Research Farm
http://www.ncagr.com

CEFS Center for Environmental Farming Systems

NC Department of Agriculture & Consumer Services | NC A&T State University | NC State University

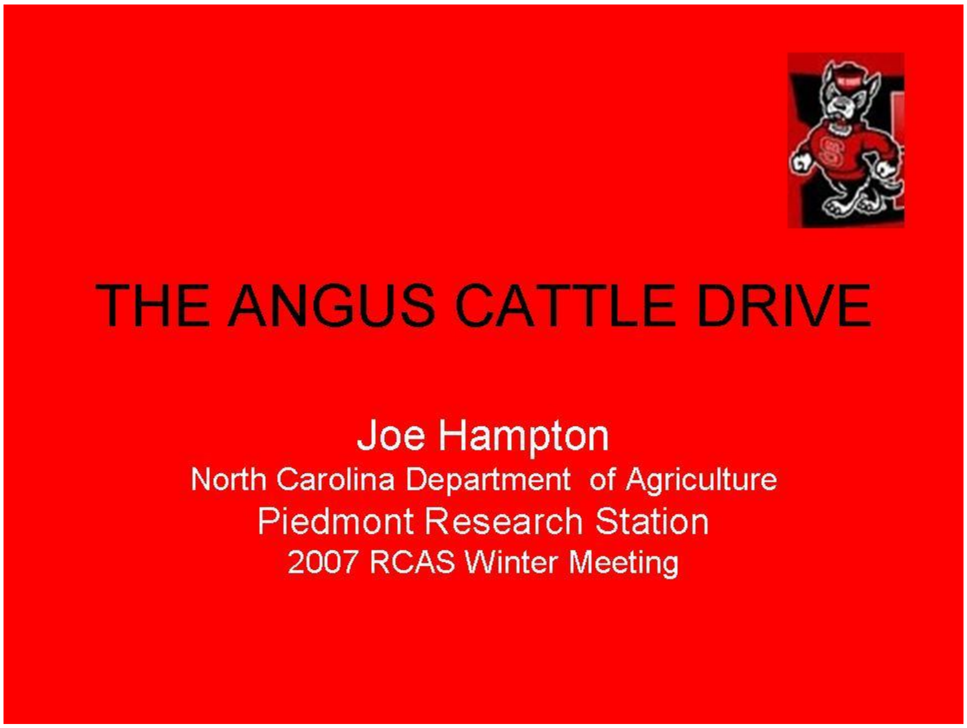
Dr. Nancy Creamer, Director CEFS
http://www.cefs.ncsu.edu

NC Choices

Jennifer Curtis, Project Manager, NC Choices
www.ncchoices.com

'Angus Cattle Drive: A Commodity Based Endowment'

Mr. Joe Hampton, Superintendent
Piedmont Research Station
Salisbury, North Carolina



BEEF INDUSTRY

2005 USDA AG STATISTICS

- US Receipts $49.2 billion
- 80% of Producers < 50 head
- North Carolina - 17 head average
- 1.2 million producers in US
- Production value $1008 per head
- Multiple layers of production

BEEF INDUSTRY SEGMENTS

- Seedstock
- Cow / Calf
- Stocker / Backgrounder
- Feedlot
- Packer

UTILIZATION OF TECHNOLOGY

- Hayes Gregory retired, MARC and NCSU, personal communication

- Poultry Industry   90 to 95%
- Swine Industry   85 to 90%
- Dairy Industry   75 to 80%
- Beef Industry   40 to 50%

UPPER PIEDMONT RESEARCH STATION

- Registered Angus herd established in 1945
- Donated by Jeff Penn to NCSU in 1959
- Became a “young sire” herd with Select Sires in 1982
- Recognized as a “Historic Herd” in 1995 by the American Angus Association
- Hosted the Spring Fever Sale in 2001

THE ANGUS CATTLE DRIVE TEAM

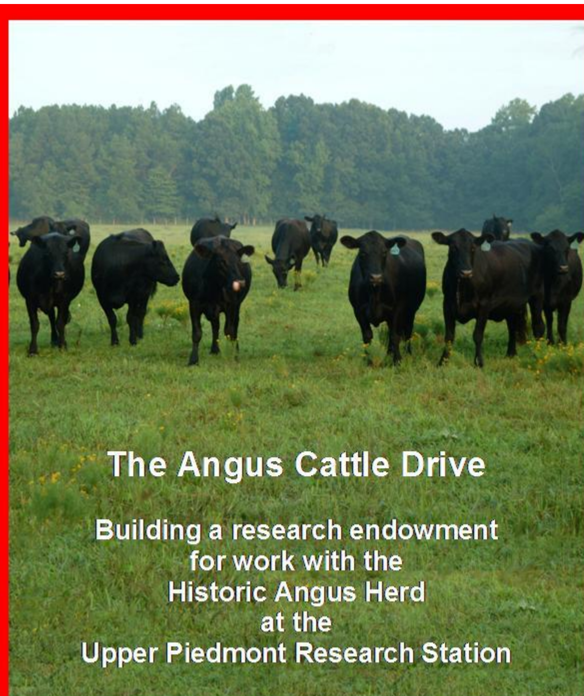
- Catherine Maxwell, Director Of Development, NC ARS
- Dr. Joe French, Superintendent, Upper Piedmont Research Station
- Dr. Joe Cassady, Department of Animal Science, NCSU
- Dr. Carm Parkhurst, Retired Professor, NCSU
- Joe Hampton, Just There

GOALS

- Create a permanent endowment
- Identify ways to capture future income
- Mount a campaign to solicit funds

STEPS

- Personal contact with producers
- Personal contact with other cattle organizations
- Articles in popular press
- Presence at commodity events
- Brochures/Posters
- Mass mailings with other's mailing list



THE ANGUS CATTLE DRIVE

PARTNERS

BEEF PRODUCERS

AGRIBUSINESS

AMERICAN ANGUS ASSOCIATION

NC ANGUS ASSOCIATION

NC CATTLEMENS ASSOCIATION

ANGUS FOUNDATION

Charles Darwin said:

- "It is not the strongest of the species that survives,
- nor is it the most intelligent,
- but the one most responsive to change."

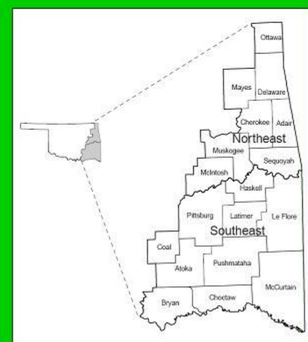
THE WORLD IS FLAT

- CLASS OF 1491

'Water Quality Research in Forestry: A Joint Project in Oklahoma and Louisiana'

Mr. Bob Heinemann, Superintendent
Kiamichi Forestry Research Station
Idabel, Oklahoma

Oklahoma's Timber Regions



Oklahoma Counties	All Land (10^6 Acres)	Total (10^6 Acres)	Timberland (10^6 Acres)	Woodland (10^6 Acres)	Reserved Timberland (10^6 Acres)
Eastern	10.10	5.42	4.90	0.48	0.045
Central & Western	33.76	3.11	1.44	1.67	0
Total	43.86	8.53	6.34	2.015	0.045

Oklahoma's Forest Industry

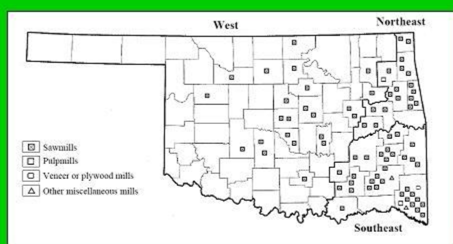
Oklahoma's 3rd largest agricultural product.

Oklahoma's largest agricultural product with respect to in-state valve added.

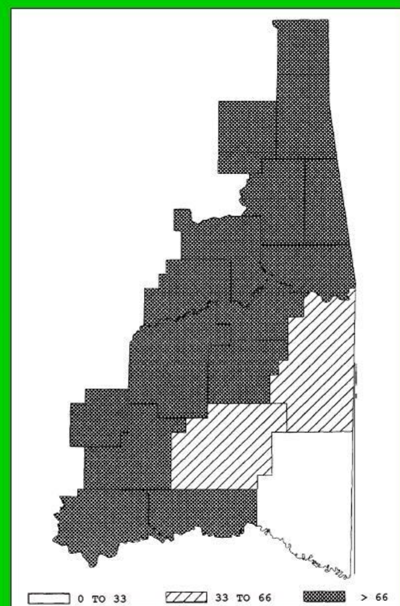
Oklahoma is 15th in the Nation in timber production

Oklahoma's Forest Landowners

- NIPF - 158,000 own 3.3 million acres
- Forest industry 1.1 million acres
  - Weyerhaeuser
  - Plum Creek
  - Green Bay Fiber
  - John Hancock
  - Valley Timbers
  - Herron Timber
- U.S. Forest Service 0.22 million acres
- Other Public 0.36 million acres



Value Added Timber Manufacturing Sites

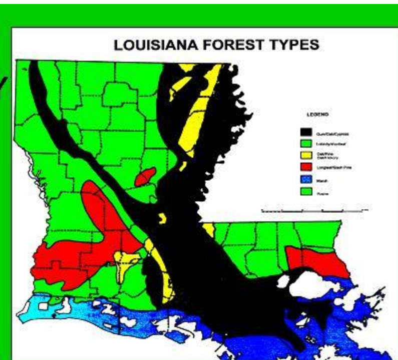


Percent timberland by county in NIPF Ownership

LOUISIANA'S FORESTRY INDUSTRY

Commodity	Gross Farm Value, billion	Value Added, billion
Forestry	$1.18	$3.38
Poultry	$0.68	$0.65
Sugar Cane	$0.29	$0.19

LOUISIANA FORESTRY INDUSTRY

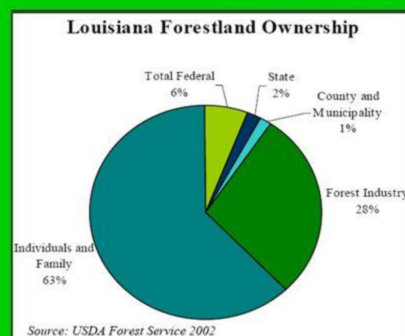


48% of total land area in forest

81% of forest owned by private non-industrial landowners

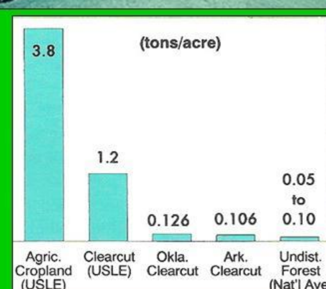
2nd largest manufacturing employer

National, regional, state based industries

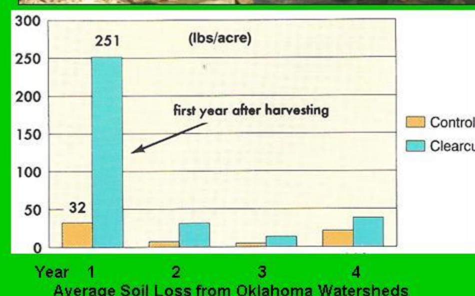


Even though forest practices are similar in nature to traditional agricultural practices they draw undo attention and concerns from the public due to their scale of operation, aesthetic impact and the innate appreciation of trees most people possess.

First year soil loss from croplands as compared to first year soil lost from clearcut harvests.

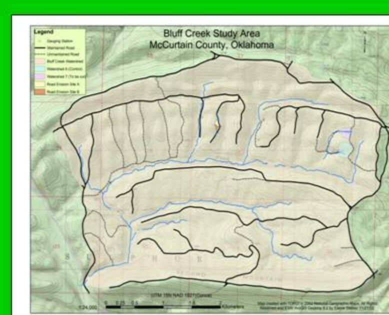


Intensive mapping of watersheds enable researchers to begin to understand stream dynamics and how forest practices impact such things as wildlife and fish habitat, stream runoff, road placement



Three years post harvest, sites had stabilized to pre-harvest soil loss rates.

Long term monitoring of actively managed forested watersheds allow for determining the cumulative impact of various forest management practices on water quality over time.

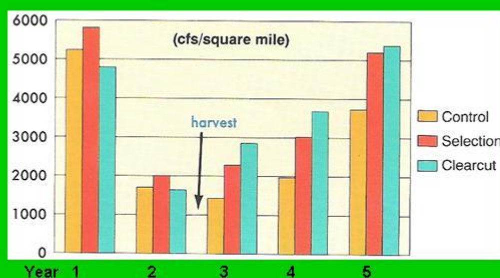


7 watersheds monitored for 25 years

Spring 2007 harvest will complete 1 entire planting to harvest cycle.

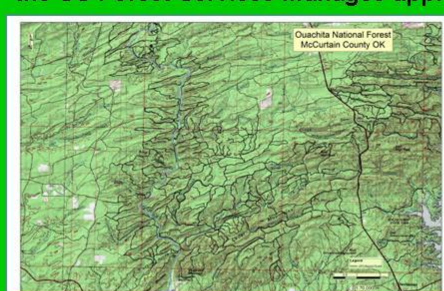
Bluff Creek Gauging & Sampling Station

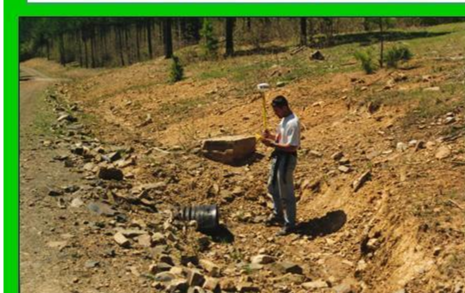
Down stream monitoring stations enable the estimation of cumulative effects of forest practices on water quality over large tracts of land i.e. Impact on stream flow & road construction/maintenance practices.



Average Peak Flow from the Arkansas Watersheds

Forest roads have the greatest impact on water quality. Weyerhaeuser maintains just under 4000miles of road on its 400,000 ac holding in Oklahoma the US Forest Services manages approximately another 1000 miles of roads





Measurement and Modeling of Erosion from an Established Forest Road in the Ouachita Mountains of Oklahoma

The information provided from this study assists in water quality planning and in the development of realistic TMDL's and solutions to water quality problems related to road construction and maintenance.

- Erosion rates on established roads are lower than on new roads.
- Modeling did a reasonable job predicting total erosion over the study period, but tended to under-predict storm erosion. Two year sediment totals from both sites = 5.7 & 4.8 tons/acre

Measuring the Impact Forest Practices on Stream Side Management Zones

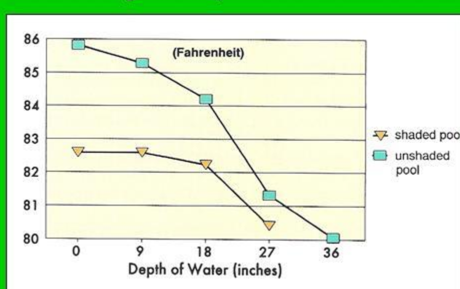


Figure 19. Average Stream Temperatures for East Glover Creek.

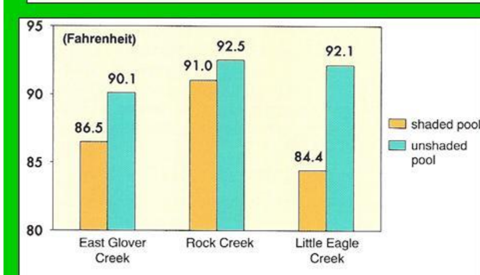


Figure 20. Highest Temperature Recorded at Pool Surfaces.

Application of Fertilizers to Pine Forests

Poultry Litter Nutrient Application Rates:

•Litter Nutrient Content – N 4%, P 2%, & K 3%

•Litter Application Rates – 2, 4, 8, & 16 Tons/ac.

•DAP + Urea Application Rate – 0.25 Tons / ac. (Accepted commercial application rate ≈ 4 tons/ac of litter)

Results:

•Soil water nutrient content at 4 tons/ac ≈ DAP+

• Urea Application (3.4 & 3.5 ppm respectively).

•Stream water N levels increased by ≤ 0.1ppm. with no increase seen in P & K levels.

•Significant increase in tree height and foliar N & P levels.

OSU – LSU RESEARCH LINK

Dr. Michael Blazier

- M.S. and Ph.D. -- Oklahoma State University
- Forestry Research Project Leader --LSU
  Hill Farm Research Station &Calhoun Research Station

Responsibilities as Forestry Research Project Leader;

•Coordinates research efforts between on-campus faculty, industry, and state/federal agencies.
•Oversees lab facilities and analysis.
•Manages graduate students.

Skills acquired while at OSU:
•Coordinating with on-campus personnel
•Establish & implement practical research protocol
•Efficiently using station and part-time labor
•Installing and maintaining sampling equipment

Research Efforts Being Considered by LSU Project Leader as a Result of his Experiences at OSU

- Impact of harvesting and road construction/maintenance on Louisiana's highly erodible soils.
- Cooperative fertilizer research ventures between Hill Farm Research Station faculty, School of Renewable Natural Resources faculty, forest industry, NRCS, and state agencies.
- Impact of Best Management Practices (BMPs).
- Impact of management activities in streamside management zones (SMZs).
- Impact of management activities on riparian zones & wildlife corridors.

Our Current Research Efforts Are To Ensure Their Future

?

'Workshop on Financial Strategies and Cost Recovery Systems'

Jim Beaty, Superintendent
Purdue University
Agronomy Center for Research & Education (ACRE)

Isn't it great, that as research station managers, we get to participate in these wonderful meetings and share new ideas with other colleagues? This RCAS group has a great value in its common interests and trust among members who attend these meetings.

There is a wealth of knowledge in this room and my job today will be as a catalyst and moderator. Your participation will determine its success. During this 30 minute workshop we will tackle the issue of changing finances.

Today we are targeting ideas only. In 30 minutes "the poison is in the details." So I will ask you to give ideas and we will share details with handouts or via the RCAS web site or with Dennis Onks' proceedings. I asked Bob to use the Power Point and Chuck to record ideas on the flip charts.
Thank you guys.

Workshop Notes:
What are the three most common forms of financing?

Traditional Funding Sources
Hatch Funds
State Line Items
University Funding

How many states use one or more of these sources?
Generally are these growing or shrinking?
Shrinking!

So lets look for other big traditional sources?
Commodity Sales
Grants

Let's look for Alternative Ideas!

How about Alternative Labor Sources?
Department of Corrections
Department of Human Resources
Americore
Fed H2A

Endowments
From gifts
Land Sales
Donations
Real Estate
Equipment
Supplies

Others
Mineral rights
Gas rights
Oil rights
Limestone quarry sales
Timber sales
Wind Turbine agreements
Easements across property

Rental space to commodity groups. Office space and/or field plot space.

Save America's Treasures Grants with Matching Funds

Some Institutions use Project Fees
Cost Recovery Systems
Fee/Acre or Turf Fee/ Sq. Foot
Fee per Service

Know the USDA recharge rules!

Note: 4 groups provided handouts. Arizona, Ohio State, California, & Purdue

Ohio Agricultural Research and Development Center
Outlying Agricultural Research Stations, Wooster, Ohio
Kenneth Scaife, Assistant Director Field Operations

Cost Recovery Measures

1. Income from sale of animals or animals removed from herds for experimental purposes. Each location has a dedicated earnings account where proceeds from sale of animals covers the operating costs of the herd. Expenses to maintain the herd include feed, forage, bedding, veterinary care and supplies, breeding animals (bulls, semen for AI), repairs of fences, gates and fences. Earnings accounts are to maintain 20% of a year's operating costs in reserve.

2. Services for plot research conducted by external (non-university) companies where research and extension faculty are not involved. Fees vary based on crop species and level of services provided by the research station. These clients usually collect their own data, and use services of the research station to establish and maintain the crop.
3. Research Station Managers solicit contributions from faculty to contribute funds for seasonal labor, materials or equipment. Where research station personnel apply a significant number of experimental treatments or collect data, the investigators provide labor funds to offset seasonal labor expenses.

4. In the future we are working towards establishing endowments, and will continue to access investigator grant funds since state and federal funds allocations are flat to decreasing. Another source under consideration is to return overhead monies charged to grants directly to the research station where the projects are conducted.

5. The OARDC Feed Mill operation adds an overhead charge on each ton of feed that is produced. These overhead dollars are used to cover operating costs of the mill.

Dr. Fred Swanson, Center Director
Kearney R&E Center
Parlier, California

UNIVERSITY *of* CALIFORNIA
Agriculture & Natural Resources

Kearney Research & Extension Center
9240 South Riverbend Avenue, Parlier, CA 93648-9757
Telephone: (559) 646-6000 Fax: (559) 646-6015

Research Center Financing and Cost Recovery

► **Field and Farming Operations:**

◊ Recharge Rate Calculation: Instead of tracking each project's actual costs for fertilizer, labor and supplies etc., the hours of work performed on each project is the medium used for determining the level of support received. In turn, each project is charged an hourly rate for the "normal and ordinary" hours of work posted against it.

- Each project's support hours are estimated ahead, providing an estimate of future charges. Combining all projects' estimated hours provides an estimate of the total projected hours needed for the entire center.
- Dividing the center's total projected support hours into the center's projected budget shortfall yields the hourly charge rate, which is then used for charging for the hours posted to each project.
- The following formula determines the budget shortfall: The amount funded by the University, less the estimated total expenses for the coming season, offset by any carryover deficit or surplus, equals the budget shortfall.
- Projected Expenses **LESS** University Funds (adjusted for carryover) **EQUALS** Shortfall

  $524,797 - $406,212 = $(118,585)

$(118,585) Shortfall **DIVIDED BY** 20,000 Estimated Hours **EQUALS** $(5.93)/hour

◊ Expenses related to harvesting marketed crops are charged against that income.

◊ Projects are charged additionally for "**non-**normal and ordinary" work in the field or laboratory (data collection or specialized work). A $10.40/hour rate is used which equals the cost for the contracted labor brought in to backfill for our technicians' normal duties.

◊ Purchasing nursery stock, specialized equipment or irrigation systems and their installation and maintenance within the research plot are borne by the researcher.

► **Physical Plant Operation:**

◊ Actual employee hourly rates, without benefits, are charged to the researchers for maintenance and repairs on researcher owned equipment (incubators, dryers, ovens, etc.).

◊ Cost recovery for utilities on research projects requiring high levels of utility usage (additional lighting in greenhouses, high usage fans required for air movement on air pollution study, etc.)

For additional information please contact:
Fred Swanson, Center Director, (559) 646-6060, fswanson@uckac.edu
Or Janie Duran, Office Manager, (559) 646-6010, jduran@uckac.edu
Website: http://danrrec.ucdavis.edu/kearney

Maricopa Agricultural Center Financing And Cost Recovery

Bob Roth
University Of Arizona

The University of Arizona College of Agriculture and Life Sciences has developed procedures to increase cost recovery. Flat budgets, budget cuts and inflation have reduced the funding available for operations and personnel services. The University of Arizona allocates operating monies to each Center, which has not been sufficient. The Centers have to generate an additional 30 and 50 percent to meet their goals. The University does provide funding to cover personnel services. If the Centers need additional personnel to operate, they must generate those funds. Each project leader is assigned technical support if it is available and must pay 20% of that cost from other funding. If they are not assigned technical support then they must generate 100% of the funding.

Our first step was to return farm sales back to the Centers. Historically the sale of all agriculture goods from the Centers was divided equally between the President and the College. The Centers received nothing even though they had the expenses for growing, harvesting and transporting.
Currently 80% of all farm sales are returned to the Center and 20% is allocated to the Experiment Station Director. The Experiment Station Director typically uses these funds for those Centers that are short of funds and to support new projects.

Our second step was to charge project leaders a fee to help support their projects. This policy varies between each Center because of differential operating costs and amount of land available for research. It costs more to produce vegetables, compared to cotton or pasture crops. At one Center the U/A researcher gets one acre free and pays $800 for each additional acre. At another Center the researcher pays (up to $2000/acre) according to the grant money available for that project. All researchers are requested to include funding on the grant to support their projects (whether it is land, greenhouse space, etc.). A Farm Service Agreement is written which requires that the funding be shown for each project (http://cals.arizona.edu/aes/mac/documents/farm_service_agreement.pdf).

It was noted that private companies were providing funds to University researchers to conduct their research at the Centers. This practice resulted in no Center support for the project. Our third step was to develop a Facility Use Agreement (http://cals.arizona.edu/aes/mac/documents/facility_use_agreement.pdf). This is a short legal document that is signed by a non-University affiliated organization, the Center Director and the University Contracting Officer. It outlines the agreements between the University and the User and the payment schedule. This agreement allows the organization to develop proprietary information or materials. Charges for these agreements range from $2000 to $3000 per acre depending on the production costs.
Services provided only include normal farm practices, any extra requirements are charged at the typical custom rates. In some cases there has been a $250 per acre fee plus charges for all services provided by the Center. These agreements generate the majority of our cost recovery funds. The Facility Use Agreements have been used for land use, greenhouse, cotton ginning and delinting, cold room and freezer use, storage space, etc.

Equipment replacement has always been a problem. In recent years we have solicited unrestricted donations, not only in money but also equipment. In some cases the donation tax advantage can exceed the amount received at auction or farm sale. The donated equipment is used as trade-in for new or used farm equipment. Typically all University equipment is turned into Surplus Property and sold. The return to the Centers from this practice has been minimal. University regulations allow the Center to trade-in old equipment and get full credit. Our experience has shown that several old tractors can help reduce that cost of a new tractor. In fact in some cases the equipment has had additional antique value.

RESEARCH CENTER ADMINSTRATORS SOCIETY
EXECUTIVE COMMITTEE MEETING

September 24, 2006
KSU SEARC Office Building
Parsons, Kansas

The Executive Committee of the Research Center Administrators Society held their fall 2006 meeting at the above site and date. Members in attendance were: Vaughn Skinner (AR), Don Hubbel (AR), Fred Swanson (CA), Stan Jones (GA), Billy Mills (GA), Rod Yager (GA), Bob McNeil (GA), Bob Dunker (IL), Lyle Paul (IL), Jim Beaty (IN) Lyle Lomas (KS), Bill Peterson (KY), Allen Nipper (LA), Joe Street (MS), Clyde Bogle (NC), Sandy Maddox (NC), Floyd Wiggins (NC), Jeff Anderson (NC), Phillip Winslow (NC), Ken Scaife (OH), Rick Matheson (OK), Josh Massey (OK), Brent Westerman (OK), Chris Stansberry (OK), Bob Heinemann (OK), Erich Whrenberg (OK), Rocky Walker (OK), Robert Havener (OK), Thomas Pickard (OK), Merritt Taylor (OK), Rob Ellis (TN), Barry Sims (TN), Walt Hitch (TN), John Hodges (TN), Blake Brown (TN). Officers present were Randall Rawls (AL), President; Mike Phillips (AR), Vice President; Denny Thompson (NC), Executive Treasure; Paul Sebesta (TX), Communications Officer; and Ray Cartee (UT), Secretary.

President Randall Rawls called the meeting to order at 3PM. Lyle Lomas presented an itinerary for the meeting. He then introduced Fred Cholick, Dean of the College of Agriculture and Director of the Experiment Station, who gave an overview of Kansas agriculture and the importance of their Research Centers. He introduced Daryl Buchholz, Associate Director of Cooperative Extension who defined the role of their programs in Kansas. President Rawls asked all of the members to stand and introduce themselves.

The minutes from the Executive Committee Meeting held February 5, 2006 in Orlando, Florida were reviewed. A motion to accept was made by Joe Street and seconded by Bill Peterson and was approved by voice vote. The Business Meeting minutes from Orlando were also reviewed. Merritt Taylor moved to approve and it was seconded by Bob McNeil. The motion was approved by voice vote.

COMMITTEE REPORTS

Business Manager

Denny Thompson presented the financial statement (handouts). A motion was made by Brent Westerman and was seconded by Lyle Lomas to accept the report. The membership approved by voice vote. John Hodges moved to retain the security box and Bill Peterson seconded the motion. The motion passed by voice vote. A motion by Jim Beaty and seconded by Paul Sebesta to reimburse Denny Thompson for the lunches he purchased for the wives tour in Orlando was approved by voice vote.

Financial

Allen Nipper presented the Financial Committee report (handout), and moved to accept the report. Lyle Lomas seconded the motion and it passed by voice vote.

Membership

Membership Committee was not present. It was announced that Findlay Pate passed away since the Orlando meeting.

Proceedings

Sandy Maddox reported that the program proceedings for the 2004 meeting in Arizona were in route to the Best Western Motel. They did arrive and were distributed.

Awards

John Hodges announced three nominees for the Distinguished Service Award. The committee recommendation was forwarded to the officers and approved.

Meeting Site Selection

Allen Nipper reported meeting sites are set through the summer of 2008. They are as follows: South Island Texas – winter 2007; Georgia – summer 2007; Dallas Texas (SAAS) – winter 2008; and Utah – summer 2008. Future SAAS winter meeting sites are Atlanta Georgia – 2009 and Orlando Florida – 2010.

Nominations

Paul Sebesta indicated nominations will take place at winter meeting.

RCAS Historian

Brent Westerman indicated he needs information for each site we have had meetings.

Tax Committee

Bob Dunker reported that RCAS is now listed as 501C-5 and are tax exempt. However, outside donations to RCAS will not be allowed as a charitable deduction.

Committee Assignments

President Rawls appointed Joe Street (MS) to the Finance Committee. All other Committees will remain the same.

WINTER MEETING

Local Arrangements

Paul Sebesta passed out Hotel, Travel and Tour arrangements for the meeting in South Padre Island Texas, January 27 through February 1, 2007.

Program

Mike Phillips presented some ideas for presentations: Overviews by the Texas A&M Experiment Station Director, the ARS Regional Director and the Mexico Director. Some subjects of interest were Bio-fuel, Immigration, Insects and Quarantine Measures.

There was no other business discussed and the meeting was adjourned by President Rawls at 4:58 PM.

Respectfully submitted by
Ray Cartee
RCAS Secretary

RESEARCH CENTER ADMINISTRATORS SOCIETY
EXECUTIVE BOARD MEETING

January 28, 2007
Sheraton Beach Hotel
South Padre Island, Texas

The Executive Committee of the Research Center Administrators Society held their fall 2007 meeting at the above site and date. Members in attendance were: Larry Earnst (AR); Don Hubbell (AR); Fred Swanson (CA); Bob McNeill (GA); George Granade (GA); Robert Dunker (IL); Jim Beaty (IN); Lyle Lomas (KS); Bill Peterson (KY); Allen Nipper (LA); Clyde Bogle (NC); Sandy Maddox (NC); Debbie Robertson (NC); Jeff Chandler (NC); Paul Nyren (ND); Ken Scaife (OH); Merritt Taylor (OK); John Hodges (TN); Dennis Onks (TN); Barry Sims (TN);
Rob Ellis (TN); Pete Schultz (VA)

Officers in attendance: Randall Rawls (AL) President; Mike Phillips (KY) Vice President; Denny Thompson (NC) Executive Treasure; Paul Sebesta (TX) Communications Officer; Ray Cartee (UT) Secretary; and Ruth Cartee (UT) acting stenographer.

President Randall Rawls called the meeting to order at 1:10pm. President Rawls asked that each member of the group stand and introduce themselves. He then introduced Paul Sebesta for the itinerary.

Welcome and Local Arrangements Committee Report - Paul Sebesta; thanked the Tourism Council who will be taking the Spouses on a guided tour 9:00 am to Mexico; a Photo ID is needed for return to US. Should be back 2:30-3:00pm; a reception will be held in the Blue Dolphin Room will begin serving at 5:00pm until 7:00 pm

Meetings: will be held in this room beginning Monday at 8:00am; Tuesday 8:00am tour of the Sana Rosa Sugar cane production plant; Sana Anna Refuge tram tour of the bird watching facility; United States Border Patrol station and both A&M and Paul's research stations; followed by a fish fry and entertainment. Meeting in this room 8:00 AM Wednesday until noon. Thursday we will leave at 8:00 AM for Rio Bravo, Mexico Research Center. Friday 8:00 leave for Sterile Fruit Fly Center - Mission TX. Also a hospitality room has been set up in rooms 1101-02.. Open until 11:00PM. ...

Web site - Communication officer needs to be replaced; holding office in a society is a conflict of interest for ARS /USAID employees. Members my attend but not hold office.

The minutes from the Executive Committee meeting held September 24, 2006 in Parsons, Kansas were reviewed. A motion to accept was made by Ray Cartee seconded by Lyle Lomas and approved by voice vote.

Brent Westermann called for all program presentation for publication be sent to him for the Proceedings CD.

COMMITTEE REPORTS:

Secretary

Ray Cartee reported 52 registered members and 15 spouses for a net $10,225 Dennis Onks overpaid last meeting and it has been suggested the excess ($60) be toward this years meeting. Motion to table until clarification that money was actually deposited by Denny Thompson; Second by Clyde Bogle and passed by voice vote.

Business Manager

Denny Thompson presented the financial statement (handouts). Bank balance is $8,421.14. This includes Kansas with quo pro quid from North Carolina and Oklahoma with the vans that were used. There are two CDs one for $3,038.38 & one for $5,208.76 that will mature in February and June. Denny suggested renewal for 6 months on the February CD to allow for greater flexibility in the future. Motion made by Jim Beatty and seconded by Clyde Bogle to proceed as suggested. and to allow the Business Manager and the Finance Committee chair to confer and determine best options for the Society passed by voice vote.

Program Committee

Mike Phillips thanked all who were instrumental in putting the program together; particularly Paul Sebesta and others through their willingness to present papers. Randal Rawls expressed the knowledge of the tremendous amount of work and help to pull these programs together. It is appreciated when the committee people call that we all take a step forward and help with the programs where they are needed.

Awards

John Hodges reported the recommendation award will be handed out as approved. Bill Petersen will be honored for his tireless effort in maintaining this society as an officer and member.

Nominations

Bob Dunker presented the membership with the following individuals for officers for 2007-2008; President, Mike Phillips (KY); Vice President, Ray Cartee (UT); Secretary, Merritt Taylor (OK); Business Manager, Denny Thompson (NC); Precedings Officer, Dennis Onk; Communication Officer, open nominees from floor. Motion made to accept report by Paul Nyran; second by Larry Earnest.. Report approved by voice vote.

Proceedings

Dennis Onks indicated that three of the presenters from Kansas were not documented. He suggests that abstracts are a vital part of the proceedings and would like to see more. Right now the downloading of the proceedings are difficult. Presentations will separated to allow for ease of download. North Carolina has been instrumental in providing all the information to the Proceedings CDs. A few of 2005 and a copy of 2006 are available. These CD's should be used as a recruiting tool for other institutions to bring into the Society. When seeking people we should inform them that the acceptance of presentation will be in the proceedings thereby they accept or decline inclusion or not. If not wishing to have their presentation printed or otherwise produced; move on and seek someone else for the program..

Finance

Allen Nipper indicate we still do have resolution on the credit card payment use. Cost is the factor; training on machines, etc. Allen wondered if there had been any honorarium sent to the Findley Pate family. Discussion of doing something but no decision. There were personal contributions. Call for Question: Never been done before and we may be setting a precedent. A standing resolution for future good will letters to be sent to the families. Motion by Ray Cartee that a card or letter from the membership body be automatic from the Secretary of the Society with a second by Paul Nyrn approved by voice vote.

Membership

Pete Schultz and Paul Nyran indicate not pro-active in decisions. A map has been put together which will help his to encourage people to attend. A copy of the program and registration form was sent by the Secretary to all those who have not been attending. It may help to attend SASS in alternate years.

Meeting Site Selection

Allen Nipper introduced Bob McNeil from the University of Georgia who supplied all with a bag of Georgia peanuts. Fall 2007 will be held in Griffin Georgia, about 40 miles south of Atlanta. A tour of the main campus and outlying facilities are scheduled for September 23rd - 26th . Motion made by John Hodges to have a 2-year rotation with SASS beginning with the winter meetings in Georgia. Seconded by Pete Schultz; motion carried by voice vote. Summer meetings will be in California or North Carolina in 2009. Confirmation with site committee to determine location.

Old Business

New Director at Hayes Kansas is Bill Gilliand. Fred Perry has retired and Karen Hammer represents the University of California Experiment Station. Additional changes were Mike Bourn from Oklahoma and Florida and South Carolina need to be activated again.

New Business

Paul Sebesta and Bob Dunker are checking by-laws to determine the best alternative for the replacement of the Communications Officer. Proceedings Officer and Business Manager are retained by voice vote.

Adjourned 2:42

Respectfully submitted by:
Ray Cartee
RCAS Secretary

RESEARCH CENTER ADMINISTRATORS SOCIETY
BUSINESS MEETING

January 31, 2007
Sheraton Beach Hotel
Blue Marlin Room
South Padre Island, Texas

The regular business meeting was called to order by Randall Rawls at 10:30 am.

Randall Rawls waved order of business and rules in order to complete some business items before others must go.

Passing of gavel:

Mike Phillips, President 2007-2008

Acceptance speech - grateful for all who helped put this program together and hoped the same expertise and enthusiasm will carry forth as we move into the new year and other meetings.

A plaque was presented to Randall Rawls for his service this past year as President.

Return of podium for final business:

Approval of 2006 Winter Meeting Minutes - Ray Cartee.

A motion was made by John Hodges and seconded by George Grenade to approve the Minutes for the 2006 Winter Business Meeting in Orlando FL. The motion was approved by voice vote.

COMMITTEE REPORTS:

Business Manager

Denny Thompson provided information on CD's of $10,165, $5,872 & $12,768.42 that were coming to renewal date in February and June. Because the CD's were a generation of dollars, discussion regarding income from upcoming meetings may allow for a lesser charge for participation. Balance to Date: $20, 900.68. Audit to be held in 2 years; motion made by Lyle Lomas to accept report. Seconded by Paul Nyren.

Finance Committee

Allen Nipper said the credit card use for registrations is still out awaiting some more investigation.

Awards Committee

John Hodges reported that Bill Peterson was presented with the RCAS Distinguished Service Award at last nights banquet.

Membership Committee - Pete Schultz, Paul Nyren

Paul suggested that counterparts in other states should make some personal contact with those persons that should be introduced to the membership of RCAS. It was noted that Arizona, South Carolina, or Florida didn't have any representatives to these meetings.

Proceedings Committee

Dennis Onks stated with the support of North Carolina, the CD of abstracts were available. You may them up from a box in the foyer. It is hopeful the CD's were be used as recruiting tool and historical history of the meetings. Discussion called for enumeration by membership. It was suggested that a sum of money be collected to offset the cost of their participation in printing. The group decided to provide a gift fund for NC in the amount of $500 for their use wherever it was needed. Motion by Allen Nipper, Second: John Hodges and was passed by voice vote.

Meeting Site Selection

Allen Nipper wanted to clarify RCASassociation with SASS. It was discussed that the group would meet with SASS for two years then off one year. Meetings will be held in Georgia Summer 007 an Informational slide show Georgia Fall 2007 Meeting was presented by Bob McNeil and George Grenade The meetings will be held September 23-26, 2007 at Griffin GA which is about 40 miles south of Atlanta The Executive Meeting will be the afternoon of Sunday: Sep 23rd. **Monday: Sep 24th** Tour Griffin Campus; Central Georgia Research :& Educational Center; Rock Eagle 4-H Center; Tour Peach facilities; arrive Tifton. **Tuesday: Sep 25th** Tour Southwest Georgia Research & Education Center; Jimmy Carter's boyhood home; Andersonville National Historic Site. **Wednesday: Sep 26th** Tour Tifton Campus; return to Griffin.

Hotel accommodation:

Griffin: Howard Johnson $49.00 + tax - 770 227-1516 Sep 22, 23, 26
Tifton: Holiday Inn $65.00 + tax - 229 3982-6687 Sep 24, 25

The 2008 Winter Meeting will be with SAAS in Dallas TX February 2-5, 2008 and John Sweeten will be our local contact. It was suggested to set aside two hours of meeting time for discussion on ways to supplement center funding.

Summer: 2008 Utah - Ray Cartee
Winter: 2009 SASS Atlanta
Summer: 2009 California

Motion to accept meeting sites made by Lyle Lomas; seconded, Pete Shultz and was passed by voice vote.

Nominations Committee

Paul Sebesta - Open nominations may come from the floor the committee nominated the following for officers for 2007-2008; President, Mike Phillips (KY); Vice President, Ray Cartee (UT); Secretary, Merritt Taylor (OK); Business Manager, Denny Thompson (NC); Proceedings Officer, Dennis Onks; Communications Officer, Pete Schultz (VA).

Motion made by John Hodges, seconded by Fred Swanson to accept the nomination and cast a unanimous vote motion carried by voice vote.

Web Site Update

Pete Schultz in conjunction with Lydia has been working on the website and invites anyone to contribute information.

Other Business

John Hodges reminded us that registration fee's for meetings need to be one amount to include everything. The fee's for spouses is all that should be separated.

Motion to adjourn by Pete Shultz, seconded by Merritt Taylor. Motion passed /Adjourned at 11:29

Respectfully submitted by:
Ray Cartee
RCAS Secretary

RESEARCH CENTER ADMINISTRATORS SOCIETY
Bylaws
Current Revision 02-06-2005

Article I. Name

The name of this organization shall be the Research Center Administrators Society, otherwise referred to as RCAS.

Article II. Objectives

The objectives of the society shall be those of an educational and scientific unincorporated association qualified for exemption under Section 501(c)(3) of the Internal Revenue Code of 1986 as amended or a comparable section of subsequent legislation.

Specifically, the society shall strive to advance the acquisition and dissemination of scientific knowledge concerning the nature, use, improvement, and interrelationships of research center administration scientific research, and new technology. To this end, the society shall 1) promote effective research, 2) disseminate scientific information, 3) facilitate technology transfer, 4) foster high standards of education, 5) strive to maintain high standards of ethics, 6) promote advancements in this profession, and 7) cooperate with other organizations having similar objectives.

Article III. Composition of the Society

SECTION 1. The society shall be composed of members as described in Article IV.

SECTION 2. The society shall have an executive committee, other committees, and such officers as are necessary to fulfill its objectives.

Article IV. Membership

SECTION 1. The membership shall include superintendents, resident directors, center directors, and other individuals with various titles having administrative responsibilities involving a field station, branch station, research station, research and educational centers, or other branch research facility of a state agricultural experiment station or any other governmental, public or private agricultural research organization.

SECTION 2 The membership shall be composed of regular and active members. Anyone as described in Section 1 shall be designated a regular member and shall be eligible for active membership**.** Any individual, as described in Section 1 who attends a meeting and pays the designated registration fees shall be designated an active member for three years with all rights and privileges afforded by the Society.

Article V. Officers

SECTION 1. The officers of the Society shall be a President, a Vice-President, a Secretary, an Executive Business Manager, a Society Proceedings Editor, a Communications Officer, and a Newsletter Editor**.** These officers shall perform the duties prescribed by these bylaws and by the parliamentary authority adopted by the Society as described in Article IX.

SECTION 2. The officers shall be elected by the membership to serve for one year or until their successors are elected, and their term of office shall begin at the close of the meeting at which they are elected. The Executive Business Manager, the Society Proceedings Editor, the Communications Officer, and the Newsletter Editor shall serve at the pleasure of the Executive Committee and the Society for a specified term announced upon the election of the officer. Additional terms may be served if deemed in the best interest of the Society.

SECTION 3. No member shall hold more than one office at a time, and no member shall be eligible to serve consecutive terms in the same office. An officer may move into an office through the departure of another officer, completing the existing term and then be elected to serve a full term in that office. The Executive Business Manager, the Society Proceeding Editor, the Communications Officer, and the Newsletter Editor may serve more than one term upon recommendation of the Executive Committee and approval of the Society.

SECTION 4. Duties of the President are to serve as overall coordinator of RCAS activities; preside at all society meetings**; a**ppoint nominating committee in accordance with Article VIII, Section 1; appoint local arrangements committee chair for scheduled meetings; and appoint all other committees as needed.

SECTION 5. Duties of the Vice-President are to serve as Chair of the Program Committee; coordinate program costs with the Executive Business Officer in order to establish appropriate registration fees; provide copy of program to all RCAS officers and state representatives; provide Communications Officer with copy of program to place on the website; and serve as member of the Executive Committee.

SECTION 6. Duties of the Secretary are to be responsible for registration at all meetings and provide President and Executive Business Manager with final registration list; collect fees at all meetings and turn the monies over to the Executive Business Manager for deposit in the society's bank account; prepare minutes of all meetings and business sessions; provide Communications Officer with unofficial copy of the minutes for each meeting for the website for membership review; provide the Proceedings Editor and Communications Officer with official approved copy of minutes for publication in the Proceedings and on the website; provide program agenda of all meetings and other appropriate information to membership; serve as a member of the Executive Committee; serve as recording secretary for Executive Committee meetings as appropriate.

SECTION 7. Duties of the Executive Business Manager are to maintain the societies' banking accounts, fiscal records, prepare financial statements and provide such statements to the Executive Committee and the membership at scheduled meetings; issue checks for payment of invoices as submitted by the Executive Committee or program committee chair of any Society sponsored event; work with local arrangement committee in establishing appropriate registration fees for all meetings, to establish credit accounts, and other business matters related to any RCAS sponsored meeting; represent the society when designated by the President; maintain current membership list; revise as appropriate and maintain official copy of bylaws; provide Society Proceedings Editor with official copy of bylaws for publication in the proceedings; serve as a member of the Executive Committee; maintain past and current copies of society proceedings and provide copies to libraries, new members, and other individuals as requested.

SECTION 8. Duties of the Society Proceedings Editor are to assemble all program presentations of the annual meeting and edit for publication with input from Vice-President; publish approved minutes of annual meeting and Executive Committee Meeting as provided by the Secretary; procure all needed publishing materials and report cost to the Executive Committee for approval; Serve as a member of the Executive Committee.

SECTION 9. Duties of the Communications Officer are to be responsible for maintaining the Society website.

SECTION 10. Duties of the Newsletter Editor are to be responsible for publishing and distribution of the Societies' newsletter; to place the newsletter on the website at designated times as required by the Executive Committee; and serve as a member of the Executive Committee. Mechanism and dates of distribution of the newsletter to be determined by the Executive Committee.

SECTION 11. : A Local Arrangements Representative will be appointed for each scheduled meeting. Duties of the Local Arrangements Representative are to visit the meeting site in advance of the meeting to determine if the meeting room and other facilities are adequate; meet with hotel sales person or other appropriate businesses to make arrangements for meetings, including, coffee breaks, tour buses, food functions, visual aid equipment and other related needs; coordinate business arrangements with the Executive Business Manager to establish charge accounts if appropriate; coordinate budget matters with program chairman and Executive Business Officer to establish appropriate registration fees, coordinate all program arrangements and planned activities with other Program Committee members; shall have the option to solicit additional assistance from the membership as needed; attend the Executive Committee meeting prior to their assigned meeting.

Article VI. Meetings

SECTION 1. The Executive Committee will recommend sites for the winter and summer meetings two years in advance. The Active members will approve Executive Committee site recommendations at the business meeting of the winter meeting. Nominations of potential winter and summer meeting locations will also be accepted from the membership during the business meeting.

SECTION 2. Special interim meetings can only be called by the President in conjunction with the Executive Committee.

SECTION 3. Active members in attendance at any winter, summer, or special meeting shall constitute a quorum.

Article VII. Executive Committee

SECTION 1. The Executive Committee shall consist of current officers, the immediate past President, and one representative from each participating state.

SECTION 2. The Executive Committee shall have general supervision of the affairs of the society between annual business meetings, make recommendations to the Society, and shall perform such other duties as are specified in these bylaws. The Executive Committee shall be subject to the orders of the society.

SECTION 3. State Representatives shall be selected by the membership of their respective states.

SECTION 4. The Executive Committee shall meet at least twice annually. A meeting will be held during each of the semi-annual meetings.

Article VIII. Committees

SECTION1. The President shall appoint a Nominating Committee consisting of three immediate past Presidents that are still active in the Society. The Nominating Committee shall be appointed during the annual meeting. It shall be the duty of this committee to nominate candidates for the offices to be filled except for the office of Executive Business Manager and Society Proceedings Editor, and a Communications Officer. The Nominating Committee shall report during the business session of the annual meeting and prior to the election of officers. Before the election, additional nominations from the floor shall be permitted. An Executive Business Manager candidate and a Society Proceedings Editor, and Communications Officer Candidate shall be selected by the Executive Committee prior to the annual meeting, and the appointment shall be recommended to the Society for approval. The Society membership may also make nominations from the floor.

SECTION 2. Special committees shall be appointed by the President as the Society or the Executive Committee shall from time to time deem necessary to carry on the work of the Society. The President shall be ex-officio member of all committees except the Nominating Committee.

Article IX. Parliamentary Authority

The rules contained in the current edition of "Robert's Rules of Order Newly Revised" shall govern the Society in all cases to which they are applicable and in which they are not inconsistent with these Bylaws and any special rules of order the Society might adopt.

Article X. Amendment of Bylaws

SECTION 1 - Amendment by Active Membership. The Bylaws can be amended by a two-thirds vote of a quorum as described in Article VI, Section 3 during the business session of the annual meeting. Notice of the proposed change must be given to the Society President one week prior to the annual meeting. The notice shall include the full text of the amendment and the President will make such amendment available to the entire membership at least 24 hours prior to the winter business session.

SECTION 2 - Amendment by Executive Committee. In an emergency, the bylaws can be amended by action of the Executive Committee provided strict procedures are followed. A member proposing the amendment shall provide the Executive Committee Chair with the full text of the proposed change. The Chair shall distribute copies and/or place the full text on the website for committee members 45 days prior to the voting deadline. Voting may be by letter, telephone with confirming letter, or by roll call if taken during an Executive Committee meeting. State Representatives of the Executive Committee are to review the amendment with their respective delegation and cast one vote reflecting the delegation's view. A two-thirds vote of the Executive Committee members voting is required for adoption of an amendment. The Chair shall announce the voting results, and should the proposed amendment pass, the Executive Business Manager shall revise the bylaws to include the amendment(s) and place the full text of the revision on the web site for review by the Society membership. Amendments to the bylaws are to be ratified by the active membership at the winter meeting.

Article XI. Non-liability

SECTION 1. Non-liability. An officer, member, or other volunteer of the society is not liable for the society's debts or obligations and an officer,, member, or other volunteer is not personally liable in that capacity, for a claim based upon an act or omission of the person performed in the discharge of the person's duties, except for a breach of the duty of loyalty to the society, for acts or omissions not in good faith or which involve intentional misconduct or knowing violation of the law, or for a transaction from which the person derives an improper personal benefit. The officers, members, or other volunteers of this society have agreed to serve in their respective capacities in reliance upon the provisions of this Article.

Article XII. Dissolution

Upon dissolution of the corporation, the Executive Committee, after paying or making provisions for the payment of all liabilities of the society, will dispose of all assets of the society exclusively for the purposes of the society in such a manner, or to such an organization or organizations organized and operated exclusively for charitable, educational, or scientific purposes as shall at the time qualify as an exempt organization or organizations under section 501(c)(3) of the Internal Revenue Code of 1986 (or the corresponding provision of any future United States Internal Revenue Law), as the Executive Committee shall determine.

Revision Dates:

Revised 10-01-1985
Revised 02-05-1988
Revised 02-06-1992
Revised 01-29-1995
Revised 02-05-2001
Revised 02-06-2005

RCAS **Research Center Administrators Society**

RCAS Officers 2007-2008

Randall Rawls, Alabama, Past-President
Mike Phillips, Kentucky, President
Ray Cartee, Utah, Vice-President
Merritt Taylor, Oklahoma, Secretary
Denny Thompson, North Carolina, Executive Business Manager
Dennis Onks, Tennessee, Proceedings Co-Editor
Debbie Robertson, North Carolina, Proceedings Co-Editor

2006-2007 RCAS Committee Assignments

Awards
John Hodges, Tennessee, Chairman
Ray Cartee, Utah
Dave Langston, Arizona

Nominations
Bill Peterson, Kentucky, Chairman
Lyle Lomas, Kansas
Randall Rawls, Alabama

Proceedings
Dennis Onks, Tennessee, Chairman
Debbie Robertson, North Carolina
Sandy Maddox, North Carolina

Finance
Allen Nipper, Louisiana, Chairman
Lyle Paul, Illinois
Joe Street, Mississippi
Pete Schultz, Virginia
Larry Earnest, Arkansas
R. Brent Westerman, Oklahoma

Membership
Pete Schultz, Virginia, Co-Chairman
Paul Nyren, North Dakota, Co-Chairman

Meeting Site Selection Committee
Allen Nipper, Louisiana, Chairman
Ray Cartee, Utah
Lyle Paul, Illinois
Paul Nyren, North Dakota
Larry Earnest, Arkansas

2007 Distinguished Service Award Recipient

William O. 'Bill' Peterson
Director, Management Operations
University of Kentucky
College of Agriculture
Lexington, Kentucky

Mr. Peterson is recognized this year by the RCAS membership for distinguished service and support of the Society's mission to improve the administration of agricultural research units. This award has been earned by service as a member, committee chair and Officer during his 20+ years of membership. During this period he has served as the Kentucky State Representative, Local Arrangements Chairperson in 1992 and 2000, Secretary 2000, 2nd VP 2001, 1st VP 2002, President 2003. He has also served on the awards, membership and program committees. His contribution to the RCAS by serving in these roles has helped the Society to increase in membership and provide educational information to its members. This dedication and service is appreciated and recognized with this 2007 Distinguished Service Award.

Bill was raised in central Kentucky in his home town of Loretto. The family are grain and tobacco farmers and this has been continued by his brothers and now their children. His college experience yielded the BS and MS degrees from the University of Kentucky. While working on the Ph.D. degree at Cornell University, he had the chance to join with his family to purchase a 6000 acre grain farm. He left Cornell to begin this partnership farming operation and it continues today. Shortly after, he was offered his present position of Director of Management Operations with the University of Kentucky and this experience has continued since 1986. He and his wife have three children, two sons and a daughter. The Society is proud to have members such as Bill, who honor Agriculture and work to improve the products produced by the American Farmer.

Past Recipients of the Distinguished Service Award for service, leadership, and outstanding contributions to RCAS over an extended period of time.

YEAR AWARDED	RECIPIENT
1987	John Ewing
1988	Robert "Bobby" Moss
1989	Joe High, Jr.
1990	Wallace Griffey & Bill Webb
1991	Norman Justus
1992	Gene Morrison & Jere McBride
1993	William Loe & Howard Malstrom
1994	James Riley Hill
1995	Edward Worley
1996	Robert Freeland & Will Waters
1997	Joe Musick
1998	Dennis Onks
1999	John “Ike” Sewell
2000	F.T. “Butch” Withers, Jr.
2001	Joe McFarland
2002	John Hodges III & John Robinson
2003	Ben Kittrell & Jim Jones
2004	Findlay Pate & Carl Tart
2005	Denny Thompson
2006	Dave Langston

PAST PRESIDENTS, RCAS

YEAR	PRESIDENT
1969 - 1970	Robert Moss
1970 - 1971	Preston Reed
1971 - 1972	Charles Douglas
1972 - 1973	Charles Douglas
1973 - 1974	D. M. Gossett
1974 - 1975	Henry Marshall
1975 - 1976	Tom Corley
1976 - 1977	H. Rouse Caffey
1977 - 1978	E. G. Morrison
1978 - 1979	Robert Moss
1979 - 1980	Joe High, Jr.
1980 - 1981	Julian Craigmiles
1981 - 1982	Freddy Peterson
1982 - 1983	Wallace Griffey
1983 - 1984	Bill Webb
1984 - 1985	Gary Elmstrom
1985 - 1986	Norman Justus
1986 - 1987	Robert Freeland
1987 - 1988	Jere McBride
1988 - 1989	Howard Malstrom
1989 - 1990	Bill Loe
1990 - 1991	Edward Worley
1991 - 1992	Will Waters
1992 - 1993	James R. Hill, Jr.
1993 - 1994	Joe Musick
1994 - 1995	Dennis Onks
1995 - 1996	Jim Pitts
1996 - 1997	F. T.(Butch)Withers
1997 - 1998	Ben Kittrell
1998 - 1999	Findlay Pate
1999 - 2000	John Robinson
2000 - 2001	Denny Thompson
2001 - 2002	Carl Tart
2002 - 2003	Lyle Lomas
2003 - 2004	Bill Peterson
2004 - 2005	Paul Sebesta
2005 - 2006	Robert Dunker
2006 - 2007	Randall Rawls