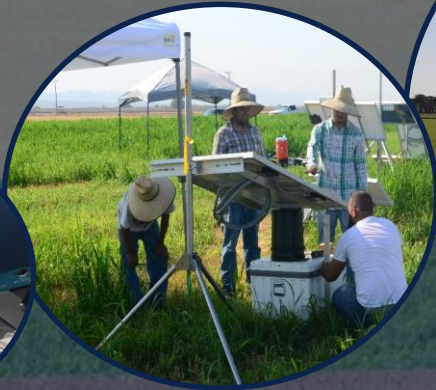


# Yuma Agriculture & the Yuma Center of Excellence for Desert Agriculture



THE UNIVERSITY OF ARIZONA  
COLLEGE OF AGRICULTURE & LIFE SCIENCES

Yuma Center of Excellence  
for Desert Agriculture



*Arizona is known as one of the most productive and efficient agricultural regions in the world and one of the most diverse agricultural production states in the nation.* AZ Farm Bureau

Exports to  
70  
countries

## AZ Agriculture:

\$17.1B Economic Impact

77,000 Jobs

1/2 livestock and 1/2 crops

1 Farmer Feeds 160 People (vs. 19 in 1940)



## AZ Dairy Industry

**210,000** cows produce 4.8 billion #'s of milk

Most productive in the U.S.: 23,000#/cow

Herd size of 2,000 = **2<sup>nd</sup> in nation**

Requires lots of hay and forage

Family-owned & operated = **98%**

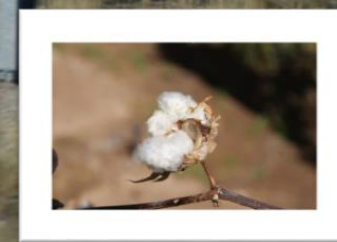
## AZ Cotton Industry

**200M #'s** produced on 130,000 acres

Makes a pair of jeans for every person in the US

Also produces cottonseed for food (oil) and feed

3 of Arizona's "Five C's"





# AGRICULTURE IN YUMA

- **High value specialty crop industry (\$3.2 Billion)**
- **Produces 90% of the nation's leafy greens Nov-Mar**
- **One of the top producing areas worldwide of Medjool Dates (5,000+ acres)**

## Arizona's top producer



**Vegetable production (#3 in USA)**

**Lemons**

**Tangelos**

**Tangerines**

**Watermelon**

**Cantaloupe**

**Durum Wheat (exported to Italy)**

- **Year-round growing season, 150+ crops**
- **230,000A of Fertile soil**
- **Available workforce**
- **Senior water rights**
- **Progressive farmers exploring/utilizing technology**
- **Great Community Support**



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# AGRICULTURE IN YUMA

Yuma ranks highly among US counties in agricultural sales & crop acreage

<b>Commodity</b>	<b>Yuma's rank among US counties in sales</b>
Vegetables & Melons	Top 0.1%
All Crops	Top 0.5%
All Agricultural Products	Top 1%
Other Crops & Hay	Top 1.2%
Nursery, Greenhouse	Top 23%
Grains, Oilseeds, Beans & Peas	Top 28%

<b>Commodity</b>	<b>Yuma's rank among US counties in acreage</b>
Vegetables	Top 0.1%
Lettuce	Top 0.2%
Durum Wheat	Top 9%
Forage	Top 9%

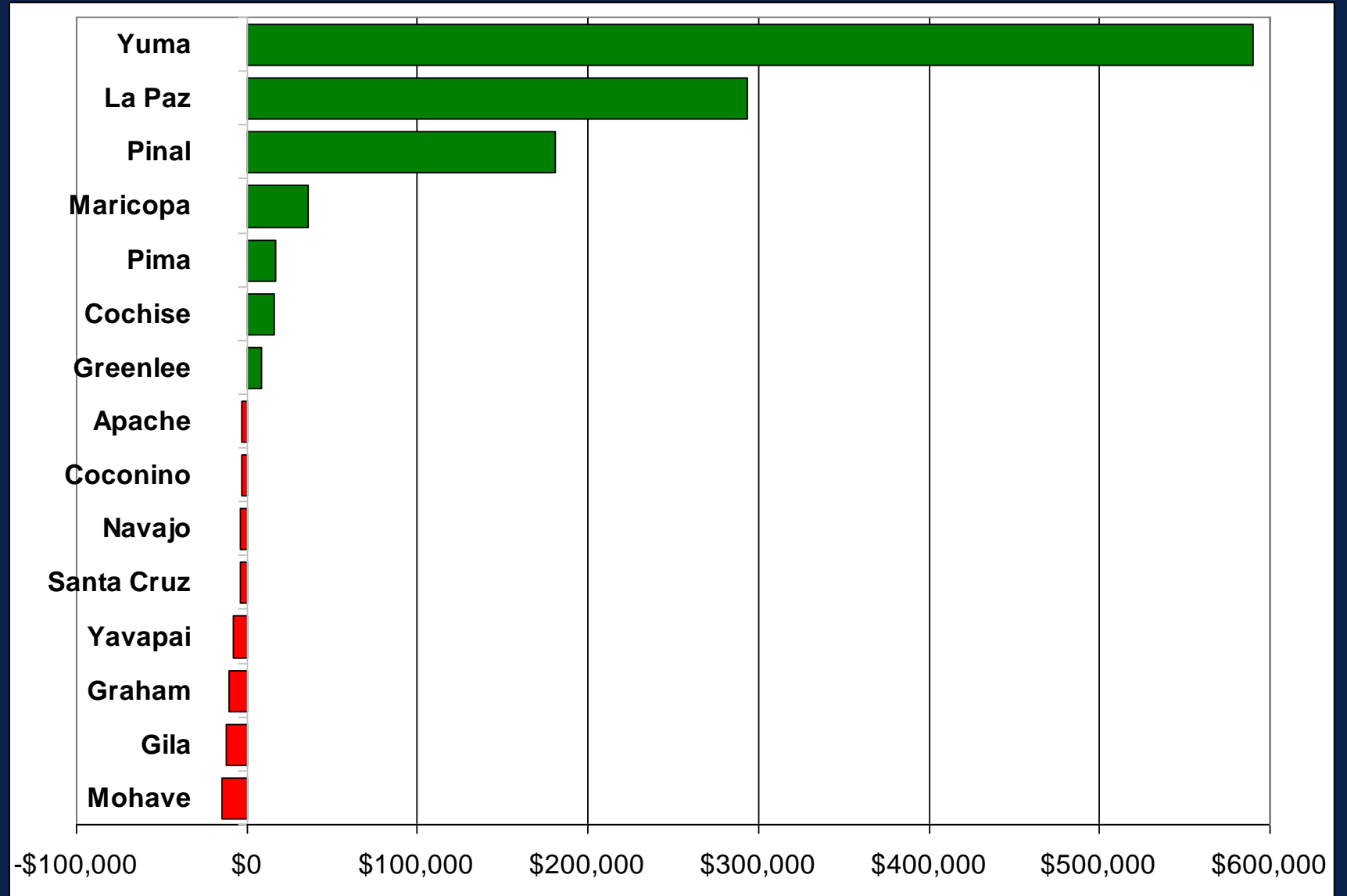
# AGRICULTURE IN YUMA

**Gross Cash Crop Receipts  
per Acre-Foot of  
Water Withdrawn, 2010**

COUNTY	\$ / Acre Foot
Mohave County	\$162.50
La Paz County	\$190.22
Pinal County	\$211.09
Maricopa County	\$368.70
Pima County	\$519.91
<b>Yuma County</b>	<b>\$680.81</b>

# AGRICULTURE IN YUMA

Net Farm  
Income,  
2012

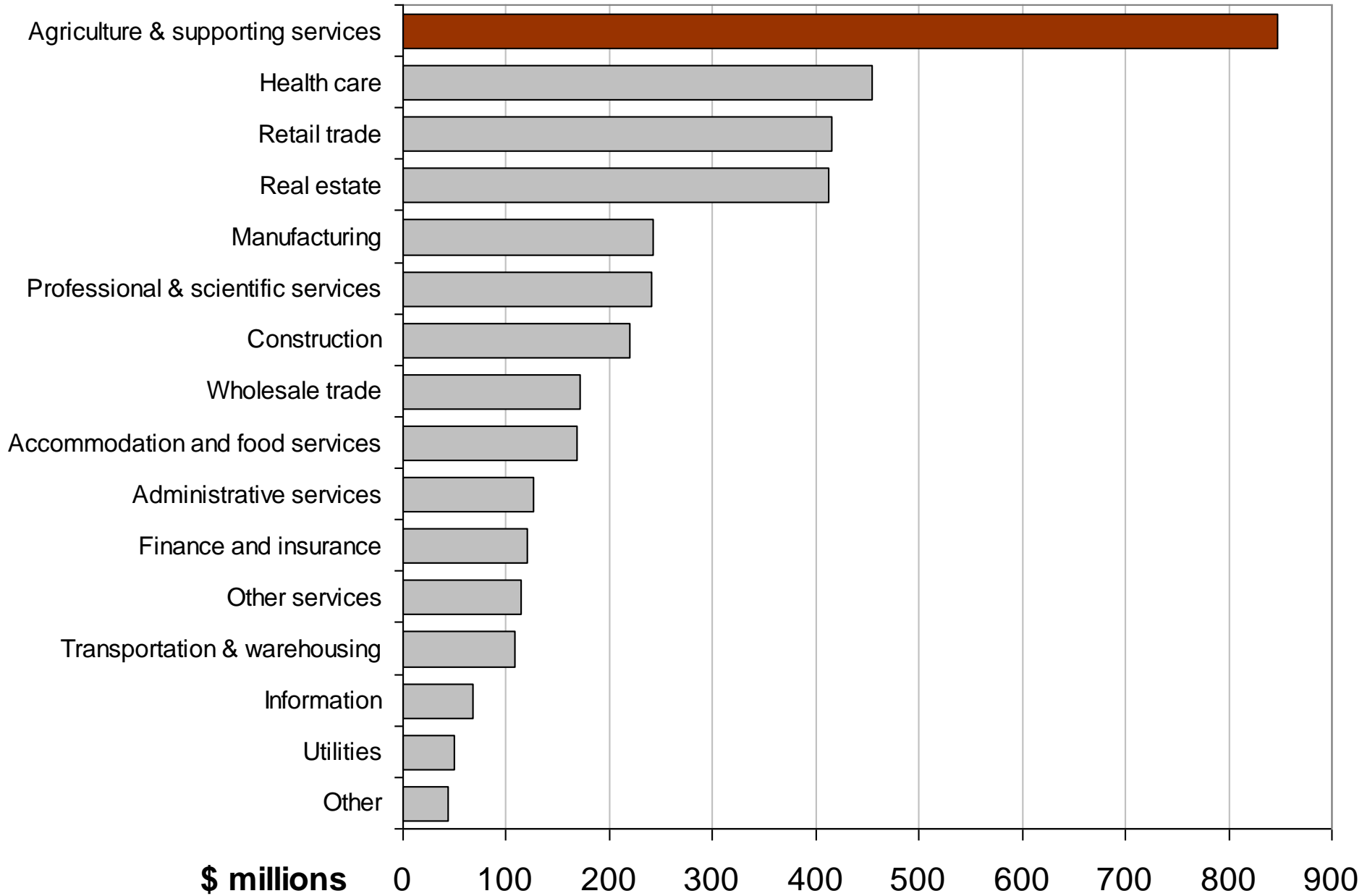


# AGRICULTURE IN YUMA

AZ Cash Rents (\$ / acre)

Yuma	\$584
La Paz	\$182
Maricopa	\$157
Pinal	\$120
Other Counties Average	\$118
Cochise	\$111
Graham	\$108
Pima	\$99
Mohave	\$98
Navajo	\$68
Greenlee	\$60

# Agriculture is the single largest private sector contributor to Yuma GDP (2012)





# AGRICULTURE IN YUMA

## Contribution of Agricultural Sectors to Yuma's Economy: Employment

- ▶ Direct Effect: 1 in 5 jobs
- ▶ Total Effect: 1 in 4 jobs

# Location Quotients (LQ) Examples

- ▶ Napa Wine & Spirit Merchant Wholesalers  
LQ = 13.3
- ▶ Silicon Valley Computer and Electronic Product Manufacturing  
LQ = 13.4
- ▶ Detroit Motor Vehicle Manufacturing  
LQ = 16.3
- ▶ Yuma Agriculture's LQ = 24.5





“YUMA IS TO AGRICULTURE WHAT NAPA IS TO WINE  
AND SILICON VALLEY IS TO COMPUTER TECHNOLOGY.”

GEORGE FRISVOLD



# Looking Ahead – Demands on Agriculture



## Technology as a solution



# U of A in Yuma



## Teaching

## Research

## Extension



- *14+ Degrees*
- *Scholarships*
- *Internships*
- *Workforce Development*



- *Outreach*
- *Applied Ag Research*
- *Youth Development (4-H)*
- *Family & Consumer Sci. Educational programs*





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# Yuma Center of Excellence for Desert Agriculture

*"Solutions to Desert Agriculture's Pressing Problems"*





# Q: How can the University better support the Desert Ag Industry?



A: Center of Excellence dedicated to addressing on-the-ground industry needs!

High-priority issues identified by industry stakeholders



Bring funding and research teams together:



Provide rapid, direct value-adding responses

*Over \$1MM in grants!*



*university + industry + government agencies*

Improve all aspects of desert crop production systems & economics



COLLEGE OF AGRICULTURE AND LIFE SCIENCES  
Yuma Center of Excellence  
for Desert Agriculture

Housed in CALS

**Univ. of AZ**

*University provides office facilities, access to CALS Admin Support, Research infrastructure, Cooperative Extension Researchers & infrastructure*



Funded by Industry

**Industry**

*Tax deductible donations to UA Foundation support daily operations and direct-value research projects*

YCEDA Advisory Council guides the ED on the focus of research/programs

*Executive Director*



**Paul Brierley**

*Chair*



**Robby Barkley**  
Barkley Ag

*Vice Chair*



**Vic Smith**  
JV Smith Companies



**John D'Arrigo**  
D'Arrigo Brothers



**Mike Antle**  
Tanimura & Antle



**Mark Smith**  
Smith Farms

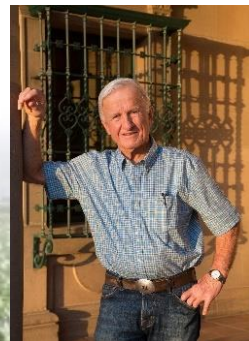


**Kelly Keithly**  
Keithly-Williams Seed

*Ex-Officio*



**Dr. Shane Burgess**  
VP & Dean  
U of A



**Jon Jessen**  
Gowan Co.



**Steve Martori**  
Martori Farms



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# YCEDA Priority Issues



**Production Efficiencies & Yield Maximization**



**Plant Diseases**



**Water Management**



**Plant Pests**



**Food Safety**



**Nutrient Management**





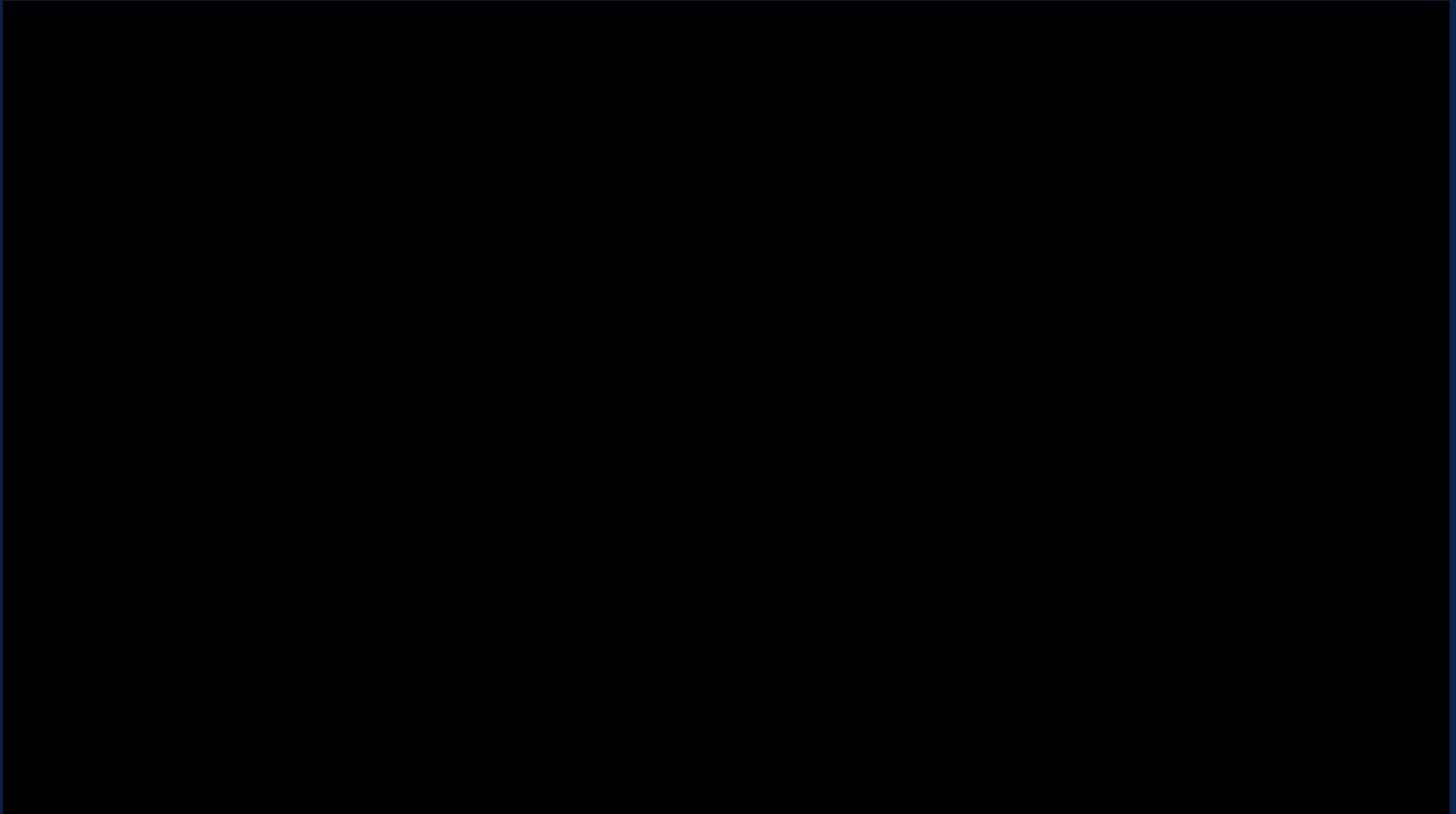


What are we doing about all of this?





# What are we doing about all of this?



# IRRIGATION & SALINITY MANAGEMENT



Advanced measurement equipment and extensive sensor network track water application, crop usage, evaporation and soil salinity movement over a year's cropping pattern.

- *\$630,000 Research Grant Funding*
- *\$160,000 UA funding for research equipment*
- *Will show the need for and quantify the leaching coefficient*

Will develop new evapotranspiration data (crop coefficients)

Mobile Apps will be developed to manage irrigation quantity/timing







# FUSARIUM WILT OF LETTUCE

## Disease Mitigation Research



- First commercial field trials in 12 years
- 2015 International Symposium
- 2016 Fusarium Conference in CA
- Early / Remote detection research projects
- DNA Analysis of Disease Pressure

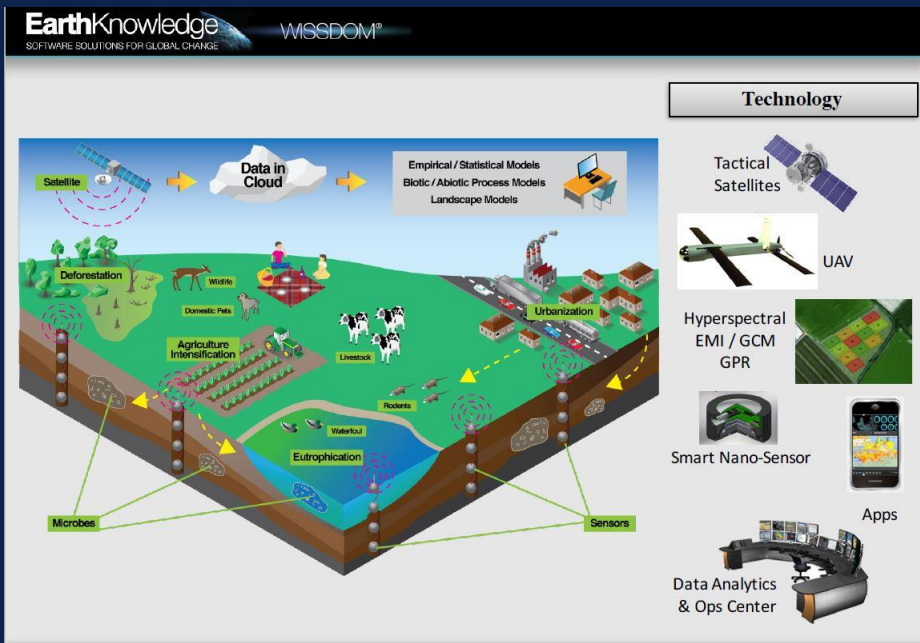


industry & academia working together in a unified effort

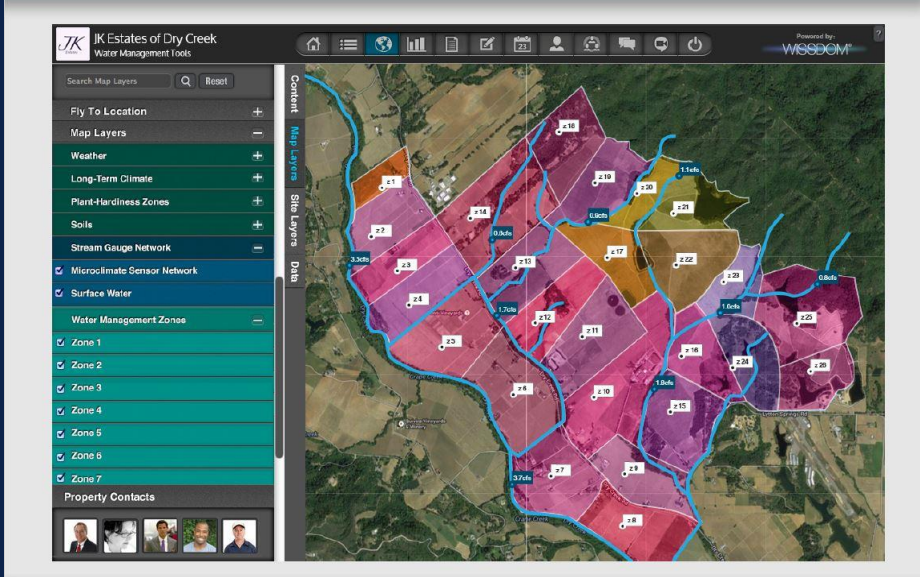




# BIG DATA ANALYTICS & DECISION TOOLS



**Multi-Sensor Technology Platform** © 2015 Earth Knowledge - Confidential



**Farm and Water Management by Zone** © 2015 Earth Knowledge - Confidential

## How can we improve productivity?

Work with a USDA National Lab and a Big Data Analytics Company to create a Decision Tool to assist in decisions impacting disease triggers!  
(soil health, soil moisture, climate, etc.)

Utilizing the decision tool

- Planting decisions
- Soil preparation
- Irrigation Management
- Pesticide treatments
- Production decisions
- Yield estimation
- Harvest timing



# DRONES

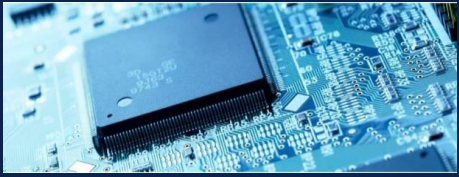


- **Develop and License Apps for Commercialization**
- **Testbed/Ground-truth Commercial Applications**
- **Provide Remote Sensing for Research Projects**
- **Operator Training Certification**



# Utilizing Technology

## Mechanization/Labor



## Food Safety







# Bird Deterrent Discussion & Design Challenge



## Bird Deterrent Discussion and DESIGN CHALLENGE!

Hosted by University of Arizona Cooperative Extension  
Sponsored by the Yuma Center of Excellence for Desert Agriculture



Do you have issues keeping birds away from fresh produce fields, livestock feed, airport runways, or golf courses?

Are you a Wildlife Biologist, Ornithologist, or Animal Deterrent Specialist?

Are you an Engineer, a Designer, or a creative problem solver?

If you answered Yes to any of these questions, then you will want to attend this FREE event!

### Meeting Agenda—March 29, 2016

#### 1. Optional field trip. 8am-10am

For those of you who are not familiar with bird issues in Yuma, we will visit areas with high bird activity where you may be able to see damage to crops.

#### 2. Define the issue. 10am-12 noon

We will all share information about the bird deterrents that we have used, along with their efficacy.

#### 3. Ask the experts. 12noon-2pm (Lunch will be provided)

We will explore bird behavior and physiology, and discuss how we can use those to our advantage in developing new deterrents, within the confines of bird protection regulations.

#### 4. DESIGN CHALLENGE!

We challenge those who are interested to design a new, different, more efficient and cost effective bird deterrent for fresh produce growers, as well as livestock operations, airports and golf courses. All those who sign up for the Challenge will be invited back in May to confidentially present your ideas. The winners will receive assistance in applying for funding to make their bird deterrent a reality, and other fabulous prizes!

Meet at the Yuma Agricultural Center (6425 W. 8<sup>th</sup> St.) at 7:45am for the field trip, or at 10am for the meeting.

RSVP REQUIRED. Email [pkrivadeneira@email.arizona.edu](mailto:pkrivadeneira@email.arizona.edu) and provide your full name, title, and affiliation. Also indicate if you will be attending the field trip, and if you have dietary restrictions for lunch. Call (928) 919-2611 for more information. This event is FREE!



*YCEDA sponsored  
1-day seminar w/industry,  
researchers and technologists  
&  
design challenge*



# YCEDA OUTREACH

Informing industry and the public

## WEBSITE

DesertAgSolutions.org becoming "go-to" site for actionable research



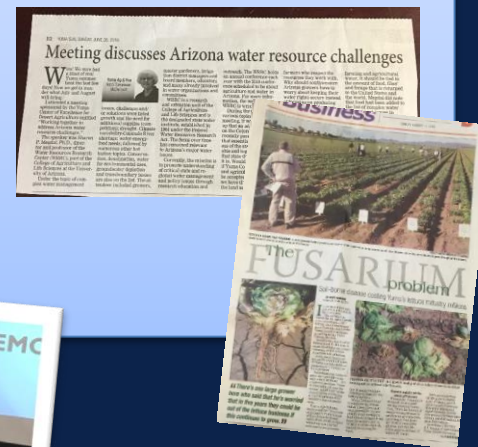
## CENTER of EXCELLENCE SEMINAR SERIES

Bringing research topic overviews to industry



## MEDIA

Strong presence in newspaper, TV and radio



## SOCIAL MEDIA

Growing presence enables discussion with larger audience







*Located at the Yuma Ag Center  
6425 W. 8<sup>th</sup> St.*

**Paul Brierley**  
Executive Director

**PaulBrierley@email.arizona.edu**

o: 928-782-5873  
c: 928-920-4983



Website: [DesertAgSolutions.org](http://DesertAgSolutions.org)

**You Tube** YCEDA Research



@YCEDA



@YCEDA\_DesertAg

**CONNECT WITH US!**



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