



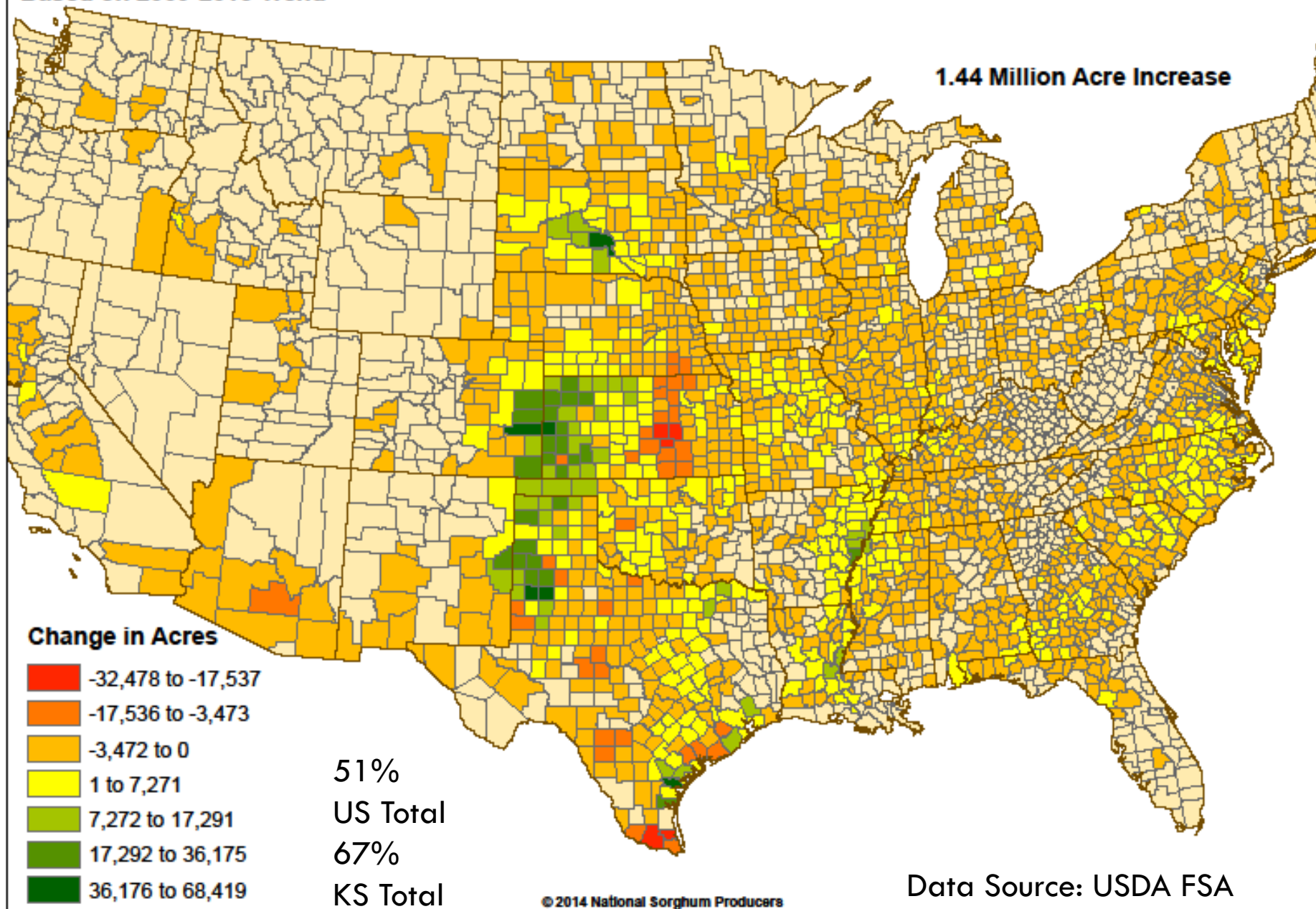
GRAIN SORGHUM RESEARCH AND EXTENSION NEEDS



Jesse McCurry, Regional Director

Change from 2009 Trend Sorghum Acreage to 2013 Trend Sorghum Acreage

Based on 2009-2013 Trend

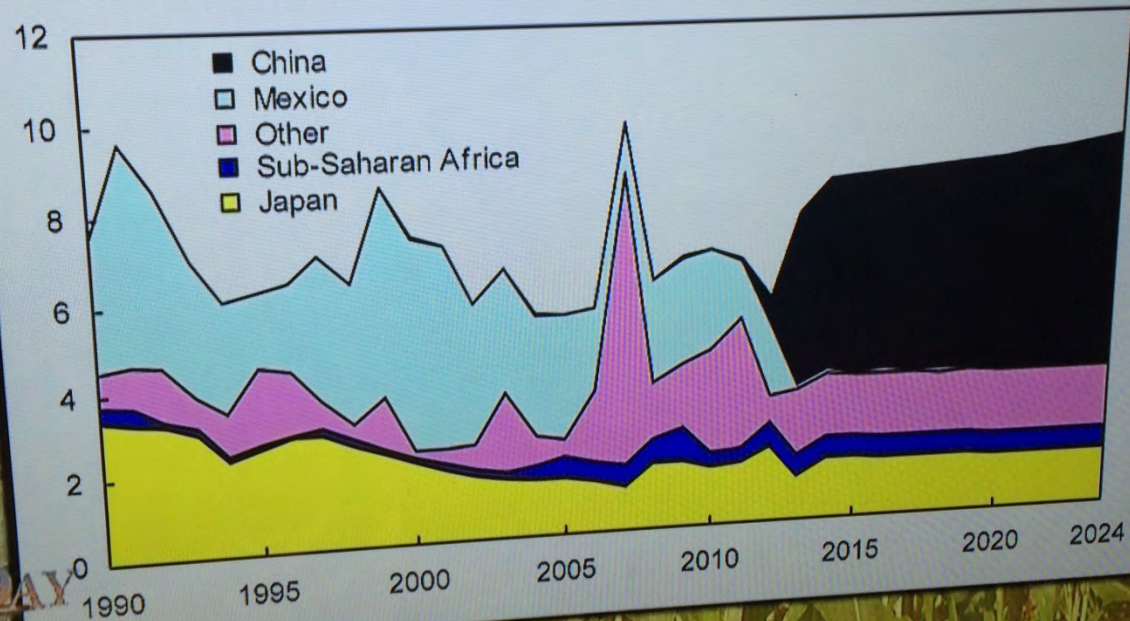




GLOBAL SORGHUM IMPORTS

Global sorghum imports

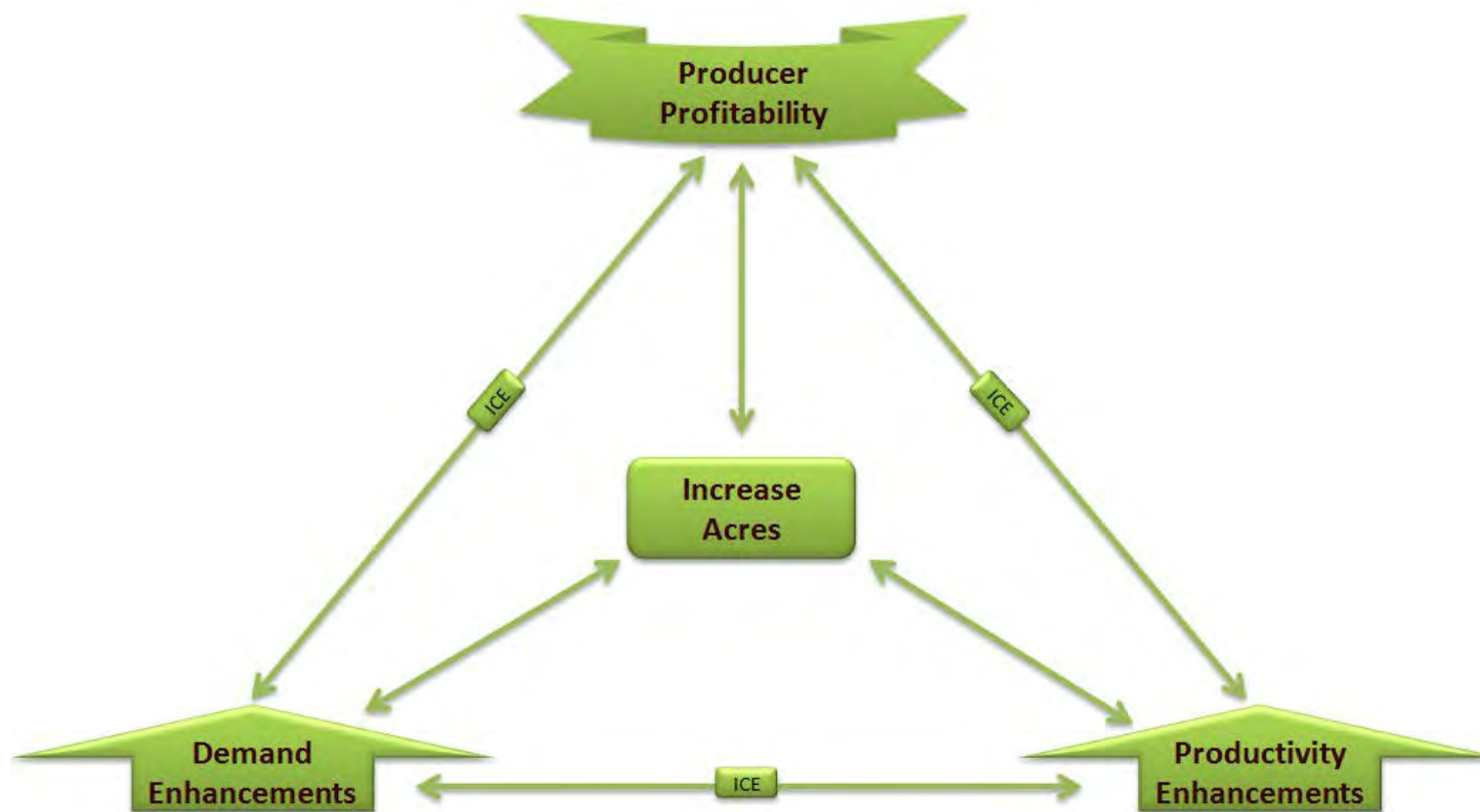
Million metric tons



SORGHUM: THE SMART CHOICE

China. China. China. China. China. China.

Our guiding model.



Our farmer leadership.

- 13 member board
- 5 seats for (KS)
- 3 seats for (TX)
- 1 seat for (SD)
- 4 at-large



Dale Murden
Chairman
Edcouch, TX
Texas: 2014-2017



Adam Baldwin
Vice Chairman
McPherson, KS
Kansas: 2014-2017



David Fremark
Secretary
St. Lawrence, SD
At-Large: 2012-2015



Martin Kerschen
Treasurer
Garden Plain, KS
At-Large 2013-2016



Bill Kubecka
Palacios, TX
Texas: 2012-2015



Clayton Short
Assaria, KS
Kansas: 2013-2016



Greg Shelor
Minneola, KS
Kansas: 2012-2015



Verity Ulibarri
McAlister, NM
At-Large: 2014-2017



Kathy Broman
Hereford, TX
At-Large: 2013-2016



Bill Greving
Prairie View, KS
Kansas: 2012-2015



Carlton Bridgeforth
Tanner, AL
At-Large: 2014-2017



John Dvoracek
Farwell, NE
Nebraska: 2014-2017



Dan Krienke
Perryton, TX
Texas: 2013-2016

Farmer Priorities – pre 2/24/15

1. Grass and Weed control
 - ▣ *Always the most consistent #1*
2. *Yield development*
3. *Cold tolerance*
4. *Drought tolerance*
5. *Disease resistance development*
6. *Management*
7. *New gene introduction*
8. *New genetic introduction*
9. *Information management*
10. *facilitation*



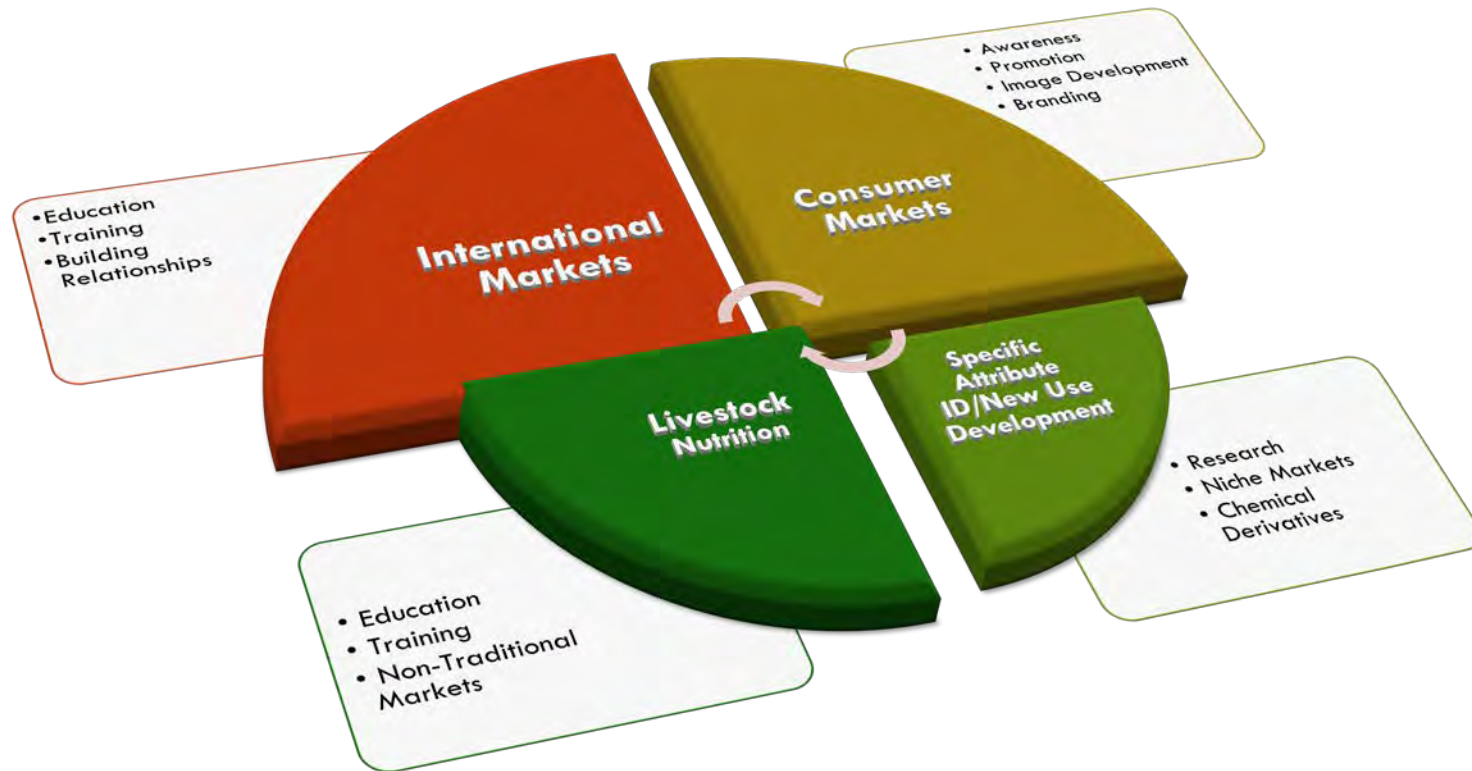
What farmers want.

Crop Improvement Priorities NOW

- Over-the-Top Grass Control
- Yield Development and Enhancement
 1. Breeding
 2. Field-level management
- Seed Innovation
 1. Conversion Program
 2. Advanced breeding techniques and tools
 3. Development of new and novel genetic traits
- Information Management
 1. Sorghum Research Database
 2. Genomics Database

The Committee will strategically facilitate all priorities towards commercialization through collaboration between public and private researchers and industry stakeholders. All research outcomes will be targeted towards producer profitability.

Revised HVM Objectives



Renewables Priorities

1. Alternative markets for coproducts
 1. Adhesives, waxes, aquaculture
 2. What is in the DDGS?
 3. Carnuba wax replacement (turtle wax)
2. California LCFS and sustainability issues
 1. Data collection
 2. Model design

Bridging the Gap...Moving the needle



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Private industry is required.

RFPs

USCP

Kansas Commission



Investments and Cycles

- USCP RFP Proposals:
 - Total 119 pre-proposals at \$20 million
 - 51 for crop improvement at \$11.3 million
- KGSC RFP Proposals:
 - Total 26 pre-proposals at \$996,051



USDA Approved



What USCP Funded – 3.65m

- David Stelly of Texas A&M University was funded \$240,488 **to identify methods of eliminating gene flow** from sorghum to johnson grass.
- Muthukumar Bagavathiannan of Texas A&M University was funded \$213,419 for the development of **new sources of herbicide resistance** in grain sorghum.
- Bryan Ayre of University of North Texas was funded \$225,000 for the development of methods to enhance breeding opportunities.
- Bob Fanning of South Dakota State University was funded \$10,000 for establishing a Nebraska and South Dakota production guide.
- Mithila Jugulam of Kansas State University was funded \$30,000 for **herbicide development**.
- Paul Ulanich of North Carolina Biotech was funded \$98,314 for grain sorghum variety evaluation.
- Nancy Turner of Texas A&M University was funded \$130,000 for pet food development.
- Lonny Sweet of The Connect Group was funded \$200,000 **for branding and public awareness** within the food industry.
- Jim Zenner of JPZ Consulting was funded \$41,500 for institutional food promotion.
- Earl Roemer of NuLife Market was funded \$120,000 for food development.
- Jason Bootsma of Prairie Aqua Tech was funded \$120,000 for livestock nutrition.
- Jim Zenner of JPZ Consulting was funded \$80,200 for food industry promotion.
- Rhonda Miller of Texas A&M University was funded \$69,000 for food development.
- Sajid Alavi of Kansas State University was funded \$130,000 for **pet food development**.
- Morawicki of University of Arkansas was funded \$90,000 for animal nutrition.
- Nancy Turner of Texas A&M University was funded \$185,000 for coproduct enhancement.
- Mark Riley of University of Arkansas was funded \$74,953 for coproduct enhancement.
- Battelle was funded \$80,000 for coproduct enhancement.
- Daria Aragon of Louisiana State University was funded \$30,000 for biofuels enhancement.
- Michael Aide of University of Missouri was funded \$8,000 for biofuels enhancement.



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External Advisors

UNITED SORGHUM CHECKOFF PROGRAM EXTERNAL COMMITTEE PARTICIPANTS

Crop Improvement

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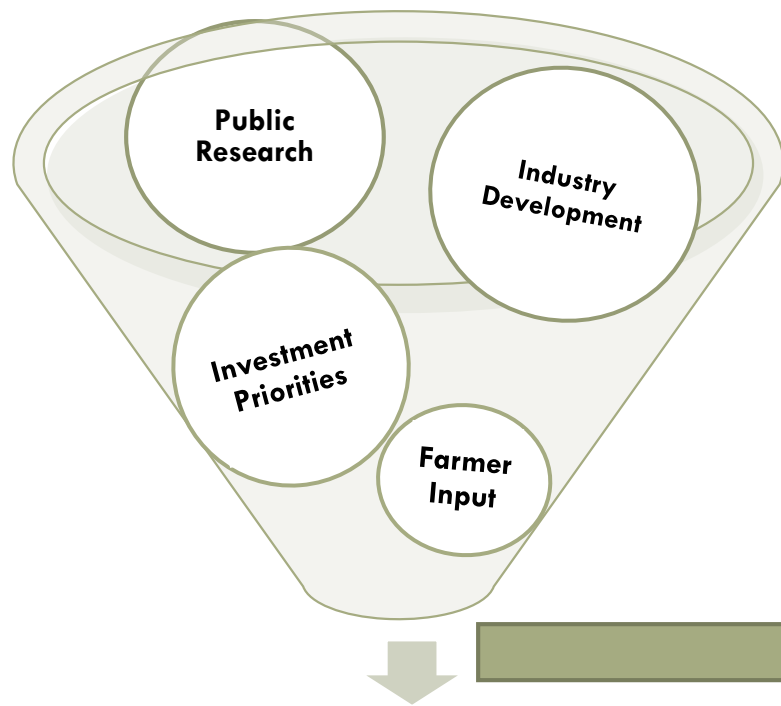
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dpeine@wpellc.com



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Updated 1/21/2015



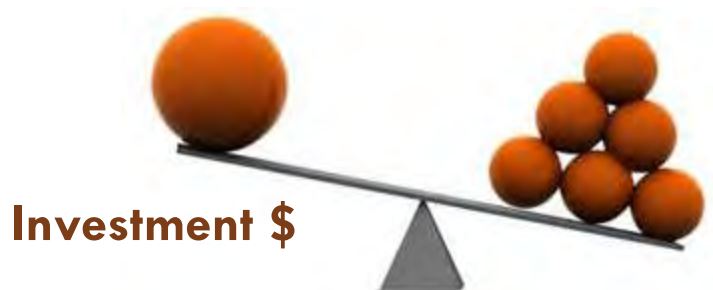
Research must connect to private industry to connect to farmers' fields

Farmer Seed Bag



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Industry Needs



Strategic Investments

- \$280M, 10 years New Active Ingredient
- \$500K to Extend a Current Label to Sorghum
- \$150M, 10 years to develop a GMO Trait



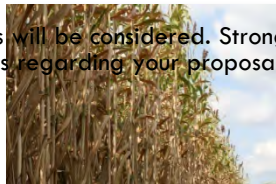
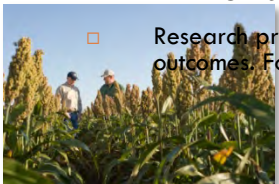
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Kansas Commission - Proposals are due by April 30, 2015.

- Weed Control
 - Research focusing on the identification of new genetic sources for resistance to available grass control herbicides.
 - Management research addressing herbicide treatment and farm based weed control.
- Yield
 - Genetic and breeding research targeted towards increased yields in both high yielding and limited resource environments.
 - Research focusing on best farm management practices for top yields. This priority can include but is not limited to: farm trials, extension meetings and on-farm management case studies.
 - Identify best management practices for both full and limited irrigation practices.
- Standability
 - Researching the key components attributed to standability.
 - Proposal directed toward ensuring genetics in producers' fields have strong standability.
- Sorghum Economics and Profitability
 - Production economics focusing on farm profitability and sorghum return relative to other crops.
 - Water economics to include but not limited: water response curves and limited irrigation returns.
 - Basis drivers evaluating the impact of ethanol, feed markets, exports and other market drivers on interior Kansas basis markets.
- Disease Control
 - Evaluate how plant health and disease resistance are influenced by management including but not limited to fertilizer, seed treatment, and seeding rates.
 - Genetic research targeted toward plant health and disease resistance.
- Insect Control
 - Evaluation of economic threshold for treatment and insect control related to profitability.
 - Chinch bug management and control.

- Research proposals outside of these priorities will be considered. Strong proposals will provide a linkage and vision for commercialization of project outcomes. For further clarification or questions regarding your proposal please contact the commission at (785) 477-9474 or jill@ksgrainsorghum.org.



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Sorghum Yield and Profitability Response to Water Supply and Irrigation Management

- Objective I: Water Use Efficiency Curve Update
- Objective II: Best Management Practices for Limited Irrigation
- Objective III: Sorghum Water Economics

- Investment: \$149, 982

- **Objectives:**
 - 1. Compare the yield response and water use of grain sorghum and drought-tolerant corn in dryland, limited, and full irrigation scenarios.
 - a. Lead: Gary L. Cramer
 - b. Co-investigators: Eric Adee, Ignacio Ciampitti, Johnathan Holman, Kraig Roozeboom, Alan Schlegel
 - 2. Determine the top end grain sorghum yield potential under very well-watered conditions (100% ET) at three locations in western Kansas (Colby, Garden City and Tribune) and the effect of irrigation timing on grain sorghum yields under very limited irrigation (6 or 10 inches total) at Colby, Tribune and Garden City.
 - a. Lead: Isaya Kisekka
 - b. Co-investigators: Lucas Haag, Johnathon Holman, Freddie Lamm, Alan Schlegel,
 - 3. Determine the economic cost/benefit of irrigated grain sorghum production under diverse water regimes.
 - a. Lead: Bill Golden
 - b. Co-investigator: Dan O'Brien



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2015-2016 Kansas Priorities

- Weed Control
 - Research focusing on the identification of new genetic sources for resistance to available grass control herbicides.
 - Management research addressing herbicide treatment and farm based weed control.
- Yield
 - Genetic and breeding research targeted towards increased yields in both high yielding and limited resource environments.
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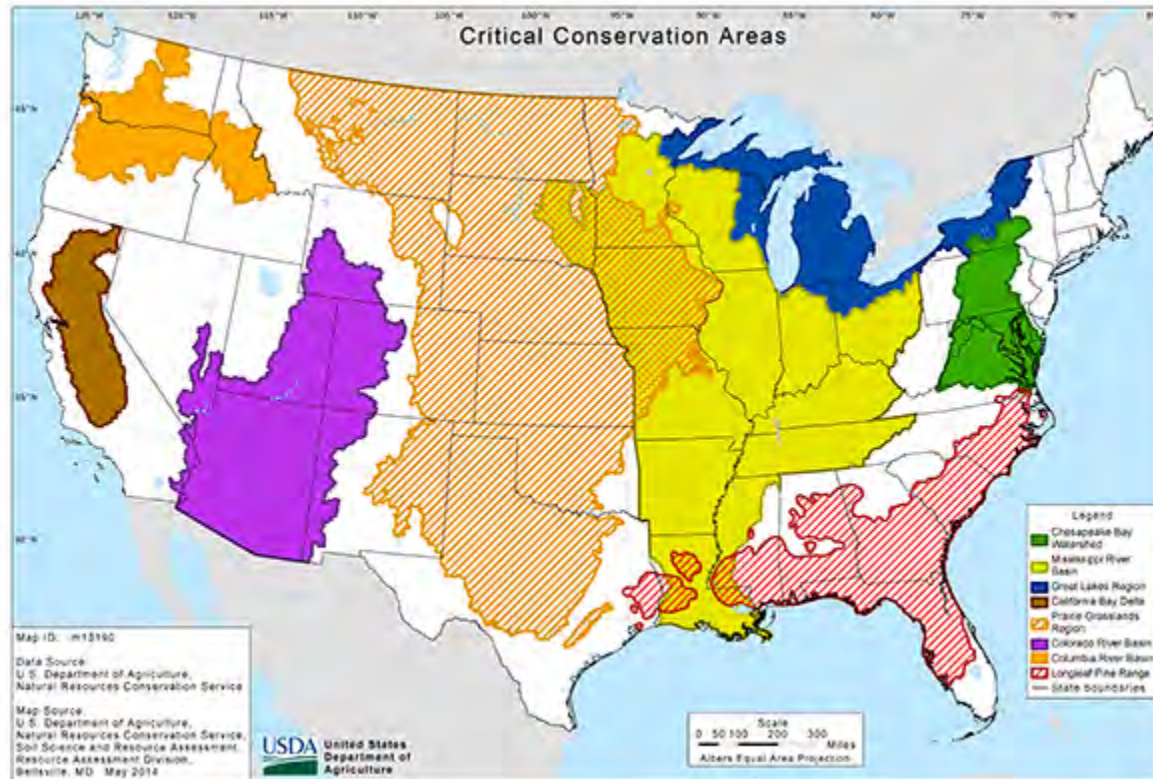


Kansas Commission RFP Timeline

- Proposal Deadline April 30, 2015
- Selected Presentations Mid Summer
- KGSC Funding Decisions prior to Oct 1
- Contracts for Oct 1, 2015 – Sept 30, 2016



RCPP possibilities??



Crop Improvement

- The horizon for sorghum genetics is bright
 - *Double haploid-* allows plant breeders to shave years off of their breeding programs
 - *Approximately 7000 genetic lines to be processed or distributed to sorghum genetics community through the USDA Germplasm Unit*
 - *Sorghum Conversion Program delivered 142 new genetics to 15 public and private entities*

Crop Improvement

- Leveraging valuable research through collaborative and strategic investments with private entities
 - ▣ *Built relationships with “Big 6” chemical and genetic providers*

High Value Markets

Agvantage Naturals
Alternative Baking Company
Amy's
Angel's Recipes
Ardent Mills
Augason Farms
Authentic Foods
Bard's Beer
Belly Hugs
Big River Grains
Bob's Red Mill
Briess
Canyon Bakehouse
Cargill
Crunchmaster
Dakota Prairie Organic Flour Co.
Dogfish Head Craft Brewed Ales
El's Kitchen
Enjoy Life
French Meadow Bakery
Gia's Gluten Free Bakery
Gluten Free Essentials
Grandpa's Kitchen
Green's
Guenther Sorghum Supply
Harvester Brewing
Hodgson Mill
Inspiration Mixes
JustPoppin

- ✓ Increased number of product lines
- ✓ Increased product formulation percentage
- ✓ Increased number of Suppliers
- ✓ Co-Branding

Krusteaz
Kristen's Gluten Free Food
Lakefront Brewery (New Grist)
Lucy's
Maasdam Sorghum Mills
Manna Organics
Mariposa
Mini Pops Inc.
Muddy Pond Sorghum Mill
Namaste Foods
New Planet Gluten Free Beer
NuLife Market
Nu World Foods
Odell's Gluten Free
Orgran
Pleasant Hill Grain
Prairie Star
Quantum Foods, LLC
Redbridge
Rudi's
SB&B
Shiloh Farms
Silly Yak Bakery
Soft n' Hearty
St. Peter's Brewery
Steadfast Beer
Taylor Made Gluten Free Bakery
The Granary: Bulk Foods
The Old South Trading Post
Twin Valley Mills
Wondergrain

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One “customer” at a time...



WINS



2014?



Sorghum Flour – Dec 2014

Sorghum Protein Powder – Nov 2014



5 FCL – Birdseed (New) – Nov 2014



California Cereal Products - 1st Qtr 2015



Pearlized & Whole Grain - 2014

October 2014



June 2014



2014 – Dofu/Pancakes



SORGHUM: THE SMART CHOICE

Moving “The Needle”



High Value Markets

□ Food sector focus

- *Culinary, Consumer, Institutional, Food Processor and Formulators.*
- *Execute a strategic PR campaign to and leverage media to manipulate consumer behavior to promote sorghum consumption.*
- *Collection of sorghum based recipes.*
- *Promoting experts to speak on our behalf.*

□ Sell your product

- *Great Grains: 218 placements, 5.5 million in print impression, \$413,000 in advertising equivalency.*
- *202 placements, 692 million in print impressions*

Authors & Social Media Experts



Ronni Lundy – **Sorghum Savor** – Due Out Spring 2015

Lauren Pincus – **Nutrition Starring You** – “Population” Group Focus (Diabetic/Obese)



ELLEN BRIGGS
Founder, Author, Radio Host



STACEY ANTINE
MS, RDN



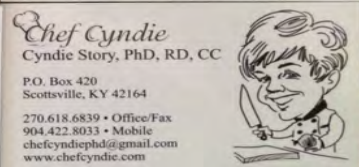
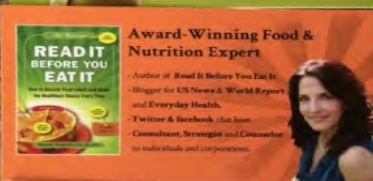
CAROLINA JANTAC,
MS, RDN, LD
&
JAIMIE PROCTOR
MS, RDN



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Click Here



Recipes & Blogs
Click Here

Recipes & Blogs
Click Here



Triad To Wellness, LLC – “Professional Sector”
Group Focus - Social Media Program

- Promo Events
- Twitter Parties
- Facebook
- Instagrams
- Pinterest

SORGHUM: THE SMART CHOICE

Promoting “Experts” To Speak On Our Behalf!!!

Associated Press Media Pickup



The Final Proof: October 2014
Sorghum: The \"New\" Ancient Grain



SORGHUM: THE SMART CHOICE

202 Outlets => 692 "Million" Impressions
(May 30, 2014)

AP Associated Press
Sorghum Seeing Success as Southern Foods Get Hot

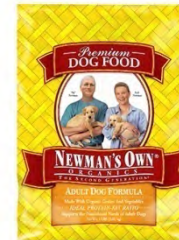
High Value Markets

Brand Name	Formulas
IAMS	Iams® Veterinary Formula™ Weight Loss/Mobility Plus Restricted-Calorie™ dry dog food formula, Iams® Veterinary Formula™ Glucose and Weight Control Plus Optimum Weight Control dry dog and cat food formulas, Iams® ProActive Health™ Adult Indoor™ Weight & Hairball Care dry cat food formula
Mr. Bucks Pet Food	Rescue Blend Special Recipe, Rescue Blend Everyday Recipe, Chicken & Brown Rice
Eukanuba	Most dog and cat dry foods
Pet Wants	Chicken Meal & Brown Rice dry dog food, Salmon Meal & Brown Rice dry dog food, Lamb Meal & Brown Rice dry dog food, Buffalo Meal & Duck Meal dry dog food, Lean Dog Formula, Maintenance Formula, Puppy Formula, Lean Cat Formula, Adult Cat Formula, Kitten Formula
Hills Pet Nutrition	Hill's® Healthy Advantage® & Hill's® Science Diet® dry dog formula
Newman's Own Organics	Adult and Advanced dry dog and cat formulas



SORGHUM: THE SMART CHOICE

What's In A Name?



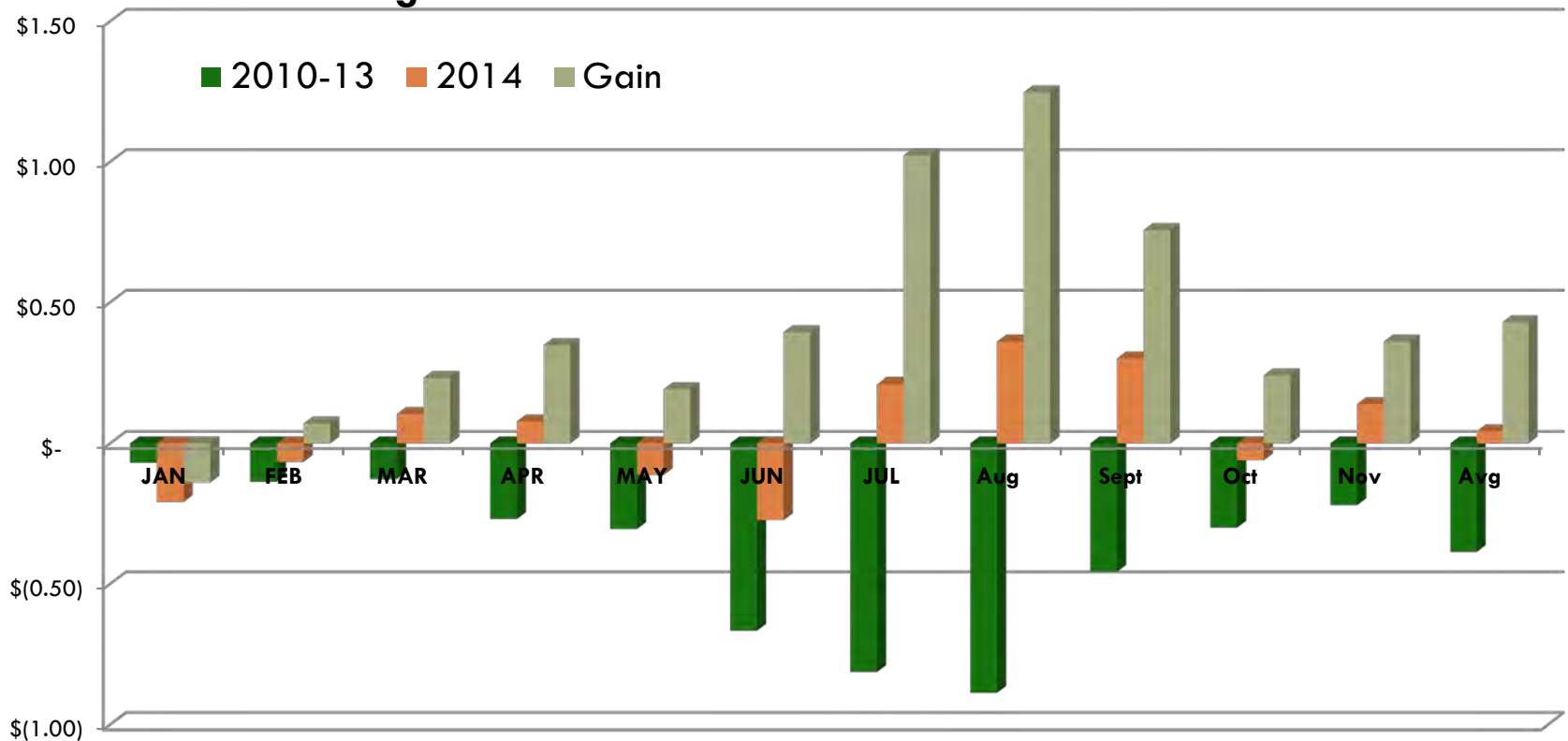
- 1) Collaborate with current users (Iams, Science Diet)
- 2) Increase ingredient usage in new formulations
- 3) Product Development (Treats) - KSU?
- 4) Non-Food Applications (i.e. Dermal)
- 5) Educate/Counter "Grain-Free" Movement

High Value Markets

- Strengthen China's Market
 - *The collaborative efforts of the Sorghum Checkoff and the U.S. Grains Council have helped strengthen this market by developing relationships with Chinese grain buyers*
 - Total commitments were 15.5 million bushels
 - This brings the total year's commitments to 181.8 million bushels
 - 91% of the total commitments from last year!

Power of Demand

Sorghum Basis Differentials for the Current Year



SORGHUM: THE SMART CHOICE

In a Year of 400 Mbu = to \$172 million

Renewables

- California brings a little glamour to the Sorghum Belt
 - *Four plants wanting four shuttle trains per week, with a potential demand of 80 million bushels per year*
 - *Significant incentives related to the California Low Carbon Fuel Standard*
- The age-old Sorghum Belt problem of weak new crop basis is a thing of the past
 - *Producer contracting at ethanol plants*

Renewables

- Policy is key and we are talking to the policy makers
 - *USDA and Department of Energy data is used by policy-makers, so ensuring their data is good can make or break the industry*
 - *Both are also funding significant research in sorghum, as is the California Energy Commission*
- Supporting Projects Yielding Good Information
 - *Delta BioRenewables is supplying both information and products to significant players, including seed companies*

Taskforce process and outcomes

- Extension Program in Limited Water: Develop an extension model specifically to support LEMAs and limited water areas. The model will generate expertise and demonstration trials centered on sorghum production with cooperative efforts of local crop consultants and the agriculture extension network. Innovative approaches should be engaged including:
 - Cropping system evaluation and demonstration
 - Weather prediction models and forecasting
 - End-user market development and utilization evaluation including ethanol and unique high value sorghum chemistry
- Crop Breeding and Genetics: Focus current breeding programs to deliver material that links to private breeding programs. Outcomes of the breeding program should be high performing parent lines and trait specific attributes that support private industry commercialization of new traits and hybrids. Coordinate Kansas State genetic research with private industry to develop new crop breeding tools and markers that will accelerate crop advancements.



Fit with KSU, Governor's Water Vision...

Progress : Phase I Action Items

Category	Action Item	Lead Person	Next Steps	Deadline
Technology and Crop Varieties	Establish a Technology Outreach Taskforce to assist in the working model development and implementation of the field scale demonstrations			
Technology and Crop Varieties	Showcase, on a field scale, the latest technologies in irrigation infrastructure, irrigation water management, soil moisture measurement, conservation tillage, automation, telemetry and other agronomic practices aimed at reducing irrigation water use			
Technology and Crop Varieties	Form a collaborative stakeholder team to set sorghum research priorities and develop research and funding strategy and present strategy to potential funding partners, including the Kansas Legislature			
Technology and Crop Varieties	Ensure crop insurance policies do not discourage use of alternative, specialty and cover crops			
Technology and Crop Varieties	Collaborate with crop consultants and other agricultural advisors to support farmers interested in less water intensive alternative crop production			
Technology and Crop Varieties	Encourage state universities to expand engagement in development of teaching, research and extension programs related to less water intensive crop varieties			

FY 16 RFP Process

- estimates: May 1 for pre-proposals.
Full proposals due Aug 1
- Funding decisions announced Dec.
- RFP items
 - Renewables
 - Crop Improvement
 - High Value Markets
- RFA items
 - More directive to specific providers

Key Thoughts

- ❑ Convert to grower value
- ❑ Upper echelons of irrigated sorghum yields
- ❑ Field level guidance for sorghum under irrigation
- ❑ Look exclusively at sorghum. It is a growing need.
- ❑ Demonstration type project
- ❑ What are the best management irrigated practices for sorghum?

Finally.

Questions?



**SORGHUM: THE
SMART
CHOICE**

How can you move the needle on the sorghum research agenda? How can I help?