SORGHUM RESEARCH BREAKS BOUNDARIES
SORGHUM BREEDERS USE GERMPLASM TO CREATE NEEDED HYBRIDS
PRODUCERS TRIUMPH OVER SUGARCANE APHID
SEEKING HIGHER VALUE
AQUACULTURE MARKET EMERGES
A SMART PET FOOD INGREDIENT
A GROWING APPETITE FOR SORGHUM
FINANCIALS

TOTAL REVENUE
- Assessments $6,828,575
- Refund of duplicate payments ($18,028)
- Closed contract funds returned $250,532
- Investment income $126,461

TOTAL: $7,187,540

TOTAL EXPENSES
- Crop improvement $4,433,897
- Market development $1,646,539
- State passback funding $1,548,010
- Renewables $634,866
- Administrative $587,513
- USDA oversight and reserves $100,180

TOTAL: $8,951,005

STATE PASSBACK
- Kansas $924,450
- Texas $429,031
- Oklahoma $73,309
- Nebraska $48,745
- Colorado $45,599
- Louisiana $9,604
- Arkansas $8,802
- New Mexico $7,099
- Kentucky $1,373

ACCESSING RESERVES

Thanks to years of prudent spending, the Sorghum Checkoff board of directors was able to utilize funds set aside in savings to account for the difference in this year’s revenue and expenses.
The Sorghum Checkoff collaborated with DuPont Pioneer in sorghum breeding research. In 2017, Pioneer research scientists Cleve Franks and Tanveer Hussain discovered two sorghum haploid inducer lines, a breakthrough that will allow sorghum hybrids to move through the breeding pipeline quicker than ever before.

The use of doubled haploid inducer lines in sorghum breeding significantly speeds up the timeline of getting hybrids into fields. Farmers will now be able to access sorghum hybrids with desired traits like high yield, drought tolerance and sugarcane aphid tolerance faster than before. Other crops have been using this same technology for years, and now sorghum is moving toward a more level playing field.

The Sorghum Checkoff board of directors invested an additional $1.7 million to continue research related to sorghum breeding and the inducer lines. This investment made by the board will continue to finalize the breeding system utilizing Pioneer’s technology. The investment also allows for drone-screening of sorghum in the field to measure breeding conditions and yield projections.
SORGHUM BREEDERS USE GERMLASM TO CREATE NEEDED HYBRIDS

The Sorghum Checkoff partnered with Texas A&M AgriLife Research and the U.S. Department of Agriculture - Agricultural Research Services (USDA-ARS) to release early generation selections of new sources of sorghum germplasm.

The first converted lines will be released from this program to the sorghum genetics community. Breeders will use these unique genetics to help develop sorghum hybrids with needed and desired traits. This project was renewed two years ago as a five-year project with Texas A&M AgriLife Research after a successful previous five-year sorghum germplasm program.
Sorghum producers in 2017 showed significant success in managing the sugarcane aphid. Populations of the pest were down across the country. Estimates suggest no more than 15 percent of acres in South Texas were infested, and very few fields in Kansas needed treatment. Several factors contributed to this success, including improved management, evolving natural enemies and new research taking place.

**IMPROVED MANAGEMENT**
- Early Planting
- Seed Treatments
- Tolerant Hybrids
- Proper Scouting
- Timely Insecticide Application

**EVOLVING ENEMIES**
- Asian Multicolored Lady Beetle
- Improved Parasitoid Activity
- Lacewings and Hoverflies

**NEW RESEARCH**
- Sugarcane Aphid Biology
- Tolerant Hybrids
- Seed Treatments
- Population Thresholds
- Scouting
- Insecticides and Rates
- Sugarcane Aphid and Other Pests
- Cultural Factors
- Environmental Factors
- Sugarcane Aphid and Growth Stage
SEEKING HIGHER VALUE

Sorghum Checkoff assessment data from the 2016/2017 marketing year revealed the top marketplaces in terms of value. The average price for consumer food products tops marketplace values in the sorghum industry at $4.78 per bushel followed by industrial and exports at $4.48 and $4.21, respectively. These direct markets provide key opportunities for farmers to seek out higher value options that can impact bottom lines.

GROW FOR THE MARKET

Diving deeper into the 2016/2017 marketplace values, the average per bushel premium received for sorghum by producers who marketed their grain directly was $0.63 per bushel. In contrast, producers received an average open market price of $2.77 per bushel with no added premium. While only eight percent of sorghum was directly marketed this marketing year, there is a tremendous opportunity for the years to come. When it comes to capitalizing on profitability, a lot weighs on the flexibility to produce the types of sorghum the market demands. Whether it is duck feed in China, whole grain dishes in Japan or flour for the foodservice industry in the U.S., these value-added places are turning niche markets into game-changing opportunities for farmers.
AQUACULTURE MARKET EMERGES

Aquaculture launched as a new market for U.S. sorghum in 2017 with the finalized results of a catfish feeding trial conducted in Vietnam. The Sorghum Checkoff partnered with the U.S. Grains Council to launch the research project in 2016 as a way to explore international markets.

The Sorghum Checkoff strategically invested in aquaculture research as a way to tap into a market that could provide consistent demand at a high value to producers. The feeding trial examined sorghum use in comparison to corn and traditional aquaculture feed, cassava, to determine its ability to be easily substituted in feed.

The results of the study showed no difference between sources of starch on growth performance, fillet color or physical properties of feed pellets. U.S. sorghum also contains no tannins and contains higher protein and amino acids, showing it can benefit aquaculture diets. Sorghum Checkoff staff traveled to Asia to educate key industry representatives on the opportunity to integrate sorghum into aquaculture diets.

The Sorghum Checkoff will continue to expand sorghum use internationally by cultivating market development opportunities, fostering trade relationships and educating producers on market options and availability.
A SMART PET FOOD INGREDIENT

A new study funded by the Sorghum Checkoff, *Use of Sorghum as the Primary Cereal Ingredient in Premium Pet Food Products*, unveiled that sorghum can be used at higher inclusion rates while meeting nutrient requirements. The study also showed that the use of sorghum also helps optimize nutrient use during digestion, and no particle size adjustments need to be made during processing.

Another study finalized in 2017, *Introducing New Profit Streams for Grain Sorghum*, looked specifically at the use of sorghum bran and germ components in milling and inclusion. The study found that the use of sorghum bran led to improved digestibility, enhanced circulating antioxidant levels and better blood sugar balance.

COMMERCIAL PET FOOD GUIDE

The sorghum commercial pet food guide was released in 2017. The guide distinguishes sorghum’s benefit in pet food as it relates to glycemic index and insulin responses in pets after consumption. The guide also demonstrates sorghum’s optimal palatability and fecal quality scores. All information provided in the guide is a collection of current research on pet food and the use of sorghum as an ingredient. The guide is now available online at SorghumCheckoff.com.

NEW OPPORTUNITIES IN MEXICO

Sorghum’s inherent attributes are providing opportunities to expand beyond traditional marketplaces in Mexico. Similar to trends in the United States, pet owners in Mexico are demanding new foods that hit the mark when it comes to their pet’s health. There are currently 11 pet food mills in Mexico that produce approximately 2 billion pounds of cat and dog food each year. The Sorghum Checkoff and the U.S. Grains Council jointly hosted trade missions in 2017 in both Kansas as well as Mexico to promote the inclusion of sorghum in pet food. Efforts will continue exploring this high margin, value-added opportunity for sorghum.
Datassential’s 2016 Trending Grains Report indicates sorghum, a relatively recent ingredient to the restaurant scene, is now included on 1.7 percent of menus across the nation. Considering the National Restaurant Association reports there are more than one million restaurant locations throughout the U.S., sorghum’s growing inclusion is making an impact. In fact, sorghum has grown 256 percent as an ingredient on restaurant menus over the last four years alone.

Fast Food Debut

Sorghum debuted on fast-food menus in 2017, making it available nationwide. Chick-fil-A introduced a gluten-free bun to their menu made with sorghum flour. Papa John’s also introduced a new, gluten-free pizza crust, including sorghum flour as the main ingredient.
WHOLE GRAIN GROWTH SPURT

The International Food Information Council’s 2017 Food and Health survey reported that 84 percent of consumers recognize whole grains are a healthy food component. Not only are these consumers understanding the nutrition associated with whole grains, they are eating more of them, too. In fact, a report from Technavio indicates the global whole grain marketplace is expected to increase at a rate of 6.71 percent annually from 2017-2021 — a great opportunity for sorghum!

MAKE WAY FOR ANCIENT GRAINS

Innova Market revealed that ancient grains can now be found in 2.5 percent of new global product launches, compared to 0.5 percent 10 years ago. Leading this ancient-grain charge is the United States with more than 3 percent of product launches containing ancient grains. Diving into the U.S. ancient grain food and beverage product releases, sorghum ranks fifth, appearing in approximately 12 percent, behind quinoa at 40 percent, chia at 38 percent, millet at 22.5 percent and buckwheat at 15.6 percent. The ancient grain marketplace is expanding, not just in products but on menus, as well, and sorghum is a perfect fit for this growing target market.