

Grain Science & Industry at KSU – Looking Forward

July 28, 2017





**“The global leader in creating value
from grains”**

“To educate, innovate and transfer knowledge which significantly impacts the grain industry”

Our Students: “Well rounded, hard working leaders who solve problems”



Success Stories Abound

- Job placement for our students continues at **>100%**
- Internships are numerous, occurring as early as summer after freshman year
- Industry feedback on post-graduate job performance is encouraging
- Two new faculty positions and the Hall Ross mill manager have been hired
 - Dr. Li – Assistant Professor of Cereal Chemistry
 - Dr. Paulk – Assistant Professor of Feed Science
 - Paul Blodgett – Milling Operations Manager / Faculty (Teaching Material Handling)
- Two tenured faculty positions are in the approval process, three additional are part of the departmental strategic plan.
 - Milling Researcher Position
 - Bio-Fuels Position
- Scholarship giving to the department remains strong
- Support for the department from the College of Agriculture remains strong

GSI Facilities Update

- The ABA is leading an effort to upgrade critical processing/analytical equipment
 - Working to upgrade the flour and dough testing lab with new/modern equipment
- There is growing investment designated to improve individual lab facilities
 - Primary focus is replacement of 101 equipment and building upgrades
 - New specialty mill in empty bay of HRFM or potentially Shellenberger Hall
 - Use of Shellenberger mill space for additional lab spaces
 - Experimental Milling Room
 - Cleaning Equipment Lab Room
 - Independent equipment re-run systems
 - Milling Science Club Production Space
- Personal Safety & Food Safety Concerns
 - Challenge the status quo in foundational areas to effectively educate and develop future leaders in the milling, baking, and feed industry.
 - Developing the mindset with faculty & students that safety and food safety is about culture 1st and activities & programs 2nd
 - Setting the expectations & ensuring physical conditions meet/exceed continuously elevating standards
 - Lots of work going towards food safety programs

Milling Curriculum Changes

- Management Applications Class
 - Being taught by Dr. Stark and Dr. Smith
 - Heavily based on case studies (real life work scenarios)
- GRSC 584 – Milling Processing Technology Management
 - Emphasis will be on continuous improvement and will be case study based
- Milling Science I
 - Emphasis on the design and function of the cleaning and milling equipment
 - Maintenance to be included and Visual identification of the key mill steams
- Milling Science II
 - In depth exploration of flour milling process optimization and KPI's
- Advanced Flowsheets
 - The specialty milling class. Looking at flowsheet adaptation for milling of other grains.
 - Problems/case study class
- **THANK YOU** to all the wheat/corn/sorghum donors supporting the milling classes in 2016/2017.
 - Grain Craft, ADM Milling, Ardent Mills, Bay State, Bungee, AIPC, Mennel Milling, Sorghum Commission, North Dakota Mill and Elevator

Undergraduate Enrollment

Year	BSM	FSM	MSM	GSI Total	COA Enroll	GSI/CO A X100	GSI 5 yr average	GSI % Female
Fall 2012	73	40	87	200	2366	8.0	193	41.0
Fall 2013	86	48	73	207	2486	7.6	200	46.4
Fall 2014	92	52	74	218	2599	8.0	207	45.9
Fall 2015	70	54	68	192	2696	7.1	204	47.5
Fall 2016	70	46	73	189	2705	7.0	201	44.5
Fall 2017								

Graduation rate = ~80%

Undergraduate Enrollment

COLLEGE OF AGRICULTURE KANSAS STATE UNIVERSITY																		
TOTAL ENROLLMENT OF NEW STUDENTS BY CURRICULUM																		
7/25/2017																		
Curriculum	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013*	2014	2015	2016	2017
Agribusiness	41	46	35	40	45	49	57	45	48	46	60	71	74	90	94	98	98	86
Ag Economics	23	40	29	13	28	30	25	23	22	26	36	38	33	34	35	40	31	22
Ag Education	28	28	28	18	6	22	17	30	30	26	19	24	20	17	27	26	22	27
Agronomy	40	26	24	27	29	21	33	21	33	39	34	50	48	44	54	63	50	45
Ag Comm & Journalism	9	9	15	14	15	12	10	16	12	9	17	15	11	21	23	20	15	9
Ag Technology Mgmt	9	15	16	15	12	15	13	12	17	17	11	14	20	16	25	21	11	11
Animal Sciences	130	113	109	122	151	135	155	152	154	179	192	166	253	198	329	296	330	286
Bakery Science & Mgmt	11	9	10	15	11	9	7	11	16	18	23	12	28	25	17	17	19	11
Food Science & Industry	8	10	9	14	16	20	19	21	20	25	36	33	43	27	32	34	25	27
Feed Science & Mgmt	8	2	13	6	12	13	14	8	15	18	6	17	17	17	11	20	14	15
Horticulture	80	74	53	70	58	48	49	36	52	31	49	29	27	31	25	33	27	14
Horticultural Therapy*	8	4	6	4	5	4												
Milling Science & Mgmt	19	18	11	10	13	13	25	15	15	15	23	20	21	17	24	12	21	25
Park Mgmt & Conservation#	28	23	26	15	19	24	12	21	9	29	25	24	25	26	24	21	31	28
Recreation & Parks Adm**	4	3																
Wildlife & Outdoor Ent Mangt ##										9	23	26	20	34	24	23	20	11
Pre-Veterinary***	68	60	52	44	47	63	55	51	63	76	80	117	74	120				
General Agriculture	16	20	17	13	21	16	20	22	29	34	20	35	24	13	23	12	15	5
Totals	530	500	453	440	488	494	511	484	535	597	654	691	738	730	767	736	729	622

Graduate Enrollment

Graduate student enrollment and gender diversity in the Department of Grain Science and Industry's Masters and Ph.D. Programs

YEAR	MS + PhD	5-YR AVG	% PhD	% Female	URM	MS				PhD			
						MS Total	Domestic		Intl Total	PhD Total	Domestic		Intl Total
							Total	URM			Total	URM	
2012	54	51	35.2	53.7	2	35	21	2	14	19	7	0	12
2013	59	54	37.3	50.8	2	37	20	2	17	22	9	0	13
2014	57	55	45.6	50.9	4	31	19	4	12	26	9	0	17
2015	52	51	55.8	48.1	1	23	12	1	11	29	8	0	21
2016	40	52	62.5	50.0	2	15	6	2	9	25	4	0	21

*Data does not normalize for number of professors with established research programs (minus Maier, Ambrose, Jones)

Research Funding

College of Agriculture Awards by Department						
	FY 2012	FY 2013*	FY 2014 **	FY 2015	FY 2016	5-YR Avg
AgEcon	\$3,275,769	\$1,830,146	\$2,701,748	\$4,499,667	\$4,987,123	\$3,458,891
Agronomy	\$6,135,014	\$6,028,423	\$9,047,246	\$4,282,708	\$7,460,995	\$6,590,877
Animal Science	\$1,463,992	\$3,169,724	\$4,160,941	\$2,330,114	\$3,124,814	\$2,849,917
Entomology	\$1,361,623	\$1,542,339	\$2,951,497	\$1,926,270	\$2,099,381	\$1,976,222
Grain Science	\$2,165,610	\$9,440,686	\$4,798,264	\$2,999,474	\$4,755,228	\$4,831,852
Horticulture	\$755,787	\$605,141	\$1,212,934	\$528,216	\$1,153,206	\$851,057
Plant Pathology	\$7,375,691	\$8,905,475	\$8,462,872	\$8,040,595	\$7,442,382	\$8,045,403
TOTAL	\$22,533,486	\$31,521,934	\$33,335,502	\$24,607,045	\$31,023,129	\$28,604,219
FY16 Proposed vs Actual Awards by Department						
	Submitted	Total	Rcvd	Amount	Average	Yield
AgEcon	69	\$11,151,479	40	\$4,987,123	\$124,678	44.72%
Agronomy	225	\$22,764,706	135	\$7,460,995	\$55,267	32.77%
Animal Science	64	\$3,496,838	79	\$3,124,814	\$39,555	89.36%
Entomology	53	\$6,545,443	50	\$2,099,381	\$41,988	32.07%
Food Science Institute	-	\$0	1	\$262,267	\$262,267	100.00%
Grain Science	46	\$6,014,525	84	\$4,755,228	\$56,610	79.06%
Horticulture	53	\$4,448,238	40	\$1,153,206	\$28,830	25.93%
Other	102	\$12,222,734	86	\$15,634,404	\$181,795	127.91%
Plant Pathology	90	\$18,391,337	86	\$7,442,382	\$86,539	40.47%
	702	\$85,035,300	601	\$46,919,800	78,070	55.18%
* FY13 includes two substantial grants awarded to GSI:						
1. Novel Sorghum Based Fortified Food Blend for Infants and Young Children Nutrition. Awarded \$2,504,917						
2. Enhancing the Economic Viability of Camelina as a Bio-Feedstock: Optimization and Demonstration of the Production System and Bioproduct Development. Awarded \$3,809,199						
** FY14 includes PHL grant awarded to GSI, later moved to Dean's office						
1. Feed the Future Innovation Lab for the Reduction of Post-Harvest Loss. Awarded \$1,737,053						
Data received from http://www.k-state.edu/orsp/awards "FY2016 Cumulative Proposal/Award Summary 07/01/15 - 06/30/16"						

Scholarships

Grain Science and Industry graduate and undergraduate student scholarships awarded						
Scholarships	2012	2013	2014	2015	2016*	5-yr Ave
Graduate Students	6	7	6	6	4	6
Undergraduate Students	127	126	132	147	141	134
Total Number of Scholarship Received	133	133	138	153	145	140

*\$232,800 of total scholarship monies awarded in 2016

International Grains Program

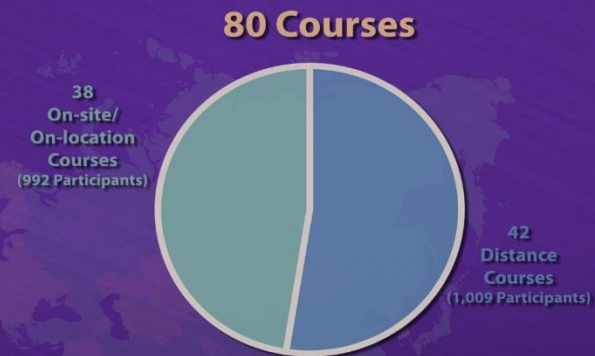
2016

80 Courses

2,001 Participants

67 Countries

2016 was a record-breaking year for the IGP Institute. We provided more courses to the largest yearly audience of participants in our history. Thank you to all of our friends and supporters who made this possible. We look forward to working with you in 2017.



Total Course Participants





International Grains Program 2017

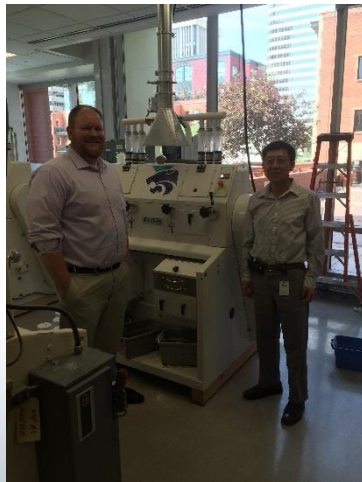
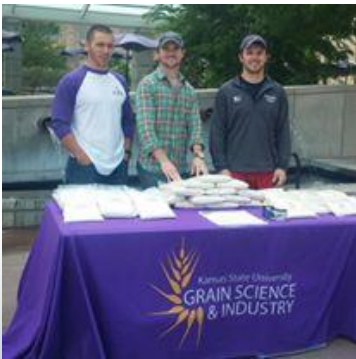
- 2017 Milling Courses
 - IGP/KSU Introduction to Flour Milling – January & July
 - IGP/KSU Basic Milling Principles – June
 - IGP/KSU Advanced Milling – June
 - Buhler/KSU Expert Milling (English) – March
 - Buhler/KSU Executive Milling (English) – June & November
 - Buhler/KSU Executive Milling (Spanish) – August
 - Buhler/KSU Flowsheet Technology (English) – November
 - **AIB/KSU FSPCA Preventive Controls and HACCP Integration for Millers of Human Food– October/November**
 - Cochran/IGP Program for Ethiopia – US Wheat Quality, Grading, and Milling – April
 - US Wheat Sub-Saharan Region Flour Milling Course – June
 - Wheat Commissioners and Staff Flour Milling Course - December

Opportunities

- Drive program awareness to increase enrollment
 - Strategies of the Recruiting Committee:
 - I) BRAND BUILDING: Create a new high impact Grain Science & Industry "Brand"
 - II) PARTNERSHIPS: Partner with stakeholders to support the initiative
 - III) RECRUITING CULTURE: Inoculate a culture of recruiting throughout the organization
- Grow scholarships to attract quality students
- Prioritize updating of research & teaching labs
- Ensure the curriculum is appropriate
- Leverage industry connections to drive program progress
- Identify and conduct industry meaningful research
 - Especially related to baking, milling and feed science
- Restore IAOM/IGP Partnership

GSI Ongoing Priorities

- Our students
- Investing for growth
- Attracting & retaining great people
- Facilities/equipment
- Relevance





Our students call this place “home”

Questions? & Go Cats!



It's a Grain-Based WORLD

Department trains leaders to meet future challenges

“We are the only program in the U.S. that trains its students to understand where grain comes from, who raises it, how it is stored, how it is further processed, and how that processing affects what people or animals ultimately ingest as part of the food supply.”

—Gordon Smith

Training Global Leaders

With the world population expected to rise to more than 9.7 billion people by 2050, the pressure on the earth's resources has never been greater. To help meet that challenge, faculty in the Department of Grain Science and Industry are training future researchers and industry professionals in the areas of bakery science, milling science and feed science.

Through their research efforts and humanitarian work, the team helps solve global malnutrition through novel food processing and enhanced means of grain storage to maximize the world's resources among other things. This is accomplished through funding support via national grants as well as with industry partnerships. According to Department Head Gordon Smith, the department finds unique ways to address difficult challenges.

Undergraduate Education

Smith credits the faculty's industry experience for providing students with real-world learning opportunities. “All of the faculty are highly integrated with the industry and more than 80 percent

have industry experience, so they can train students to meet current and future demands.”

The department averages 200 undergraduates and 50 graduate students annually. “About half of our graduate students are international, so we're training people who are going to work all over the globe,” Smith added.

Undergraduate students participate in clubs related to their majors and an undergraduate honorary society. A graduate student organization offers hands-on activities and trips to national meetings. (Clarify)

Gideon Butler-Smith, Overland Park, said he appreciates all the experience he gains as a bakery science and management student.

“The Bakery Science Club focuses on running a small business and producing baked goods for the Manhattan community. I am the production manager this year facilitating the scaling, mixing, and baking of our cherished products,” explained Butler-Smith. “This club allows students from all majors and backgrounds to experience the joy of baking and learn a little bit of science