

Kansas State University

AGRONOMY NORTH FARM RESEARCH & INNOVATION CENTER

College of Agriculture – Department of Agronomy

PROGRAM

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Prepared by Facilities Campus Planning and Project Management in association with the
College of Agriculture and PGAV Architects



Introduction

The College of Agriculture's (COA) Department of Agronomy provides national and global leadership for teaching, research, and extension activities in plant breeding, crop production, range science, soil science, and weed science, and contributes substantially to activities in genetics, water quality, precision agriculture, sustainable agriculture, and environmental sciences. The Agronomy department is among the leading departments in the College of Agriculture and at the university level in total research expenditures and extramural awards annually. The department is extensively engaged in sponsored interdisciplinary research working with dozens of leading governmental and institutional organizations and industry partners across the nation and globe and over 20 schools and departments across the university to develop and deliver innovative solutions to the grand challenges of agriculture, food safety and security and environmental sustainability in the 21st century. Research, teaching, and extension programs in the department link directly to key crops of economic importance to Kansas.

Prominently located directly north of K- State athletics complex on Kimball Avenue, the department's North Farm facilities were purchased in 1909, shortly after the Agronomy department was established in 1906 and has been an integral part of the university for 116 years. The farm has supported the department's significant contribution to the development of Kansas agriculture and is essential to the ongoing success of its global leadership in food systems and agriculture research.



Agronomy North Farm - Extents and Project Location



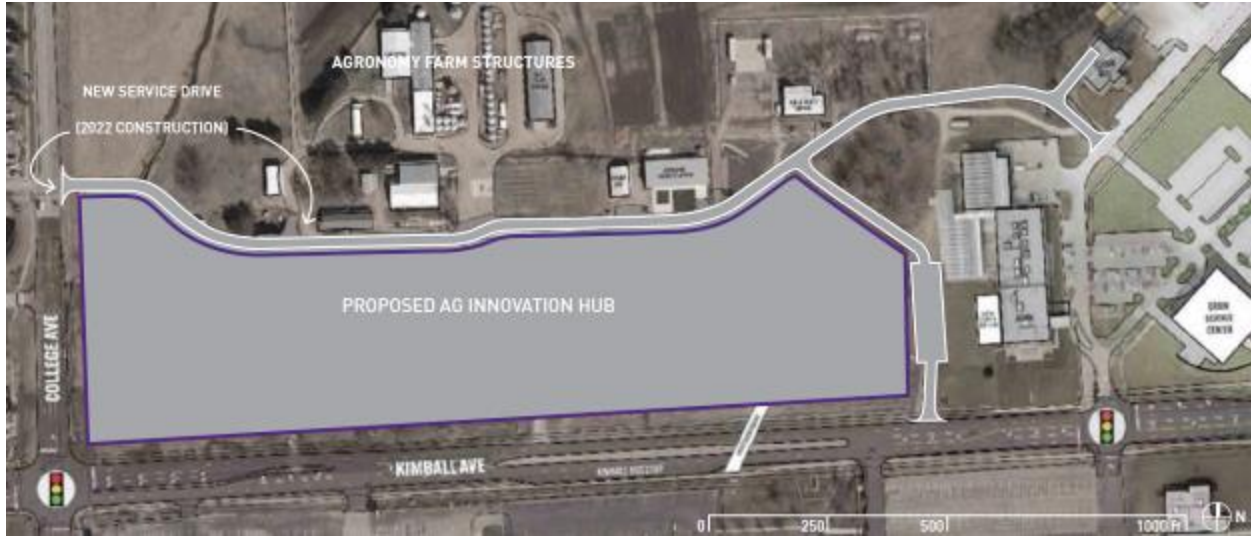
Agronomy North Farm – Existing Structures

Current Situation

Based on its strategic location, the University plans to re-develop 15.7 acres of existing Agronomy Farm property along the Kimball Avenue frontage from College Avenue on the west to the Kansas Crop Improvement Association Building on the east as an Ag Innovation Hub within the KSU Foundation’s Edge Collaboration District. The Ag Innovation Hub development concept envisions construction of new commercial lease space for Agri-Business startups and Ag Industry partners, a new hotel, restaurants, K-State alumni condominiums, and a variety of outdoor spaces for game-day and special events programming.

Ag Innovation Hub Redevelop at the Edge District

The Ag Innovation Hub redevelopment involves a land sale/transfer including transfer of ownership of the Department of Agronomy’s existing Farm Research Center from Kansas State University to the Kansas State University Foundation. 35 Agronomy research programs actively use the existing Farm Research Center and North Farm research support facilities. Approximately half of the department’s research programs are allocated space at the farm resulting in heavy utilization of the existing 12,800 SF Farm Research Center which is inadequate to meet current and projected demand. In addition, the farm hosts more than 3,000 visitors annually through formal classes, workshops, and tours. Agronomy students are on site for orientation tours, field trips, and courses assigned to the Agronomy Education Center. The farm hosts annual field days which are open to local farmers, ranchers, and industry members to share information regarding best practices in Ag management and technological developments. Demonstration plots are utilized for training Kansas certified crop advisors.



KSU-Foundation – Edge District -Ag Innovation Hub Extents



Conceptual view of - Edge Collaboration District - Ag Innovation Hub

Agronomy North Farm - Master Plan

The proposed redevelopment and loss of the existing Farm Research Center directly impacts Agronomy farm operations and presented the opportunity for the Department to take a holistic look at how best to address its current and future research facilities space needs and further strengthen the department's position as a national and global leader in agronomy research and interdisciplinary agricultural systems innovation. In January 2022, the College of Agriculture completed facilities master plan for the Agronomy North Farm which identified priority space requirements for the department's interdisciplinary research and extension programs which form the basis for a new Agronomy Research & Innovation Center to replace the existing Farm Research Center.

The Agronomy Research & Innovation Center is sized and equipped to meet current and projected research demand, support current and future institutional and industry partnership and innovation and strengthen the department's ability to recruit and retain leading faculty and sustain and grow undergraduate and graduate enrollment. As Kansas State University moves towards its goal of becoming a Top-50 public research institution, providing the modern facilities needed support interdisciplinary research and discovery is essential. The master plan includes additional program priorities to be implemented as funding is identified including the replacement of the existing aging Farm Operations Shop (a key component of the department's applied research program) and future expansion for additional innovation space to support growing industry partnerships and collaboration.



Agronomy North Farm Master Plan - Concept View Agronomy Research & Innovation Center

Project Description

Agronomy Research & Innovation Center

The new Agronomy Research & Innovation Center is being developed in partnership with the KSU Foundation and will be a focal point of the new Ag Innovation Hub as part of the Edge Collaboration District. The ~59,370 SF facility will replace the existing Farm Research Center and provide modern facilities for interdisciplinary research and collaboration to accelerate agronomy and agricultural systems research innovation capabilities for the College of Agriculture and the university, a focus of K-State's Pillar 3 economic prosperity initiative.

The Center will provide state-of-the-art field and applied research facilities and serve as the new public face and front door to the Agronomy North Farm. The Center is a keystone in the College of Agriculture's and Department of Agronomy's vision to strengthen and diversify agribusiness in Kansas and around the globe and will be a demonstration site for public/private research partnerships focused on best practices in sustainable/regenerative agriculture, crop production innovation, technology development and training, and conservation and protection of the land.



The Center is envisioned as a two-wing, single story slab-on-grade pre-engineered metal building similar in quality and appearance to recently completed Agronomy Education Center.

The ~ 33,630 SF Research Wing of the building will be comprised of 30 ~800 SF field research program workspaces, a central receiving and storage area and shared research support workspaces including: sample drying, plant /soil grinding, plant threshing and seed processing, and walk-in cold room and freezers for long term seed and germplasm storage. The research wing workspaces will be heated and cooled and provided with direct access to outdoor work areas. Special building systems include dust collection in dirty sample processing areas and compressed air for research equipment operations and cleaning.

The ~14,530 SF Innovation Wing of the building will present a public face to the Ag Innovation Hub and serve as the new front door to the Agronomy North Farm. It will complement the existing Ag Education Center directly to the east and provide adaptable research innovation labs including wet labs, “dry” computational labs, a digital ag center, the farm operations office and collaborative team meeting and office space to support interdisciplinary research innovation and industry partnerships.

The project will incorporate sustainable design features making it a demonstration facility for best practices in energy conservation and environmental stewardship. Areas of sustainable design emphasis will include, indoor environmental quality, daylighting, energy efficient mechanical systems, sustainable materials and construction waste management, access to public transportation, accommodation of green vehicles, open space and light pollution reduction, optimizing energy performance including potential for sustainable energy production and indoor and outdoor water use reduction.

The project scope also includes construction of a new 8,000 SF Research Equipment Storage Building to support overall farm operations and installation of 12 new bulk grain storage bins (Meridian 1412SM SeedMax Hopper or equivalent) to support the Department’s Foundation Seed operation. The new Research Equipment Storage Building will replace the existing aging Research Equipment Storage Building which lacks the clearances needed for storage of today’s larger combines, tractors, and equipment.

Research Equipment Storage Building & Bulk Seed Bins

The new Research Equipment Storage Building is envisioned as an un-conditioned pre-engineered metal building (PEMB) with prefinished metal panel exterior. The new building be designed with a 20’-0” eave height and multiple large overhead doors to more easily and safely accommodate the movement and storage of research field equipment including tractors, combines and a variety of agricultural implements. Upon completion the existing Research Equipment Storage Building will be demolished to clear the site for construction of the new Agronomy Research and Innovation Center.

The project will be designed in accordance with the currently adopted codes and regulations of the Office of Facilities and Property Management-Design, Construction & Compliance, and the Office of the State Fire Marshal. Additionally, the project is to comply with OFPM-DCC Building Design and Construction Manual and University Standards.

Total Project Cost of \$25 million including a \$2.5 million sustainability endowment.

Program Space Summary

Agronomy Research & Innovation Center

Agronomy Research & Innovation Center Program					
Agronomy Research Program					
Program Spaces	Quantity	NSF (per Space)	Total NSF	Total GSF	Space Detail
Agronomy Field Research Program Workspaces	30	800	24,000	32,000	Modular, flexible field research workspace. Some Smaller Programs may be assigned 1/2 workspace (400 SF) Larger programs or units may be assigned multiple modules. Majority of modules will require direct exterior access for movement of material from vehicles to the labs. Spaces to be heated and cooled.
Walk-in Cold Room / Seed Germplasm Storage	2	800	1,600	2,133	35-45 RH and 55-60 Deg F. Combined T+N not to exceed 100
Walk-in Freezer Storage	3	80	240	320	32 Deg F
Plant Threshing and Seed Processing	2	1,200	2,400	3,200	With dust collection system- localized exhaust
Sample Drying Space	1	2,000	2,000	2,667	Replaces existing 2,400 GSF Dryer Shed (#548) (Expand to 30 Dryers currently have 23,
Receiving and Seed Storage	1	2,400	2,400	3,200	Assume min. 7'2" clear for efficient pallet racking - With For-Lift access
Plant Grinding Workspace	1	495	495	660	Will replace non-functioning space in Throckmorton Hall
Soil Grinding Workspace	1	495	495	660	Will replace non-functioning space in Throckmorton Hall
Telecom / IT Rooms	0	100	-	-	- in grossing factor
Wind- Storm Shelter	0	0	-	-	- in grossing Factor- harden restrooms for windstorm area of refuge
Sub-Total Net Assignable Square Feet (NSF)			33,630		
Building Efficiency Factor		0.80			71,210 SF - Structural and Non-Assignable Area
Sub-Total Gross Square Feet (GSF)				44,840	
Agronomy Innovation Program					
Program Spaces	Quantity	NSF (per Space)	Total NSF	Total GSF	Space Detail
Entry Lobby and Visitor Reception	1	990	990	1,500	New Visitors Entry and Display Lobby
Farm Administration Offices	1	400	400	606	Relocate from Farm Operations Center - (1) Private Office for Farm Manager (165 SF) , (1) WS for Accounting Specialist (64 SF), (1) WS for Assistant Scientist (64 SF)
Office Space for Field Research Staff	1	400	400	606	Flex-Open Office Space for Staff Supporting Research and Innovation Center Operations
Small Meeting Room	2	200	400	606	10 -12 -Person Capacity
Team Collaboration /Gathering Space / Breakroom	1	800	800	1,212	20- 30 Person Capacity with Kitchenette (sink, refrigerators) flexible seating access to exterior
Shared Administration and Research Staff Copy/Workroom	1	330	330	500	Shared Office Support Work Rooms/Area (copier, work counter, supply storage, resources, mail)
Medium Conference / Team Meeting Room	1	660	660	1,000	25 -Person Capacity for Research and Innovation Team Meetings
Flex Research/Innovation Labs (wet)	2	660	1,320	2,000	Flexible Workspace with Power, Data and (1) Sink , Moveable worktables and equipment
Flex Research Innovation Lab Support (wet)	2	330	660	1,000	Research Support rooms with power and data - (1) Support Room equipped with 6" Chemical Fume Hood,
Graduate Student /Visiting Scientist Office Work Area (wet)	1	330	330	500	Flexible student/visiting scientist office space near research labs
Flex Research Innovation Labs (dry computational)	2	660	1,320	2,000	Flexible Workspace with Power, Data - Moveable worktables and equipment
Flex Research Innovation Lab Support (dry computational)	2	330	660	1,000	Research Support rooms with power and data
Graduate Student /Visiting Scientist Office Work Area (dry)	1	330	330	500	Flexible student/visiting scientist office space near research labs
Digital /Precision Ag Visualization Lab (Computational)	1	660	660	1,000	Data Visualization Lab and Team Work Space
Building Receiving and Staging	1	330	330	500	Shared Building Support
Sub-Total Net Assignable Square Feet (NSF)			9,590		
Building Efficiency Factor		0.66			4,985 SF Structural and Non-Assignable Area
Sub-Total Gross Square Feet (GSF)				14,530	
Total Agronomy Research & Innovation Center Program					
Total Net Square Feet (NSF)			43,220		
Total Gross Square Feet (GSF)				59,370	

Research Equipment Storage Building & Bulk Seed Bins

Research Equipment Storage Building					
Program Spaces	Quantity	Total NSF	Total GSF	Space Detail	
Research Equipment Storage Building	1	8,000	8,000	Replaces existing Research Farm Equipment Storage Bldg. 525 to clear site for new Agronomy Research & Innovation Center. Facility will support indoor (unconditioned) storage of large field equipment including tractors, combines and agricultural implements. 20'-0" eave height with multiple large overhead doors for equipment access.	
Building Efficiency Factor		1.00			
Total GSF			8,000		
Bulk Seed Bins					
Program	Quantity	Total NSF	Total GSF	Notes	
Bulk Seed Bins	12			Meridian - 1412 SM SeedMax Hopper Bins - To Support Foundation Seed Operations	

Existing Conditions

Existing Farm Research Center (#530)

12,800 SF Research building with field research workspaces will be transferred to Kansas State University Foundation ownership.



Existing Research Equipment Storage Building (#525)

8,000 SF pre-engineered metal in fair condition. Low eave height, limited interior clear height and multiple small overhead doors make it unsatisfactory for storage and movement of large research field equipment including large tractors, combines and headers. The building occupies a valuable site with direct adjacency to the existing Agronomy Education Center and the established crop demonstration research plots directly to the east. Its demolition will clear the site for the new Agronomy Research and Innovation Center



Existing Research Equipment Storage Building

Project Budget and Timeline

Budget

The estimated total project cost for this project is \$22.5 million excluding the \$2.5 million sustainability endowment.

Agronomy Research & Innovation Center

AGRONOMY RESEARCH & INNOVATION CENTER			
RESEARCH CENTER PROGRAM			
<u>Construction</u>			
Site work	45,000 SF	\$24.75 Per SF	\$1,113,750
Building -New Construction	45,000 SF	\$251.12 Per SF	\$11,300,400
Subtotal Construction Costs (Today's Dollars)		\$276 Per SF	\$12,414,150
<u>Soft Costs</u>			
		25.5%	
AV/Security		1.0%	\$124,142
FFE		1.0%	\$124,142
Utility Costs		0.5%	\$62,071
Basic AE Services (SD, DD, CD, CA for Arch, Civil, Struc, MEPFP)		8.0%	\$993,132
Professional Consultants (Geotech, Testing/Inspections)		1.0%	\$124,142
Professional Consultants (Owners rep, /KSU FPM)		2.0%	\$274,846
Design Contingency		3.0%	\$372,425
Construction Soft Costs (included in construction costs)		0.0%	\$0
Owner Contingency		3.0%	\$372,425
Escalation (1% per month)		6.0%	\$744,849
Subtotal Soft Costs		\$70.94 Per SF	\$3,192,171
Sub-Total Estimated Costs (Construction Costs + Soft Costs)		\$346.81 Per SF	\$15,606,321
INNOVATION CENTER PROGRAM			
<u>Construction</u>			
Site work	14,500 SF	\$32.05 Per SF	\$464,725
Building -New Construction	14,500 SF	\$257.18 Per SF	\$3,729,110
Subtotal Construction Costs (Today's Dollars)		\$289 Per SF	\$4,193,835
<u>Soft Costs</u>			
		29.7%	
AV/Security		2.5%	\$104,846
FFE		3.7%	\$155,172
Utility Costs		0.5%	\$20,969
Basic AE Services (SD, DD, CD, CA for Arch, Civil, Struc, MEPFP)		8.0%	\$335,507
Professional Consultants (Geotech, Testing/Inspections)		1.0%	\$41,938
Professional Consultants (Owners rep, /KSU FPM)		2.0%	\$83,877
Design Contingency		3.0%	\$125,815
Construction Soft Costs (included in construction costs)		0.0%	\$0
Owner Contingency		3.0%	\$125,815
Escalation (1% per month)		6.0%	\$251,630
Subtotal Soft Costs		\$86 Per SF	\$1,245,569
Sub-Total Estimated Costs (Construction Costs + Soft Costs)		\$375 Per SF	\$5,439,404
Total Soft Costs		\$75 Per SF	\$4,437,740
Total Estimated Costs (Construction Costs + Soft Costs)		\$354 Per SF	\$21,045,725

Research Equipment Storage Building (Includes Bulk Seed Storage Bins)

RESEARCH EQUIPMENT STORAGE BUILDING & SEED BINS			
<u>Construction</u>			
Site work	8,000 SF	\$13.03 Per SF	\$104,240
Building -New Construction	8,000 SF	\$106.25 Per SF	\$850,000
Bulk Seed Bin Purchase and Installation		\$203,391 LS	\$203,391
Subtotal Construction Costs (Todays Dollars)		\$145 Per SF	\$1,157,631
<u>Soft Costs</u>			
AV/Security		0.0%	\$0
FFE		0.0%	\$0
Utility Costs		0.5%	\$5,788
Basic AE Services (SD, DD, CD, CA for Arch, Civil, Struc, MEPFP)		Fixed	\$121,344
Professional Consultants (Owners rep, /KSU FPM)		0.5%	\$5,788
Professional Consultants (Owners rep, /KSU FPM)		2.0%	\$23,153
Design Contingency		2.0%	\$23,153
Construction Soft Costs (included in construction costs)		0.0%	\$0
Owner Contingency		2.0%	\$23,153
Escalation (1% per month)		4.5%	\$52,093
Subtotal Soft Costs		\$32 Per SF	\$254,472
Total Estimated Costs (Construction Costs + Soft Costs)		\$177 Per SF	\$1,412,103

Total Estimated Project Cost

TOTAL PROJECT COST SUMMARY	
Research Equipment Storage Building & Seed Bins	\$1,412,103
Agronomy Research & Innovation Center	\$21,045,725
Estimated Total Project Cost (Construction Costs + Soft Costs)	\$22,457,828

Funding

This project has been approved to proceed by President's Cabinet and is anticipated to be funded through a combination of private and industry sponsor gifts. The Department of Agronomy is consistently among the most highly ranked academic units within the College of Agriculture and leader in research grant revenue generation.

Maintenance

Project funding includes a \$2.5 million sustainability endowment for ongoing maintenance and operations. The annual costs of operations, maintenance, and utilities are estimated as follows.

Agronomy Research & Innovation Center

Description	Cost/sf	Total
Operations and Maintenance	\$3.23 x 59,370 SF	\$191,765
Utilities	\$3.50 x 59,370 SF	\$207,795
Total Annual Cost		\$399,560

Research Equipment Storage Building

Description	Cost/sf	Total
Operations and Maintenance	\$2.00 x 8,000 SF	\$16,000
Utilities	\$2.00 x 8,000 SF	\$16,000
Total Annual Cost		\$32,000

Tentative Timeline/Schedule

Date

KBOR Program Approval

September 2022

Design/Construction Documents

September – March 2023

Construction

April 2023 – June 2024

Substantial Completion/Occupancy

July 2024 – August 2024