DIRECTOR'S REPORT OF RESEARCH IN KANSAS 2020

JULY 1, 2019–JUNE 30, 2020

K-STATE
Research and Extension

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

Letter of Transmittal

Office of the Director

To the Honorable Laura Kelly, Governor of Kansas

It is my pleasure to transmit herewith the report of the Agricultural Experiment Station of the Kansas State University of Agriculture and Applied Science for the fiscal year ending June 30, 2020. This report contains the title, author, and publication information for manuscripts published by station scientists. The report was published only in electronic format.

J. Ernest Minton
Dean, College of Agriculture
Director, K-State Research and Extension

A Message from the Dean and Director

It is a pleasure to provide the 2020 Director's Report of Research in Kansas. The report documents our research programs and some of our accomplishments. K-State Research and Extension provides trusted, practical education to help individuals, businesses and communities solve problems, develop skills, and build a better future.

This report is produced and distributed in electronic format. This reduces printing costs and makes the report accessible to a broader audience.

The Director's Report of Research in Kansas includes a list of journal articles, station publications, and other published manuscripts from scientists in our departments, research-extension centers, and associated programs.

The Kansas Agricultural Experiment Station was established in 1887 to conduct research vital to the success of Kansas. In 1914, the Kansas Cooperative Extension Service was created to disseminate research-based information to the public. We continually collect input from stakeholders to fine tune our strategic plan, building on our focus on the five grand challenges facing Kansans — global food systems, water, health, developing tomorrow's leaders, and community vitality. Our research programs provide the latest information through our statewide network to address those challenges.

J. Ernest Minton
Dean, College of Agriculture
Director, K-State Research and Extension

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A Message from the Associate Dean and Director for Research

The Hatch Act established the Kansas Agricultural Experiment Station in 1887 as the food, agriculture, and natural resources research component of Kansas State University, the nation's first operational land-grant university.

Our statewide network of centers and experiment fields enables our faculty to evaluate crop and livestock production systems across a wide range of environmental conditions.

This research helps Kansas farmers contribute to feeding a growing world population. By 2050, there will be an estimated 9.6 billion people globally. We will never meet that challenge without the tackling the water crisis facing Kansas and more specifically Kansas agriculture. The High Plains Aquifer, which includes the Ogallala Aquifer supplies 70-80% of the daily water use by Kansans. The Ogallala is a declining resource, therefore, our stewardship is critical to meeting our needs for food production and communities while managing that lifeblood of Kansas agriculture. A recent K-State research project found that people overwhelmingly want to conserve the groundwater resource in the region. We will get there through improving efficiency of our water use through innovative technology and sound irrigation practices (ksre-learn.com/OgallalaReport).

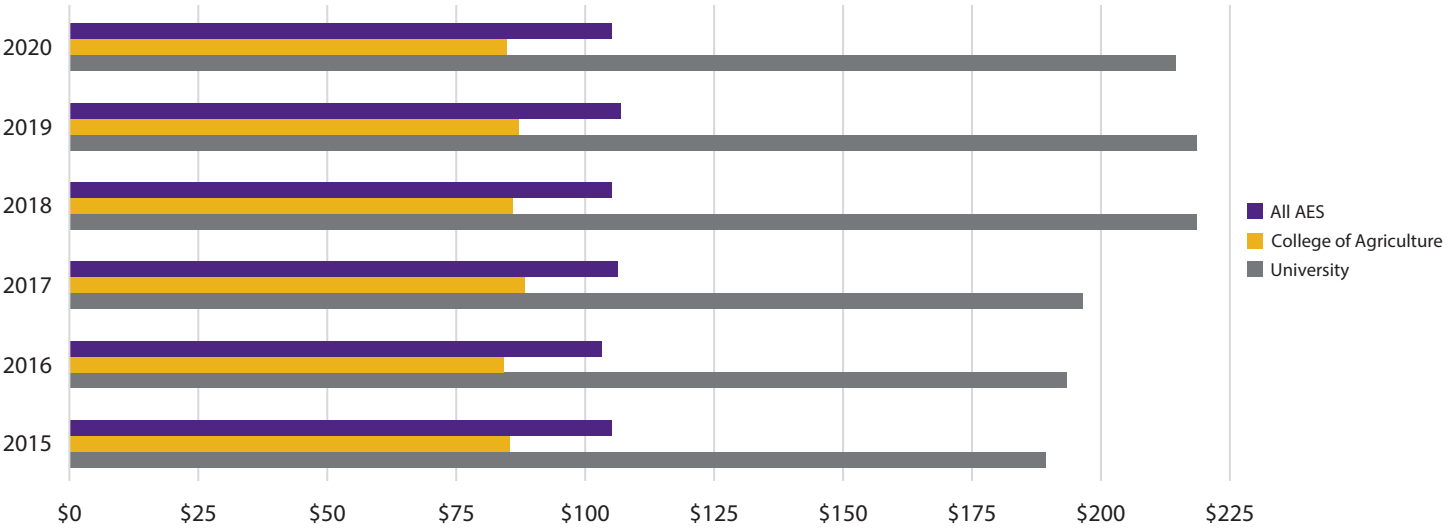
How we address these challenges of water use is dependent on the K-State Agricultural Experiment Station funded research in 20 academic departments across five colleges on two campuses. In addition to long-term research projects on livestock and crops, scientists are looking at new and alternative crops, improved control of pests, weeds and diseases, food safety, post-harvest storage, and more. All of these potential solutions grow from our research capacity and our researchers' capabilities.

As Kansas' largest employer, agriculture contributes 43 percent of the state's economy. According to current data from the national study, Feeding the Economy, 258,670 people are directly employed in Kansas agriculture, accounting for more than $9.26 billion in wages and $11.2 billion in business taxes. Our research focuses on the agricultural industry and helping it grow in a sustainable manner.

Kansas Agricultural Experiment Station research expenditures — all funds used to produce research outcomes — represent the majority of Kansas State University's total research effort. Funds are usually awarded through a highly competitive federal grant system.

Martin Draper,
Associate Dean, Research and Graduate Studies
College of Agriculture, Director for Research

Agricultural Experiment Station and University Research Expenditures (in millions)



Making a State Impact: An Eye on the Tap

For farmers and ranchers in Kansas, drought concerns are always looming, so community conversations about conservation and water use are ongoing and vital. Concerns are ever present about ponds dwindling to muddy puddles, and recently irrigators learned that the Ogallala Aquifer – a main water source for the state – declined last year by an astounding two feet in parts of Kansas.

The urgent work on water conservation forms part of the foundation for the Kansas Center for Agricultural Resources and the Environment (KCARE). Established by Kansas State University, KCARE works to coordinate water and natural resource research, including multiple projects addressing aquifer declines.

But that's only the tip of the iceberg: think "quality," in addition to "quantity."

Consider oil, trash, pet waste or chemicals seeping into storm drains after a downpour, or pesticides and fertilizer leaching off a farmer's fields. Maybe sediment washes away from construction sites or erodes from streambanks.

All are examples of "non-point source pollution," and over time it negatively impacts the water from your faucet, the pond on your farm, or the rivers and reservoirs you visit. In fact, many states have named non-point source pollution as the leading cause of water-quality problems.

For more than 20 years, KCARE has been helping reverse those harmful effects by empowering a team of watershed specialists who actively partner with producers, municipalities and other important water users to identify and implement science-based solutions to improve water quality.

"We must conserve Kansas water while also safeguarding the quality of the waters we enjoy here," said Associate Director for the College of Agriculture and K-State Research and Extension Susan Metzger. She said KCARE watershed specialists actively partner with water users to implement on-the-ground practices that assist both producers and municipalities to limit the amount of sediment and nutrients entering Kansas waters.

This grassroots approach works. Metzger said the program has prevented tens of thousands of tons of sediment from entering rivers and reservoirs.

"The desire of clean water is a constant in our communities," said KCARE watershed specialist Ron Graber. "Our job is to listen to producers and other stakeholders, and help folks work toward common goals. I think we're all making a difference."

Graber said that the work has evolved over the years, from identifying water quality concerns, to implementing solutions, or best management practices that match a community's needs. Best management practices can range from planning alternative livestock watering facilities, to reducing atrazine use on cropland, to stabilizing streambanks. Watershed specialists provide technical assistance to producers to explain which solutions are right for their specific situation and assist farmers to identify financial programs to offset costs.

"This important work goes beyond providing the public with facts and figures. It remains successful because each team member combines scientific expertise with a focus on relationships and people," Metzger said.

"If you get to know someone and then explain how we can create a solution together, it's more effective than just telling them to fix a problem," said Graber. "When we work together, then it's a win for Kansas water."

– Melissa Harvey and KCARE

Research Components of the Kansas Agricultural Experiment Station

(see map, next page)

Academic Departments

College of Agriculture

Agricultural Economics
Agronomy
Animal Sciences and Industry
Communications and Agricultural Education
Entomology
Grain Science and Industry
Horticulture and Natural Resources
Plant Pathology

College of Arts and Sciences

Biochemistry and Molecular Biophysics
Division of Biology
Sociology, Anthropology, and Social Work
Statistics

College of Engineering

Biological and Agricultural Engineering

College of Human Ecology

Apparel, Textiles, and Interior Design
Family Studies and Human Services
Food, Nutrition, Dietetics and Health

College of Veterinary Medicine

Anatomy and Physiology
Clinical Sciences
Diagnostic Medicine/Pathobiology

Research Centers

Western Kansas Research and Extension Centers

Agricultural Research Center – Hays
- HB Ranch
- Saline Experimental Range
- Harold and Olivia Lonsinger Sustainability Farm

Northwest Research-Extension Center (Colby)
Southwest Research Center (Tribune)
Southwest Research-Extension Center (Garden City)

Eastern Kansas Research and Extension Centers

John C. Pair Horticultural Research and Extension Center (Haysville)
Northeast Research and Extension Center
Olathe Horticulture Research and Extension Center
Southeast Research and Extension Center (Parsons, Columbus, Mound Valley)

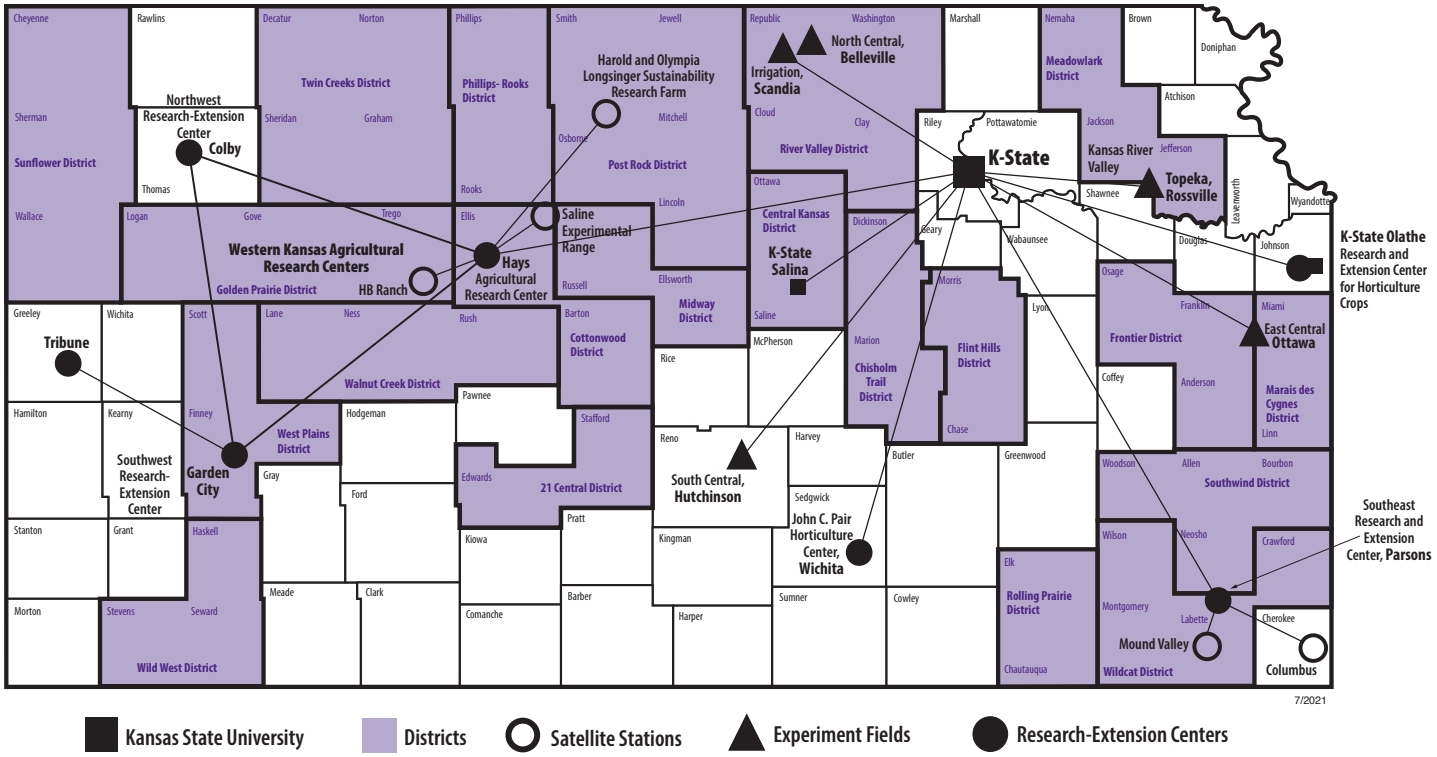
Experiment Fields

East Central (Ottawa)
Kansas River Valley (Rossville, Topeka)
North Central and Irrigation (Belleville, Scandia)
South Central (Hutchinson)
North Agronomy Farm (Manhattan)
Ashland Bottoms Research Farm (Manhattan)
Rocky Ford Plant Pathology Farm (Manhattan)
Rocky Ford Horticultural Farm (Manhattan)

USAID Feed the Future Innovation Labs

Applied Wheat Genomics
Reduction of Post-Harvest Loss
Sorghum and Millet
Sustainable Intensification

Kansas State University Agricultural Research Locations



Associated Programs

AgManager.info
Beef Cattle Research Center
Beef Stocker Unit
Bio Materials and Technology Lab
Bioprocessing and Industrial Value-Added Products
Biosecurity Research Institute
Cargill Feed Safety Research Center
Center for Bio-based Products by Design
Center for Risk Management Education and Research
Center for Rural Enterprise Engagement
Center for Sorghum Improvement
Center for Sustainable Energy
Cow-Calf Unit
Dairy Teaching and Research Center
Environmental Health and Safety Office
Food Science Institute
Fungal Genetics Stock Center
Grain-Feed Microbiology and Toxicology Laboratory
Great Plains Diagnostic Network
International Grains Program Institute
Insect Zoo
Hal Ross Flour Mill
Horse Unit
Kansas Artificial Breeding Service Unit
K-State Global Food Systems
K-State Libraries
K-State Meat Laboratory
K-State Pet Food Program
K-State Radio Network
K-State Rapid Response Center
K-State Research and Extension Communications Solutions
K-State Research and Extension Soils Laboratory
Kansas Agriculture and Rural Leadership
Kansas Center for Agricultural Resources and the Environment
Kansas Center for Sustainable Agriculture and Alternative Crops
Kansas Cooperative Extension Service
Kansas FFA
Kansas Foundation Seed
Kansas Wheat Innovation Center
Kansas Youth Institute
Kansas Value-Added Foods Lab
Kansas Water Resources Institute
Konza Prairie Biological Station
National Science Foundation Industry/University Cooperative Research for Wheat Genetics
O.H. Kruse Feed Technology Innovation Center
Plant Biotechnology Center
Purebred Beef Unit
Sheep and Meat Goat Center
Soil Carbon Center
Swine Teaching and Research Center
Tom Avery Poultry and Game Bird Research Unit
University Gardens
Veterinary Diagnostic Laboratory
Weather Data Library
Wheat Genetics Resource Center
Wheat Quality Lab

Station Publications

Reports of Progress

SRP 1151	2019 Kansas Performance Tests with Winter Wheat Varieties
SRP 1152	2019 Kansas Performance Tests with Corn Hybrids
SRP 1153	2019 Kansas Performance Tests with Soybean Varieties
SRP 1154	2019 Kansas Performance Tests with Grain Sorghum Hybrids
SRP 1156	2019 Kansas Performance Tests with Sunflower Hybrids
SRP 1155	2020 Chemical Weed Control for Field Crops, Pastures, Rangeland, and Noncropland
SRP 1157	2019 National Winter Canola Variety Trial

Research Reports 2019-2020

Cattlemen's Day
Hays Roundup Research Report
Agricultural Research, Southeast Agricultural Research Center
K-State Turfgrass Research
Kansas Field Research
Kansas Fertilizer Research
Field Day, Southwest Research-Extension Center
Swine Day

Special Publications

DRR18-19	Director's Report of Research in Kansas 2018-19

Understanding Contribution Numbers

Contribution numbers have three parts:

- The first two digits denote the year (state fiscal) of assignment.
- The second set of digits identifies the manuscript (numbered consecutively throughout the year).
- The suffix letter identifies the type of publication.

A	Proceedings of meeting or symposium
B	Book or book chapter
C	Computer program
D	Department report
J	Journal manuscript
S	Station publication (Report of Progress, Keeping up with Research, Special Publication, or Bulletin)
T	Trade publication

Categories are based on information received before manuscripts are published. Type of publication sometimes changes later.

Station publications are available at:
http://newprairiepress.org/kaesrr/
http://www.bookstore.ksre.ksu.edu/

Department reports are available only from the appropriate department office. Copies of journal articles or other external publications must be obtained from authors, journals, or a library. Some citations include a digital object identifier (doi) for use in retrieving manuscripts online. To locate an object using its doi, simply paste the doi into your browser or visit *http://dx.doi.org/*.

Kansas Agricultural Experiment Station reports are posted at https://newprairiepress.org/kaesrr/. They are listed by volume and issue (2020 Cattlemen's Day Research, Volume 6, Issue 2; https://newprairiepress.org/kaesrr/vol6/iss2/). Recommended citations and doi numbers are listed with each report.

Recommended Citation
Duncan, Z. M.; Tajchman, A. J.; Ramirez, M. P.; Lemmon, J.; Hollenbeck, W. R.; Blasi, D. A.; and Olson, K. C. (2020) "Effects of Prescribed Fire Timing on Stocker Cattle Performance, Native Plant Composition, Forage Biomass, and Root Carbohydrate Reserves in the Kansas Flint Hills: Year One of Six," Kansas Agricultural Experiment Station Research Reports: Vol. 6: Iss. 2. https://doi.org/10.4148/2378-5977.7884

Agricultural Economics

18-027-J Sorghum research and poverty reduction in the presence of trade distortions in Ethiopia
W. Embaye, N. Hendricks, N. Lilja
African Journal of Agricultural and Resource Economics
June 2017
Vol. 12, Issue 2
afjare.org/media/articles/6.-Embaye-et-al-1.pdf

18-179-J Using a crop simulation model to understand the impact of risk aversion on optimal irrigation management
R.P. Wibowo, N.P. Hendricks, I. Kisekka, A. Araya
Transactions of the ASABE
2017
elibrary.asabe.org/abstract.asp?aid=48666

19-150-J Job attribute preferences of undergraduate agricultural majors—do they match with careers in grain merchandising?
K.D. Harris
Applied Economics Teaching Resources
June 2019
Vol. 1, Issue 1, Pg. 1-17
doi: 10.22004/ag.econ.294010

20-041-B Soil and water conservation: an annotated bibliography
C. Moorberg, S. Abit, A. Aubert, E. Brevik, M. Brungardt, R. Burns, E. Carver, I. Euler, M. Falk, K. Fross, T. Gillespie, B. Hogan, S. Indorante, M. Leakey, A. Lester, M. Owens, K. Patel, E. Pruvis, C. Sasscer III, L. Starr, D. Stich, M. Tynon, C. Weber, A. Willliams, J. Ziggafoos
New Prairie Press
December 2019
kstatelibraries.pressbooks.pub/soilandwater/

20-163-J The BAITSSS model: An opportunity to integrate remote sensing and energy balance modeling for in-season crop water management
R. Dhungel, R. Aiken, X. Lin, P.D. Colaizzi, R.L. Baumhardt, D. O'Brien, D.K. Brauer
Proceedings of the 6th Decennial National Irrigation Symposium, ASABE
December 2021
doi.org/10.13031/irrig.2020-065

20-198-J Evaluation of uncalibrated energy balance model (BAITSSS) for estimating evapotranspiration in a semiarid, advective climate
R. Dhungel, R. Aiken, P.D. Colaizzi, X. Lin, D. O'Brien, R.L. Baumhardt, D.K. Brauer, G.W. Marek
Hydrological Processes
April 2019
Vol. 33, Issue 15
doi.org/10.1002/hyp.13458

20-199-J Restricted water allocations: Landscape-scale energy balance simulations and adjustments in agricultural water applications
R. Dhungel, R. Aiken, X. Lin, S. Kenyon, P.D. Colaizzi, R. Luhman, R.L. Baumhardt, D. O'Brien, S. Kutikoff, D.K. Brauer
Agriculture Water Management
January 2020
Vol. 227
doi.org/10.1016/j.agwat.2019.105854

20-200-J Increased bias in evaporation modeling due to weather and vegetation indices data sources
R. Dhungel, R. Aiken, P.D. Colaizzi, X. Lin, R.L. Baumhardt, S.R. Evett, D.K. Brauer, G.W. Marek, D. O'Brien
Agronomy Journal
April 2019
Vol. 111, No. 3, Pg. 1407-1424
doi:10.2134/agronj2018.10.0636

Agricultural Research Center - Hays

18-220-J
Sorghum genotype performance in response to high temperature and stalk rot diseases
R. Perumal, S.S. Tomar, A.Y. Bandara, M. Djanaguiraman, P.V.V. Prasad, T.T. Tesso, H.D. Upadhyaya, C.R. Little
Oral invited presentation. Sorghum in the 21st century - Global conference on food, feed and fuel in a rapidly changing world
Cape Town, South Africa
April 2018

19-257-J
Evaluation of ethanol-based extraction conditions of sorghum bran bioactive compounds with downstream anti-proliferative properties in human cancer cells
S. Cox, L. Noronha, T. Herald, S. Bean, S-H. Lee, R. Perumal, W. Wang, D. Smolensky
Heliyon
May 2019
Vol. 5, Issue 5
doi.org/10.1016/j.heliyon.2019.e01589

20-031-S
2019 Southwest Research-Extension Center Research Report
B. Gillen and multiple co-authors
Kansas Agricultural Experiment Station
Vol. 5, Issue 7
newprairiepress.org/kaesrr/vol5/iss7/

20-036-S
2019 Kansas Performance Tests with Winter Wheat Varieties
J. Lingenfelser and multiple co-authors
Kansas Agricultural Experiment Station
krex.k-state.edu/handle/2097/42015

20-061-J
Registration of 'KS Venada' hard white winter wheat
G. Zhang, T.J. Martin, A.K. Fritz, R. Regan, G. Bai, M.-S. Chen, R.L. Bowden, Y. Jin, X. Chen, J.A. Kolmer, B.W. Seabourn
Journal of Plant Registrations
January 2020
Vol. 14, Issue 2
doi.org/10.1002/plr2.20026

20-067-J
Strategic tillage effects on crops yields, soil properties, and weeds in dryland no-tillage systems
A.K. Obour, J.D. Holman, L.M. Simon, A.J. Schlegel
Agronomy
March 2021
Vol. 11, Issue 4
doi.org/10.3390/agronomy11040662

20-069-J
Advancing provitamin A biofortification in sorghum: genome-wide association studies of grain carotenoids in global germplasm
C. Cruet-Burgos, S. Cox, B.P. Ioerger, R. Perumal, Z. Hu, T.J. Herald, S.R. Bean, D.H. Rhodes
The Plant Genome
March 2020
Vol. 13, Issue 1
doi.org/10.1002/tpg2.20013

20-080-J
Herbicide programs to manage glyphosate-resistant and dicamba-resistant kochia (*Bassia scoparia*) in glyphosate plus dicamba-resistant soybean
R. Yadav, V. Kumar, P. Jha
Weed Technology
August 2020
Vol. 34, Issue 4
doi: 10.1017/wet.2020.3

20-082-J
Spring triticale forage responses to seeding rate and nitrogen application
A.K. Obour, J.D. Holman, A.J. Schlegel
Agrosystems, Geoscience and Environment
April 2020
Vol. 3, Issue 1
doi.org/10.1002/agg2.20053

20-095-J
Variation in stalk rot resistance and physiological traits of sorghum genotypes in the field under high temperature
R. Perumal, S.S. Tomar, A. Bandara, D. Maduraimuthu, T.T. Tesso, P.V.V. Prasad, H. D. Upadhyaya, C.R. Little
Journal of General Plant Pathology
July 2020
doi.org/10.1007/s10327-020-00940-4

20-104-J Integrating cover crops for weed management in the semi-arid U.S. Great Plains: opportunities and challenges
V. Kumar, A. Obour, P. Jha, R. Liu, M.R. Manuchehri, A. Dille, J. Holman, P.W. Stahlman
Weed Science
April 2020
Vol. 68, Issue 4, Pg. 311-323
doi.org/10.1017/wsc.2020.29

20-118-S 2019 Kansas Performance Tests with Corn Hybrids, SRP1152
J. Lingenfelser and multiple co-authors
Kansas Agricultural Experiment Station
krex.k-state.edu/handle/2097/42016

20-125-J Dissecting adaptive traits with nested association mapping: genetic architecture of inflorescence morphology in sorghum
M.O. Olatoye, S.R. Marla, Z. Hu, S. Bouchet, R. Perumal, G.P. Morris
G3: Genes | Genomes | Genetics
May 2020
Vol. 10, Issue 5
doi.org/10.1534/g3.119.400658

20-130-S 2019 Kansas Performance Tests with Grain Sorghum Hybrids, SRP1154
J. Lingenfelser and multiple co-authors
Kansas Agricultural Experiment Station
krex.k-state.edu/handle/2097/42018

20-159-J Potential yield loss in grain sorghum (*Sorghum bicolor*) with weed interference in the United States
J.A. Dille, P.W. Stahlman, C.R. Thompson, B.W. Bean, N. Soltani, P.H. Sikkema
Weed Technology
January 2020
doi.org/10.1017/wet.2020.12

20-206-J Dryland cropping system impact on forage accumulation, nutritive value, and rainfall use efficiency
J.D. Holman, A. Schlegel, A. Obour, Y. Assefa
Crop Science
January 2020
Vol. 60, Issue 6
doi.org/10.1002/csc2.20251

20-234-S 2020 Hays Roundup Research Report
K.R. Harmoney, J.R. Jaeger, J.W. Waggoner, Q. Rupp
Kansas Agricultural Experiment Station
Vol. 6, Issue 3
newprairiepress.org/kaesrr/vol6/iss3/

20-270-J Feral rye control in quizalofop-resistant wheat in central Great Plains
V. Kumar, R. Liu, M.R. Manuchehri, E.P. Westra, T.A. Gaines, C.W. Shelton
Agronomy Journal
October 2020
Vol. 113, Issue 1
doi.org/10.1002/agj2.20484

20-275-J Registration of the sorghum [*Sorghum bicolor* (L.) Moench] nested association mapping (NAM) populations in RTx430 background
R. Perumal, G.P. Morris, S.V.K. Jagadish, C.R. Little, T.T. Tesso, S.R. Bean, J. Yu, P.V.V. Prasad, M.R. Tuinstra
Journal of Plant Registrations
May 2021
Vol. 15, Issue 2, Pg. 395-402
doi.org/10.1002/plr2.20110

20-312-J Effective two-pass herbicide programs to control glyphosate-resistant Palmer amaranth (*Amaranthus palmeri*) in glyphosate/dicamba-resistant soybean
V. Kumar, R. Liu, D.E. Peterson, P.W. Stahlman
Weed Technology
August 2020
Vol. 35, Issue 1, Pg. 128-135
doi: 10.1017/wet.2020.90

20-325-J Rapid quantification of total phenolics and ferulic acid in whole wheat using UV-Vis spectrophotometry
W. Tian, G. Chen, Y. Gui, G. Zhang, Y. Li
Food Control
May 2021
Vol. 123
doi.org/10.1016/j.foodcont.2020.107691

20-334-S 2019 Kansas Performance Tests with Sunflower Hybrids, SRP1157
J. Lingenfelser and multiple co-authors
Kansas Agricultural Experiment Station
krex.k-state.edu/handle/2097/42019

20-346-J Cover-crop water use and productivity in the high plains wheat–fallow crop rotation
J.D. Holman, Y. Assefa, A.K. Obour
Crop Science
October 2020
Vol. 61, Issue 2
doi.org/10.1002/csc2.20365

20-353-J Genetic analysis of end-use quality traits in wheat
G. Zhang, R.Y. Chen, M. Shao, G. Bai, B.W. Seabourn
Crop Science
January 2020
Vol. 61, Issue 3
doi.org/10.1002/csc2.20411

Agronomy

18-001-J Planting alfalfa with cover crops on forage dry matter and nutritive values of alfalfa
D. Min, I. McDonald
Journal of Agricultural Studies
2020
Vol. 5, No. 2
doi.org/10.5296/jas.v5i2.11408

18-002-J Using jeopardy game in a forages course
D. Min, A. Mustain
North American Colleges and Teachers of Agriculture
March 2017
Vol. 61, Pg. 92-94

18-020-B Considering soil potassium pools with dissimilar plant availability
M.J. Bell, M.D. Ransom, M.L. Thompson, A. Florence, P.W. Moody, C.N. Guppy
Book: Improving Potassium Recommendations for Agricultural Crops
2021
doi.org/10.1007/978-3-030-59197-7

18-031-J Expression of a rice soluble starch synthase gene in transgenic wheat improves the grain yield under heat stress conditions
B. Tian, S.K. Talukder, J. Fu, A.K. Fritz, H.N. Trick
In vitro Cellular & Developmental Biology - Plant
3/6/18
Vol. 54, Pg. 216-227
doi.org/10.1007/s11627-018-9893-2

18-075-J Within-row plant spacing effects on corn yield: Field-study and literature review
G.M. Corassa, R. Gaviraghi, M.B. Bisognin, A.L. Santi, F.D. Hansel, R.A. Schwalbert, T.J.C. Amado, I.A. Ciampitti
Agronomy Journal
January 2018
Vol. 110, Issue 1
doi.org/10.2134/agronj2017.07.0380

18-103-B Spoil to soil: Mine site rehabilitation and revegetation
N.S. Bolan, M.B. Kirkham, Y.S. Ok
Publisher: CRC Press, Taylor & Francis Group
2018

18-175-J Improving gene regulatory network inference by incorporating rates of transcriptional changes
J.S. Desai, R.C. Sartor, L.M. Lawas, S.V.K. Jagadish, C.J. Doherty
Scientific Reports
December 2017
doi.org/10.1038/s41598-017-17143-1

18-206-J Carbon sequestration value of biosolids applied to soil: A global meta-analysis
H. Wijesekara, K. Colyvas, P. Rippon, S.A. Hoang, N.S. Bolan, M.C. Manna, R. Thangavel, B. Seshadri, M. Vithanage, Y.M. Awad, A. Surapaneni, C. Saint, G. Tian, S. Torri, Y.S. Ok, M.B. Kirkham
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April 2021
Vol. 284
doi.org/10.1016/j.jenvman.2021.112008

18-220-J Sorghum genotype performance in response to high temperature and stalk rot diseases
R. Perumal, S.S. Tomar, A.Y. Bandara, M. Djanaguiraman, P.V.V. Prasad, T.T. Tesso, H.D. Upadhyaya, C.R. Little
Oral invited presentation. Sorghum in the 21st century - Global conference on food, feed and fuel in a rapidly changing world
Cape Town, South Africa
April 2018

18-233-J GIS approach to estimate windbreak crop yield effects in Kansas-Nebraska
R.O. Morillo, C.J. Barden, I. Ciampitti
Agroforestry Systems
August 2019
doi.org/10.1007/s10457-018-0270-2

18-266-J Soil health and yields on non-sodic soils amended with flue gas desulfurization gypsum
D. Presley, Y. He, P. Tomlinson
Crop, Forage, and Turfgrass Management
October 2018
Vol. 4, Issue 1
doi.org/10.2134/cftm2018.01.0001

18-298-J Effects of prescribed fire timing on vigor of the invasive forb sericea lespdeza (*Lespedeza cuneata*), total forage biomass accumulation, plant-community composition, and native fauna on tallgrass prairie in the Kansas Flint Hills
J.A. Alexander, W.H. Fick, B.S. Ogden, D.A. Haukos, J. Lemmon, G.A. Gatson, K.C. Olson
Translational Animal Science
May 2021
Vol. 5, Issue 2
doi.org/10.1093/tas/txab079

18-331-J Long-term biomass and potential ethanol yields of annual and perennial biofuel crops
K.L. Roozeboom, D. Wang, A.R. McGowan, J.L. Propheter, S.A. Staggenborg, C.W. Rice
Agronomy Journal
January 2019
Vol. 111, Issue 1
doi:10.2134/agronj2018.03.0172

18-496-J Impact of post-flowering heat stress in winter wheat tracked through optical signals
D. Sebela, B. Bergkamp, S.M. Impa, A.K. Fritz, S.V.K. Jagadish
Agronomy Journal
July 2020
Vol. 112, Issue 5
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PCR-based prevalence of shiga toxin-producing *Escherichia coli* known to carry Shiga toxin genes in feces of finisher pigs
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Exploring long-term variety performance trials to improve environment-specific genotype × management recommendations: A case study for winter wheat
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