

# Project partners

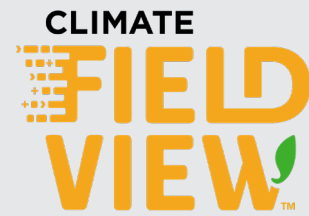
# The Flickner Innovation Farm

# GROWING for the Future



AMERICAN ROBOTICS

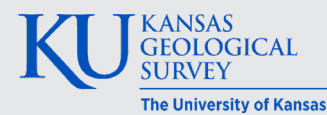
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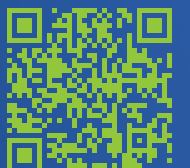
The Flickner Farm

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## About the farm

The Flickner Farm has a long history that dates back to the 1870s, when the first family members tilled ground in Moundridge. Ray Flickner is the 5th generation on this farm, which has grown to about 1000 acres spread across eight different sections with 10 individual water rights. The farm uses various technologies, management techniques, and cropping systems to improve water conservation, water quality, and soil health for the entire operation and the surrounding community. This includes implementing sub-surface drip irrigation (SDI) and precision mobile drip irrigation (PMDI) to grow corn, wheat, grain sorghum, and soybeans; many fields are no-till or limited strip till, and there is an ongoing effort to rebuild terraces and to construct new waterways. The Flickners' award-winning commitment to natural resource conservation while maintaining profitability makes the farm a perfect location for testing new technologies and discovering innovative solutions for these issues.

## Inspired to innovate

This project sprouted from a desire to use experimental design on a large-farm setting while harnessing the expertise of a team from the local farming community, industry, university specialists, state agencies and other stakeholders. Current work on the Flickner Innovation Farm combines the use of:

- ➔ Irrigation technologies, including sub-surface drip and precision mobile drip systems
- ➔ Precision agriculture using soil moisture sensors, irrigation scheduling, plant sensors, and emerging machine learning technologies
- ➔ Imagery provided by satellite, fixed-wing aircraft and automated drone system
- ➔ Research projects focused on soil health, fertilizer response, nutrient losses, and weed management

## What can we accomplish?

Recent studies confirm that the Flickner Farm use an average of 40% less water over the past decade than the county average. With the adoption of advanced irrigation technologies, this project hopes to reduce irrigated water use by an additional 15%.

Research on the farm will help to develop new state nitrogen fertilizer recommendations to minimize environmental impacts and maximize productivity and cost savings.

Project partners are monitoring groundwater levels and quality to collect baseline readings from new wells for trend analysis. This can help identify emerging water quality problems and propose solutions for issues affecting the municipal water supply.



**If we can leave this land in better condition than how we found it, then we've done our job right.**

— Ray Flickner, farmer

## Precision Agriculture

Using various types of imagery and other remote-sensing tools, researchers are piloting tailored management practices designed to increase crop yields under diverse environments and under different climate scenarios. The farm is also piloting new technologies for weed management.



## Soil Health

How do management practices impact soil health? Our team is investigating the effects of long-term cropping systems on fertilizer requirements for optimum yields. The farm is also the site for several long-term cover crop research projects.

## Water Conservation

Extreme climate events underscore the significance of water's role in the future of farming. Our research partners continue to examine how soil and plant sensors, imagery, and advanced irrigation technologies can support resilient water management.



## Our Vision

With key partners in place, we will fine-tune existing technologies while exploring new innovations to improve soil health and conserve water on Kansas farmland.

We hope to harvest the advantages of new technology and current research with our comprehensive team of experienced growers, agronomists, watershed specialists, university researchers, and industry specialists. Together, we will extend the reach of standard agricultural practices and improve yields while preserving natural resources.