

PROGRAM DESCRIPTION

Department of Higher Education and Workforce Development	HB Section(s):	3.195
Program Name: Univ of Missouri Greenley Research Center Water Works for Agriculture in Missouri		
Program is found in the following core budget(s): University of Missouri		

1a. What strategic priority does this program address?

Coordination

1b. What does this program do?

Fresh water resources are an essential component of long-term sustainable agriculture production systems. Integrated cropping systems that improve water use efficiency and promote soil conservation are essential for long-term sustainability of rural communities. Missouri ranks 2nd to Alaska in the miles of streams within its borders and there are currently efforts underway to regulate these waters. Agricultural practices that promote both water quality and soil health are beneficial to both the producer and the environment. This facility allows for a unique and rare opportunity to implement large-scale water and soil conservation projects with the following objectives: 1) preserve and sustainably utilize water resources for agriculture by developing innovative systems that target reduced maintenance costs for conservation practices, 2) improve food production resiliency by integrating best management practices for water management, soil and nutrient management, and soil health in response to extreme weather events, 3) conserve water and soil resources by evaluating practices that ensure fertilizers stay in the right place for maximum yields, and 4) provide data so informed decisions can be made on cost-effective, innovative integrated water management systems while expanding science-based agriculture education opportunities.

These funds will be used to support landscape based agriculture water management research, maintain long-term research, support personnel such as faculty and support staff associated with the program, and deliver educational related programs.

2a. Provide an activity measure(s) for the program.

Innovative integrated water management systems, crop diversification, integrated cropping systems, conservation, and value-added production research make the Greenley Research Center an essential component of the Agriculture Experiment Station in Missouri. For over 40 years, the facility has been successfully showcasing conservation research and demonstration. The facility featured the first terraces in the 1970s, the first long-term conservation tillage research (1970-1993), first long-term tillage/cover crop research (1994-current), first integrated drainage water management research (2001-present), and the first drip irrigation on sloping soils (2015-present) in Missouri. Long-term research is essential for understanding sustainable and profitable cropping systems, but support through grant agencies are short-term.

The facility has been actively supporting agriculture in Missouri with approximately 6,000 technical support calls/visits, 90 peer reviewed research papers, and 50 international and domestic graduate students advised by the Center.

This project showcases new conservation systems that are aimed at increased food production resiliency, improved water quality, and will evaluate these systems on a small-plot and large field scale. Long-term funding will also allow the expansion of research such as drip irrigation to cooperators with sloping soil in the region.

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2b. Provide a measure(s) of the program's quality.

- The program provides timely research-based information and recommendations on drainage water management (DWM) systems to producers, consumers, agribusiness representatives, extension specialists, and government agencies.
- DWM has reduced nitrate loss over 70% and phosphorus loss over 80% in water flow compared to free drainage systems.
- Corn and soybean production has increased over 20% with free drainage systems, while drainage water recycling has increased soybean production over 28% and corn production over 40% compared to current cropping systems.
- Improved agricultural water management is critical to help mitigate issues such as the droughts of 2012 and 2017, and extreme precipitation events experienced in 2008-2010, 2015, and 2021.
- Over 20 graduate and over 20 undergraduate students have studied enhanced crop management systems with this program and will be able to continue research to enhance the agriculture industry in Missouri.
- A new faculty member in Soil Science-Agroecology-Hydrology has been hired to serve as state specialist for Landscape Position Management which is essential to address the variable landscapes in Missouri.

2c. Provide a measure(s) of the program's impact.

Drainage workshops that utilize research based information from this program have trained over 400 farmer/contractors. In a survey of attendees, they have anticipated increasing installation of drainage 89%, controlled drainage 79%, and subirrigation 53% over the next three years. Contractors who attend training programs have installed on average over 150,000 ft. of drainage water management piping annually. The number of trained contractors impacts approximately 30,000 acres each year and adds \$1.3 to \$2.4 million to Missouri's economy annually. Depending on the extent of precipitation, yield losses (6 to 11 bu/acre/day) due to saturated conditions in corn alone could range from \$6.3 to \$80 million in a single year and improved management systems can reduce this loss. On average, over 2,000 producers attend programs and demonstrations on this technology annually.

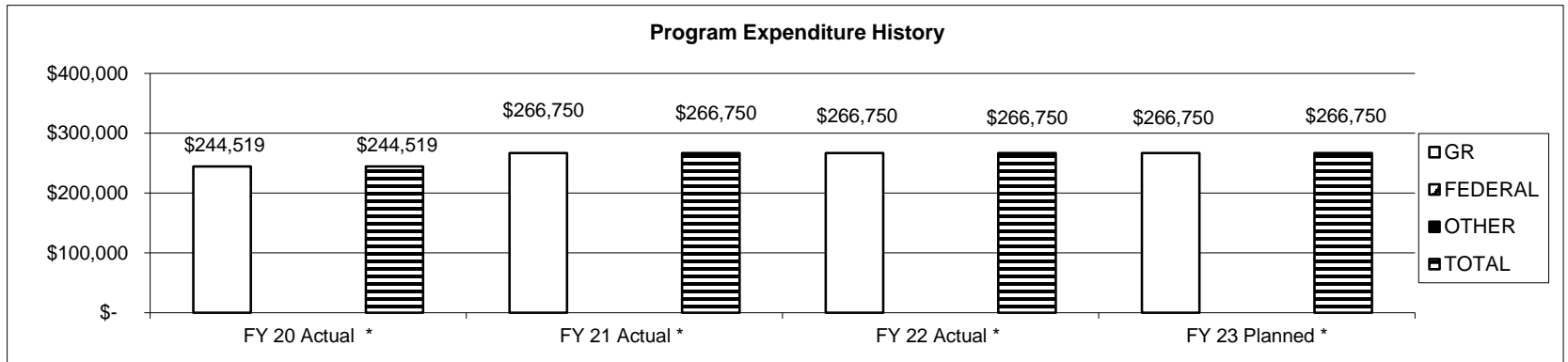
2d. Provide a measure(s) of the program's efficiency.

The efficiency of this program will be measured by the trained individuals and additional feedback from individuals with enhanced water management systems. Research will document the reductions in nutrient loss from fields and increased food production.

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3. Provide actual expenditures for the prior three fiscal years and planned expenditures for the current fiscal year. (Note: Amounts do not include fringe benefit costs.)



* Net of 3% Governor's statutory withholding for FY 2020 - FY 2022. Decrease in actual expenditures in FY 2020 was due to the additional restrictions of \$22,231 by the Governor in response to the COVID-19 pandemic.

4. What are the sources of the "Other " funds?

None

5. What is the authorization for this program, i.e., federal or state statute, etc.? (Include the federal program number, if applicable.)

Lee Greenley Jr. Memorial Research Center is a component of the University of Missouri and falls under Section 172.010 - 172.950, RSMo.

6. Are there federal matching requirements? If yes, please explain.

No

7. Is this a federally mandated program? If yes, please explain.

No