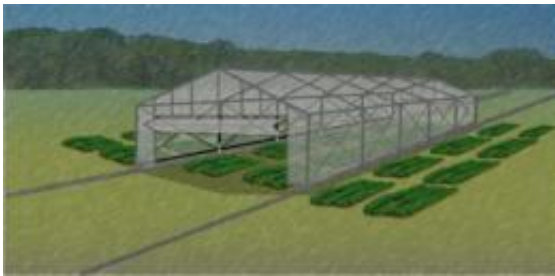


Researchers create drought conditions to unearth solutions

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Researchers at the University of Missouri College of Agriculture, Food and Natural Resources are constructing drought simulators over a variety of soil types so that scientists can study how certain plants respond to a broad range of drought conditions. Credit: University of Missouri

Droughts have devastating effects on farmers. In most of the world, droughts are the leading cause of crop failure. Droughts increase consumer costs, kill livestock, reduce crop yields, and trigger wildfires and dust storms, which lead to malnutrition and famine, social unrest and political instability. Now, researchers at the University of Missouri College of Agriculture, Food and Natural Resources (CAFNR) are constructing drought simulators over a variety of soil types so that scientists can study how certain plants respond to a broad range of drought conditions, providing information that is critical to develop more tolerant crop plants.

"This project will create a network of drought simulators unlike any

other in the United States, providing Missouri scientists with state-of-the-art field facilities to conduct a broad range of drought-related translational research," said Felix Fritschi, assistant professor in CAFNR's Division of Plant Sciences, who leads the effort.

Funded by a \$1.5 million grant by the Missouri Life Sciences Research Board, Fritschi and his team will construct four mobile rain shelters and will vary the amount of water that the test plants receive, simulating everything from short dry spells to persistent and severe drought conditions. The shelters measure 50 feet by 100 feet, look like greenhouses and are mobile. The researchers will move the shelters during sunny weather and cover the plants when rain approaches.

The shelters are being placed in different areas of the state with different environments, crop species and soil types that are agriculturally important to the state. This strategic placement allows researchers to accommodate any crop, forage and turf species grown in Missouri and surrounding states.

"Water is a finite resource that is in great demand for a wide variety of reasons, including domestic, industrial, leisure, landscape and agricultural uses," Fritschi said. "In light of population increases and greater demands for non-agricultural water uses, more and more emphasis must be placed on efficient use of water resources for plant production. The drought simulators will provide us with a new tool to study how agricultural water use efficiency can be improved."

"Plant responses to drought are very complex and difficult to study," said Robert Sharp, co-investigator and professor of plant sciences. "The ability to manage the timing, duration and intensity of water deficit stress under field conditions is essential to examine plant responses to drought. Thus, the [drought](#) simulators will bridge the gap between controlled environment facilities, such as growth chambers and

greenhouses, and real conditions encountered in the field."

Source: University of Missouri-Columbia ([news](#) : [web](#))

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