

Optimizing sweetpotato production: Study reveals best cultural practices for increasing yield, economic benefits

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Field experiments and analyses showed that early planting and delaying harvesting practices can result in increased yields and profits for sweetpotato producers. Credit: Don LaBonte.

As the popularity and convenience of sweetpotato products increases,

sweetpotato growers and processors are interested in identifying ways to meet processor's demands and to make the crop more widely available. A new study reveals that cultural practices such as early planting and delaying harvest hold promise for increasing yield and economic benefits for sweetpotato producers.

In the United States, sweetpotatoes are grown primarily for the fresh market, where consumers prefer medium-sized, uniformly shaped products that are free of imperfections. Ramón Arancibia, lead author of a study in *HortTechnology*, explained that, unlike fresh market products, the sweetpotato processing industry can use product of all sizes. For making sweetpotato fries, for example, large roots are preferred because they are longer and a more consistent fry length than medium-sized sweetpotatoes. "In addition, shape is not as critical as it is in the fresh market, and total yield is more important," Arancibia said. "Because of the differences in size and quality standards for the processing industry versus the fresh market, diverse production strategies are necessary to optimize returns."

Arancibia and a team of researchers from Mississippi State and Louisiana State Universities designed experiments to determine the importance of planting and harvest dates and plant spacing in sweetpotato cultivars Beauregard and Evangeline. The team's goal was to identify ways to increase profitability of the growing system. The field research was done at the Pontotoc Ridge-Flatwoods Experiment Station at Mississippi State University, and at the Louisiana State University Agricultural Center-Sweet Potato Research Station. Treatments consisted of a combination of early and late planting dates and delays in harvest, in-row plant spacing, and row width.

"The experiments showed that yield increase was inconsistent with delaying harvest, and appears to depend on environmental conditions at harvest late in the season," the authors said. Results also indicated that

marketable yield of the sweetpotato cultivars was consistently greater in early plantings than late plantings.

Using economic assessments, the team determined that delaying harvest in early sweetpotato plantings showed a gain in net benefit for both hand harvesting for fresh market and field-run bulk harvesting for processing. "Growers need to be cognizant of the market demands and adjust their practices accordingly to meet market expectations," the authors said. "Prices received by growers depend on the particular grade and market, and the difference in prices is a factor in the net benefit and marginal rate of return when delaying harvest."

The assessments also revealed that changing plant density (within the range tested) resulted in no changes in economic benefit.

"Our results indicated that early planting and late harvest date combination results in increased tonnage, particularly of jumbo roots while maintaining the valuable U.S. no.1 size roots. The increase in yield resulted in a gain in net benefit either for fresh market or for processing," Arancibia concluded.

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