

# Artichokes grow big in Texas

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Researchers recommended best practices for irrigation and nitrogen management to help create a market for commercial artichoke operations in Texas. Credit: Photo courtesy of Daniel Leskovar

Loaded with antioxidants and phytochemicals, the artichoke is becoming more popular as consumer interest in specialty products swells. And while 90% of the artichokes grown in the United States come from California, growers in Texas are working to introduce globe artichokes as commercial specialty crop in their region. They say the healthy vegetable has the potential to provide new economic opportunities for regional agricultural throughout the southern U.S.

The authors of a new study say that before artichoke can be successfully established in Texas and southern regions of the U.S. where water is scarce, more information is needed about [irrigation](#) and nitrogen (N) management practices. Togo Shinohara, Shinsuke Agehara, Kil Sun Yoo,

and Daniel Leskovar from Texas AgriLife Research, Vegetable and Fruit Improvement Center at Texas A&M University published a study in *HortScience* that should give growers the tools they need to ramp up commercial artichoke operations.

"The aim of our three-season study was to determine crop yield, quality, and nutritional components of fresh artichoke heads in response to differential irrigation regimes and N fertilizer rates", said author Daniel Leskovar. "To introduce artichoke cultural practices into commercial production in water-limited regions of the southern United States, it is important to understand impact of these practices."

The scientists evaluated marketable yield, yield components, quality, and nutrient levels of artichoke heads grown under three irrigation regimes (50%, 75%, and 100% crop evapotranspiration) and four nitrogen rates (0 to 10, 60, 120, and 180 kg/ha) under subsurface drip irrigation.

Results of the field experiments showed that irrigation was more effective than N management for optimizing artichoke yield. Marketable yields significantly increased at 100% evapotranspiration (ETc) compared with 75% and 50% ETc, whereas a 20% to 35% yield reduction occurred at 50% ETc across seasons. The researchers believe that the lack of yield responses to N rates was in part the result of high pre-plant soil NO<sub>3</sub>-N and NH<sub>4</sub>-N levels.

Harvest time appeared to have the largest effect on artichoke nutritional quality, followed by deficit irrigation. "Total phenolics and chlorogenic acid of artichoke heads increased as the harvesting season progressed and were highest at 50% ETc during mid- and late harvests in one season", Leskovar noted.

The team concluded that approximately 700 mm (for a bare soil system) and approximately 350 mm (in a plasticulture system) of water inputs

and 120 kg/ha or less of N appears sufficient to obtain high marketable yields, superior size, and optimal nutritional quality for production of artichokes in Texas.

The researchers hope their efforts will bridge the knowledge gap on irrigation and [nitrogen management practices](#) and help put artichoke production on the map in Texas.

**More information:** The complete study and abstract are available on the ASHS *HortScience* electronic journal web site:

[hortsci.ashspublications.org/c ... nt/abstract/46/3/377](https://hortsci.ashspublications.org/c...nt/abstract/46/3/377)

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