Artichokes are one of the most antioxidant-rich foods.

Artichokes: high-profit potential for Florida

By Shinsuke Agehara

Artichokes may look tough to eat, but they are a superfood in so many ways. They are immature, edible buds surrounded by layers of triangular petals. The edible portions consist primarily of the fleshy lower part of each petal and the large fleshy base, known as the "heart." To enjoy the whole artichoke, you need to pull out each petal by your fingers and scrape the flesh off the petal with your teeth, and yes, the "heart" is difficult to get to. But artichokes are fun to eat, beautiful to look at and provide delicious and distinct flavors.

HEALTH BENEFITS

In addition to that, artichokes are highly nutritious. They contain large amounts of potassium, magnesium, iron and fiber. They are also rich in antioxidants, including anthocyanins, quercetin, rutin, cynarin, luteolin and many other phenolic and flavonoid compounds. It has been reported that the antioxidant content of artichoke ranks fourth out of more than 1,000 food products — higher than many other foods traditionally considered to be antioxidant-rich such as dark chocolate, blueberries and red wine.

HISTORY

When we say artichokes, we are actually referring to globe artichokes that belong to a genus of

thistle-like plants in the sunflower family. Artichokes are native to the Mediterranean region and were brought to the United States in the 1800s. They were first grown in Louisiana by French immigrants and later in California by Spanish and Italian immigrants. Currently, California grows nearly 100 percent of the nation's artichokes.

ADVANTAGES AND CHALLENGES

Some traditional Florida crops are not as profitable as they once were because of diseases, labor and increased competition. The main reason why we are interested in growing artichokes in Florida is their high-profit potential. One artichoke plant can produce several buds. Retail prices range from $1 to $5 per bud. The production value is higher than many major vegetable crops in Florida, including watermelon, squash, cantaloupe and snap bean.

In Florida, the main challenge in producing artichokes is the warm, humid climate. Artichokes prefer the Mediterranean with cool winters. In fact, chilling is the environmental signal to induce bud development for artichokes. The chilling requirement of artichokes is generally 250 to 500 cumulative hours below 50 degrees. That means Florida's warm weather presents an obstacle to artichoke production.

Shinsuke Agehara's research-based recommendations for growing Imperial Star artichoke in Florida include the use of gibberellic acid for bud induction.

RESEARCH EFFORTS

Is it possible to grow artichokes in Florida? After two years of research, I'm convinced that yes, we can grow artichokes even under Florida's subtropical climate. Artichoke's potential as an alternative crop is being evaluated at the University of Florida/Institute of Food and Agricultural Sciences Gulf Coast Research and Education Center in Balm.

The first approach was to select candidate varieties based on their known chilling requirements and to test them in the field. The results show that the subtropical climate in this area does not provide sufficient chill hours, except for one variety. Some varieties are surely not suitable, but Imperial Star has great potential to grow and produce buds even in a subtropical climate.

Although Imperial Star can produce buds in Florida, current yields are very low. Yields are still limited because of insufficient chilling conditions.

The second approach was to overcome this genetic limitation using a natural plant hormone called gibberellic acid. This plant hormone can induce the expression of the same genes activated by cold weather to induce the flowering process in many plant species. For artichokes, plants should be treated with gibberellic acid at early growth stages. The results show that yield can increase more than threefold, while first harvest date can be advanced by up to two weeks.

Using Imperial Star and gibberellic acid, we can now produce as much as 6,000 pounds of artichokes per acre. Optimization of the artificial bud induction method by gibberellic acid has high potential to further increase artichoke yields in Florida. Our goal is to achieve 13,500 pounds of artichokes per acre, which is California's average commercial yield. Artichokes could provide new market opportunities for growers to cultivate a niche, profitable crop and for consumers to enjoy a locally grown, fresh-tasting food loaded with nutrients and antioxidants.

Shinsuke Agehara is an assistant professor of plant physiology at the University of Florida/Institute of Food and Agricultural Sciences Gulf Coast Research and Education Center.