

Edamame Soybeans

By Rob Myers, Executive Director

Interest in edamame soybeans continues to grow for both consumers and producers. Edamames are a type of soybean that are harvested while the pods are green and plump. The seeds are larger than regular soybeans, and have a clear hilum (in other words, unlike regular soybeans, there is no black spot on the seed). In theory, edamame soybeans are also a little sweeter and may have a different amino acid profile, but our lab tests have shown that the sugar content of edamames is similar to field soybeans.

Edamames can either be consumed fresh, or frozen before use. They are very simple to prepare - simply put the fresh or frozen pods into boiling water with salt added to the water. After four or five minutes in the boiling water, the edamames are ready for eating. Most people take the bean pods right from the pot and serve them, letting each person shell their own edamames. After being boiled, the beans come out of the pods very easily. The pods are not eaten, just the seeds. Edamames can be served cold, such as for salads. Some readily available frozen vegetable

mixes include edamame seeds already removed from the pods.

Edamame soybean plants look like regular field soybeans, and are planted the same way. Since the seeds are larger, it can take more pounds of seed per acre (plant 70-90 pounds per acre). The goal should be to have five to ten plants per foot of row when grown in wide rows (30 inches or wider). Wide row planting can facilitate harvesting of edamames, either with a green bean picker, or by hand. The pods should be harvested when they are fully plump (maximum fresh weight) and before they start drying down and losing the green color.

There are no U.S. marketing standards for edamame. Some buyers, including consumers, will expect to have few if any pods that are seedless or damaged by insects. Thus, some sorting of pods may be necessary before marketing, especially for direct retail. Alternatively, if the edamame are being hand-harvested, unappealing pods can be discarded during the picking process. Generally, pods should have at least two seeds in them, and preferably three.

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Farmer's Corner: Jerry & Alan Weber, Nelson, MO

One of Missouri's father-son teams that grow specialty crops is Jerry and Alan Weber. Jerry is a retired vo-tech teacher who farms in west central Missouri with his son Alan, who also owns a consulting firm (Alan also works part-time with the Jefferson Institute on marketing). The Webers farm 875 acres in Pettis and Saline counties. Like many farmers, the Webers grow conventional crops, however they are progressive in trying new ways to improve their soils and profits.

The Webers have grown oilseed sunflowers for birdseed, high oleic sunflowers, grain amaranth, and have tried plots of dry edible beans and pearl millet. They cite the need to spread labor and rotational benefits as the major reasons for growing specialty crops. For the first time last fall, the Webers put winter canola into the ground. Due to an opportunity in northeast Oklahoma, they thought that canola would be a good alternative to winter wheat from the profit perspective and would spread labor both during planting and harvest seasons.

Oilseed sunflowers have been a consistent performer in the Webers' rotation. Due to unsteady markets for some of the crops they have grown, the Webers have run into some obstacles with crops such as grain amaranth. They highly recommend having a contract for the alternative crops that may not have a consumer market. A contract allows some security for the seller.

If farmers have questions, Alan can be contacted at aweber@marciv.com.

Alan (on the left) has experience growing many alternative crops including amaranth.



Farmers' Market Edamames *(continued from page 1)*

Since edamame are relatively new to the U.S., there are no well-established prices. However, a producer selling them at a farmers' market should expect to ask a price per pound at least equal to green beans at the market, if not substantially higher. Since some consumers are unfamiliar with edamame, it's not a bad idea to give away samples, if the market regulations allow it. Most people like them, including kids, especially when they are hot. In fact, in Japan, edamames are a popular snack food at baseball games, bars, and other social settings.

A producer growing edamames for a farmers' market will find edamame soybeans a relatively easy crop to produce. Edamames compete better with weeds than many vegetables, and are easy to plant and establish. Labor for harvesting (hand-picking) is the main constraint. It would be best to plant edamames on several different dates to spread out the harvest and maximize the length of the sales season. Also, edamame must be moved to the market in fresh condition, either within 24 hours of harvest, or by being refrigerated right after harvest and sold within a few days. They are perishable, just like green beans, peas, or other green vegetables.

Commercial Edamames

At the Jefferson Institute we have made a number of contacts with potential commercial buyers of edamames, seeking to develop a commercial market for mechanized production in Missouri. At this point, we have not found a buyer willing to offer contracts in this region, but we continue to look for opportunities. An enterprising farmer with marketing skills could potentially crack into the edamame market, however. Many of the current edamames in the U.S. are imported, so there is a need for more domestic production.

There are technical and financial barriers to successfully producing edamames on a large scale. While planting edamames is like regular soybeans, harvesting is much different. Regular soybean combines will not work to harvest the whole pods. In Minnesota and a few other U.S. locations, green bean pickers have been modified for successful use in mechanical edamame harvest. The Minnesota growers are producing edamame for a company called Sunrich.

Harvesting is only the first hurdle. Immediately after mechanical harvesting, edamame pods must be moved into refrigerated storage. Large volumes of edamames packed together on a truck or wagon at summer temperatures will quickly deteriorate unless refrigerated or frozen. A large-scale commercial producer would need to arrange both refrigerated storage and refrigerated transportation. Underground storage at 50-55°F. might work for temporary storage (perhaps a day or two), but colder temperatures would be needed for longer-term storage.



Buying Edamame Seed

The good news is that a number of edamame varieties are available. The bad news is that they are expensive, and there are very few distributors of seed. For home use, a reasonable place to get seed is Johnny's Selected Seed (Maine; phone 800-854-2580), which sells two varieties that can be used in edamame fashion (Envy and Butterbean). Costs are \$3.00 for a garden seed packet, or \$365 for a 50-pound bag. Market growers of edamame might want to consider one of the GardenSoy varieties developed by a retired University of Illinois plant breeder. These are available from a company called Rupp (Ohio; phone 800-700-1199). A 50-pound bag of one of their GardenSoy lines costs \$200, while a quantity of 4 ounces costs \$3. For a free list of additional edamame seed sources, call the Jefferson Institute at 573-449-3518.

Edamames in the U.S.

Edamame soybeans have a bright future in the U.S. They are easy to prepare, fun and tasty to eat, and very nutritious. Soy foods of all types have been getting considerable positive press in the media in recent months. I'll leave you with a tip: if you don't have access to some edamame soybeans to eat, you can cook and eat regular field soybeans the same way. Pick when the pods are green and plump; the seeds are smaller than "true" edamame seeds, but some field soybeans taste comparable to the better edamame varieties!

Will Specialty Crops Play a Role in the Trans Fat Issue?

By Alan Weber, Marketing Specialist

It's difficult to read a newspaper or magazine without seeing an article that highlights the concern with trans fatty acids in the products we eat. As a refresher, most vegetable oils go through a process called hydrogenation, which is when hydrogen is added under high pressure to make it more solid. This process raises the melting point of the oil and makes it more stable for frying and commercial food preparation. However, it also increases saturated fat levels and creates trans fatty acids (trans fats). Trans fats are suspected to enhance plasma cholesterol risk factors for heart diseases and therefore it is desirable to reduce their content in cooking oil.

Discussion and debate has risen to the point that the Food and Drug Administration (FDA) issued an advanced notice of proposed rulemaking on July 11, 2003 to, among other things, solicit information and data that potentially could be used to establish new nutrient content claims about trans fatty acids (trans fat). The issue intensified more in December 2003 when the Institute of Medicine of the National Academy of Science issued a report entitled "Dietary Reference Intakes: Guiding Principles for Nutrition Labeling and Fortification" and suggested an approach to estimate minimum trans fat intakes within a nutritionally adequate diet and use this value to establish a daily value for trans fat. FDA is still taking comments to help draft a proposed rule.

Some companies are pursuing new technology to reduce trans fats. It was reported in March 2003 that researchers are working on a process that involves hydrogenation of soybean and canola oil at low temperatures and atmospheric pressure that results in very significant reductions in trans fatty acids. Specialty crops, however, can also play a key role.

Amidst concerns of saturated fats and trans fats in the edible oils market, the search for more healthy vegetable oils is renewing interest in oilseeds with increased oleic content. Increased levels of oleic acid can reduce or eliminate the need for hydrogenation. Commercially available high oleic acid oils such as safflower, high oleic sunflower, high oleic canola, and olive oil as well as mid-oleic oilseeds such as NuSun sunflowers are experiencing strong demand.

As an example, in May 2003 Cargill announced it had patented non-hydrogenated canola oil for food applications. The canola oil has an oleic acid content of 74% to 80% and has superior oxidative stability and fry stability useful for food applications. Companies such as Cargill are scaling up both its research and production of high oleic canola to match rising demand following the FDA announcement of planned trans fat labeling. Missouri producers have successfully grown both sunflowers and canola.

Jefferson Institute Staff Update

We would like to welcome and introduce you to our summer intern, Lisa Rees! Lisa is a sophomore studying agricultural economics at the University of Missouri. She has spent the last semester in Costa Rica learning about tropical crop and animal agriculture production. Lisa grew up on a row crop and cattle farm in Jasper. Lisa will be helping with our marketing and outreach programs.

Cortney Malter, who has been the communications specialist, is heading east. She will be moving to North Carolina with her husband after he graduates from veterinary school in May.

Century Farms

published in the Rural Missouri paper

The Missouri Century Farm program first recognized the 100-year-old family farms in 1976. All told, more than 6,000 farms have earned the right to display the Century Farm sign at the end of the drive.

To qualify this year, direct descendants of the same family must have owned the farm for 100 years as of December 31, 2004. Qualifying farms must include at least 40 acres of the original land and contribute to the overall farm income.

Information about the program is available online at <http://outreach.Missouri.edu/centuryfarm> or by calling 1-800-292-0969.

Application forms are available through Extension Publications, 2800 Maguire Blvd., Columbia, MO 65211 and from local Extension offices. A \$25 fee is required and applications must be postmarked by June 15, 2004.



June 23-25, 2004 – Agroforestry Motorcoach Tour Hosted by the University of Missouri Center for Agroforestry

This tour of on-farm demonstrations in Missouri and Iowa showcases the five agroforestry practices. The tour will depart from and return to Columbia, MO. Registration includes chartered bus, meals and lodging. Tour stops include Iowa State University windbreak practice demonstration area; the Bear Creek riparian buffer demonstration area; Ben's Black Walnut Orchards and processing facility; pecan alley cropping and buffalo herd tours at Shepherd Farms of Centerville, Iowa; and alley cropping demonstrations at Deer Ridge and Henry Sever Conservation areas. Visit www.centerforagroforestry.org and select Upcoming Events to register; or contact Julie Rhoads, UMCA events coordinator, at (573) 882-3234. Registration deadline is June 1.

Tour web page with a link to complete itinerary is <http://agebb.missouri.edu/umca/events/mototour.asp>.



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The Thomas Jefferson Agricultural Institute is a 501(c)3 non-profit education and research center based in Columbia, MO. For more information, contact us at (573) 449-3518 or by email at: info@jeffersoninstitute.org.



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**Special Edamame Soybean
Article Inside!**