Edamame in the Home Garden

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Edamame (Glycine max (L.)), are vegetable soybeans consumed at the green stage. In 2013 it was estimated that the United States consumed between 25,000-30,000 tons of edamame. Demand is expected to increase as consumers look for healthier, lower cost sources of protein to add to their diet. Isoflavones contained in edamame have been implicated in the reduction of cancer and cardiovascular disease. The increasing popularity of edamame as a healthy snack food has led to increased interest in edamame production from home gardeners across the southeast. The recommendations and information herein were based on field research conducted in central Alabama.

Edamame, pronounced (ay-dah-MAH-may) is the Japanese word for vegetable soybean. Edamame is traditionally boiled in salted water for 7-10 minutes and served in the pod. Only the seed itself is eaten, which is typically ‘popped’ from the pod directly into one’s mouth as a snack food similar to boiled peanuts in Alabama. Edamame is also served shelled in a number of Asian stir-fry dishes. Although edamame soybeans are the same genus and species as grain type soybean (Glycine max (L.)), they are typically larger in size and have a more appealing, sweet flavor. In recent years, there has been an increased demand and broader acceptance of edamame in the United States. This increased demand is expected to continue as consumers look for healthier, lower cost sources of protein to add to their diet.

Edamame plants nearing harvest.
Table 1. Varieties recommended for use in home gardens.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Maturity Group</th>
<th>Description of Variety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madori Giant</td>
<td>III-Early IV</td>
<td>Large beans, high yielding</td>
</tr>
<tr>
<td>Sayamusume</td>
<td>III</td>
<td>Very large bean, early, medium yield</td>
</tr>
<tr>
<td>Gardensoy 51</td>
<td>IV</td>
<td>Later maturing, high yield, smaller bean</td>
</tr>
<tr>
<td>Mooncake</td>
<td>IV</td>
<td>Later maturing, high yield, very tall plant</td>
</tr>
<tr>
<td>Chiba Green</td>
<td>III-Early IV</td>
<td>Large bean, good yield</td>
</tr>
<tr>
<td>Owens</td>
<td>VI</td>
<td>Late maturing, high yield, smaller bean</td>
</tr>
</tbody>
</table>

**Varieties**

Edamame, like commodity type soybeans are sensitive to day length. This means that edamame plants will only flower and produce beans when day lengths reach a critical length. Edamame varieties are separated into maturity groups based on this. For most areas of Alabama, maturity groups V–VII are most common. When planted in spring these varieties will mature in early fall. Because many of the available edamame varieties were developed in Asia, they are placed in the earlier maturing group: II – IV. Although these earlier maturing types generally produce lower yields in Alabama, the larger size of their beans and superior taste offset the lower yield for many growers. The varieties listed have produced well in Alabama and are readily available (Table 1).

**Planting**

Edamame should be planted after the danger of frost has passed and the soil temperature is at least 65°F. Like all soybeans, edamame prefers full sun, well drained soils, and adequate nutrients. A soil test should be done prior to seeding to determine if lime should be added and that other nutrients are present in sufficient

*Sow at 70-100 seed per 20 ft. row, 3 ft. between rows.*
quantities. Nitrogen applications are generally not recommended when growing a legume crop such as soybean. Legume plants are capable of fixing nitrogen from the atmosphere as the result of a symbiotic relationship with specific soil bacteria. At this time we do not see a need for N-fixing rhizobia inoculum, unless the edamame are being planted in an area with no history of a previous legume crop.

Seeding rates for edamame are much lower than that of grain type soybean. Planting rates of 50,000-70,000 seed per acre have shown optimal results. That is approximately 70 -100 seed per 20 ft. row on a 3 ft. row spacing. Germination can be low with some edamame varieties. This information can typically be found from the seed supplier, or can be found on the seed package itself. When germination percentages are below 85% we recommend the higher seeding rate to ensure a good stand. Seed should be planted no more than 1 ½” deep, any deeper will likely result in reduced emergence.

**Irrigation**

Irrigation should be applied at a rate of 1-1 ¼” weekly throughout the growing season. Supplying adequate soil moisture at germination and as seed pods mature is critical to establishment of an acceptable stand as well as high quality beans. The need for irrigation however, will vary based on weather conditions, temperature, and humidity. As important as proper irrigation is to producing a crop, excessive irrigation can damage edamame plants. Excessive water will favor disease and reduce the plants ability to take up nutrients.

**Weed Management**

Gardeners have several options when it comes to weed management. Mechanical cultivation such as hoeing can be performed when edamame plants are small and the weeds have not yet matured. In a garden setting, weeds can be managed by applying a thick layer of
mulch to the base of each plant. Hand weeding can also be effective on a small scale. Often the thick canopy formed by the edamame plant will suppress weed development.

**Insect Management**

Edamame are an attractive host to a number of insect pests. This list includes several foliage and stem feeding caterpillars along with a number of beetle species. A few of the more serious pests are soybean loopers, fall army worms, and kudzu bugs. Soybean loopers and fall army worms are two caterpillar pests that can cause serious defoliation to edamame plants. Foliar feeding insects such as caterpillars are generally easy to detect as a result of the damage they cause. Beetles, on the other hand, may hide underneath leaves and stems to avoid detection. Kudzu bugs are a new pest to Alabama and in sufficient numbers can cause significant damage to edamame crops. Kudzu bugs cause damage by inserting their piercing mouth parts into the plant and extracting nutrients. Although edamame has a number of pests, control can often be achieved through hand picking and the use of labeled insecticides available at home improvement stores.

**Disease Management**

Bacterial pustule (*Xanthomonas axonopodis*) can be a problem in Asian edamame varieties. Most commodity type soy bean varieties are genetically resistant to this disease and therefore it is not an issue. Other than avoiding excessive moisture throughout the season little can be done to prevent or treat bacterial pustule. Although the disease symptoms may be present, yield reductions may not be significant.
Root-knot and cyst nematodes cause severe reduction in edamame yield when present. Few options are available for nematode control in the home garden. Long rotations away from the affected area to reduce nematode population may be the most effective solution.

**Harvest**

Edamame is harvested green just after pods are filled. This is referred to as the R 6 stage of development. Hand harvesting edamame is an option when done on a small scale for home gardens and farmers markets. The process itself is simple, yet time consuming. Edamame is harvested much like green beans. One notable difference between edamame and green beans is that all the pods on edamame plant will mature at the same time. This makes harvesting a once-over operation. In our research, harvesting a 20 ft. row took 5 people 45 minutes and yielded around 18 lbs. of green pods. Cutting the edamame at ground level and tying the plants into small bundles is common in Asia and could be an option for market growers.  

**Storage**

It is important to allow the edamame pods to cool soon after harvesting. Harvesting in the early morning hours can help with this process. Fresh, unshelled edamame can be stored in a refrigerator for up to a week without any reduction in taste or quality. For longer storage edamame can be frozen. To retain freshness in frozen edamame a few steps need to be taken. First, bring a large pot of water to a rolling boil. Add the
edamame to the boiling water and allow it to remain for three minutes. It is not necessary for the water to return to a boil to start timing. The three minutes begins as soon as they enter the water. Remove the edamame and place in an ice bath to stop the cooking process.

Once cooled, the edamame can be placed on a towel to allow it to dry. This step is not required but it will prevent the pods from sticking together. At this point the edamame can be placed in a zip top freezer bag and frozen for up to a year.

**Cooking**

Edamame is most commonly served boiled in the pod. Preparation of edamame is both quick and easy. Bring a pot of well salted water to a rolling boil. The amount of salt needed will depend on the volume of water used as well as taste preference. Next add your edamame to the pot. Allow the edamame to boil for approximately 7-10 minutes. This time is roughly the same for both fresh picked and frozen pods. Remove from water, drain and serve.

**Summary**

Edamame is a nutritious and delicious snack that can be easily produced in most home gardens in Alabama. It is high in protein and fiber, and has been shown to reduce cholesterol, heart disease and some types of cancer.

Next spring consider giving edamame a place in your garden. You won’t be sorry!