Edamame

Edamame (*Glycine max*) is a specialty soybean (immature soybean pod), also known as vegetable soybean, edible soybean, or sweet bean. Although edamame is the same species as the grain (oilseed) soybean, edamame seeds are traditionally larger and sweater.

Recommended Varieties

Variety	Estimated Days to Maturity
Besweet 292	87
Chiba Green	82
Gardensoy 31	90's
Gardensoy 41	80's
Midori Giant	75
Tohya	78
VT Sweet	129

Recommended Nutrients Based on Soil Tests

In addition to using the table below, check the suggestions on rate, timing, and placement of nutrients in your soil test report and Chapter B Soil and Nutrient Management. Your state's soil test report recommendations and/or your farm's nutrient management plan supersede the recommendations found below.

Edamame		Soil Phosphorus Level				Soil Potassium Level				
		Low	Med	High (Opt)	Very High	Low	Med	High (Opt)	Very High	
	N (lb/A)	P_2O_5 (lb/A)				K_2O (lb/A)				Nutrient Timing and Method
	25	120	80	40	0	120	80	40	0	Preplant incorporated
	25									Sidedressed

Pod characteristics

The majority of commercial edamame cultivars are classified as "short day" in reference to the daily amount of light necessary for their flowering. Pod and seed color, size, pubescence, and number of beans per pod will vary according to the selected cultivars.

Site Selection, Optimum Soil pH

Deep or moderately deep, well drained, and fertile soils are recommended for edamame production. The optimum soil pH for edamame is between 6.0 and 6.5. Avoid fields with a history of heavy disease pressure for legume crops. Plant pathogenic nematodes and soil-borne diseases can negatively affect edamame plant performance. Avoid fields with a history of soil-borne pathogens and high population of cyst nematodes.

Seed treatment

Before edamame planting, it is recommended to inoculate the seeds with a nitrogen fixing bacterium (*Rhizobium* strain for soybean). If edamame is planted in a field with a history of soybean production, seed inoculation may not be necessary. If edamame is planted in a field without a soybean history, monitor for N deficiencies and apply additional fertilizer as necessary.

Plant Bed Preparation and planting density

Plow and harrow the soil prior to planting to ensure a smooth, leveled soil bed. Plant population can vary between 52,000 and 70,000 plants per acre. There are 1,200 to 1,600 seeds in a pound of edamame seeds. Place rows 30 to 36 inches apart from center to center and plant the seeds 2 to 4 inches apart within the row, no deeper than 0.5 inches. This is equivalent to a seedling rate of 40 to 60 lb/A.

Conservation Tillage

An alternative production system for soybeans consists of crop establishment with minimal disturbance of the soil and therefore, minimal soil erosion. This system is commonly known as conservation tillage. Although conservation tillage has been evaluated in soybean production, it still needs further evaluation for edamame varieties on the east coast of the U.S. and is not recommended.

Irrigation

Edamame is a relatively drought-tolerant plant, which tends to respond well to irrigation, especially during pod fill. Irrigation regimens should be determined by the location's potential evapotranspiration, adjusted to the specific crop coefficient for each growing stage. More research is required to determine edamame irrigation requirements for the east coast of the U.S. Irrigation intervals in a frequency higher than every 3 to 5 days can increase the risk of plant disease. For more information about edamame irrigation management visit: *https://pubs.extension.wsu.edu/edamame*.

Harvesting

Harvest edamame when the pods are plump, and the beans start to touch within the pod. Whole pods are harvested when bright green, if the pods start to turn yellow, they will be considered unmarketable. Edamame can be harvested either by hand or mechanically. Post-harvest cooling is essential to maintain product quality. The window for harvesting can be as short as 3–4 days, so frequent monitoring is paramount as plants approach maturity. Cooling may be accomplished using forced air, vacuum or hydrocooling. Edamame will retain flavor and appearance for approximately one week after harvest when properly stored.

Weed Control

THE LABEL IS THE LAW-see the Pesticide Use Disclaimer on the first page of Chapter F.

Recommended Herbicides

1. Identify the weeds in each field and select recommended herbicides. More information is available in the "Herbicide Effectiveness on Common Weeds in Vegetables" (Table E-3) in Chapter E Pest Management.

2. Minimize herbicide resistance development. Identify the herbicide mode of action group number and follow recommended good management practices; **bolded group numbers in tables below are herbicides at higher risk for selecting resistant weed populations.** Include non-chemical weed control whenever possible.

Labeled Herbicides for Edamame.
Be sure to read labels before purchase to be sure the label specifies either **edamame, vegetable soybeans,** or **immature soybeans. Be sure to check use rates.**

1. Soil-Applied (Preplant Incorporated or Preemergence)

Group	Product Name (*=Restricted Use)	Product Rate	Active Ingredient	Active Ingredient Rate	PHI (d)	REI (h)
2	Pursuit 2L	4 fl oz/A	**imazethapyr**	0.062 lb/A	30	4
-Apply as preplant or preemergence to the soil surface. Primarily controls broadleaf weeds. Combine with another herbicide to control annual grasses. -Pursuit residues persist in the soil after harvest and may affect following crops. Follow label instructions. -Pursuit is an ALS inhibitor, Group 2 herbicide, and there is widespread resistance in the region to this family of herbicides. -Maximum number of applications per year: 1.						
3	Satellite 3.3 Satellite HydroCap 3.8ME	1.5 to 3.6 pt/A 1.5 to 3.0 pt/A	**pendimethalin**	0.62 to 1.5 lb/A	85	24
-Refer to label for rates. Rates vary by application method, soil type, and organic matter content. -Labeled only for preplant incorporated or surface applied application; apply before planting and incorporate thoroughly within the top 2-3 inches of soil. -The lower rates are recommended for early planted fields or coarse-textured soils. -Primarily controls annual grasses and certain broadleaf weeds. -**Do not** use when soils are cold and/or wet soil conditions are anticipated during emergence, or crop injury may result. -**Do not** apply more than once per cropping season.						
5	Lorox 50DF	1.0 to 2.0 lb/A	**linuron**	0.5 to 1.0 lb/A	--	24
-Primarily controls broadleaf weeds and is weak on grasses. Tank mix with Dual Magnum for preemergence annual grass control. -Use lower rates on coarse-textured soil low in organic matter and higher rates on medium- or fine-textured soils with greater organic matter. Lorox has some postemergence activity. -Soybeans planted too shallow have increased risk of injury. -Maximum for Lorox: 2 lb/A per application.						
13	Command 3ME	21.3 fl oz/A	**clomazone**	0.5 lb/A	14	12
-Apply to control annual grasses and many broadleaf weeds including common lambsquarters, velvetleaf, spurred anoda, and jimsonweed. Command will **not** control yellow nutsedge, mustards, morningglory species, or pigweed species. -Use the lower rate on coarse-textured soils low in organic matter and higher rates on fine-textured soils and on soils with high organic matter. Some temporary crop injury (partial whitening of leaf or stem tissue) may be apparent after crop emergence; beans recover from minor early injury without affecting yield or earliness.						

1. Soil-Applied (Preplant Incorporated or Preemergence) - Command 3ME - continued next page

***1. Soil-Applied (Preplant Incorporated or Preemergence) - Command 3ME** - continued*

-**WARNINGS**: Command spray *or* vapor drift may injure sensitive crops and other vegetation up to several hundred yards from the point of application. **Do not** apply adjacent to sensitive crops (see label) or vegetation, or under unfavorable wind or weather conditions. Command may limit subsequent cropping options, see the label. -Maximum number of applications per season: 1.						
14	Reflex 2SL	1 to 1.5 pt/A	**fomesafen**	0.25 to 0.375 lb/A	--	24
-Controls several common broadleaf weeds. Tank mix for control of annual grasses. -Maximum of 1.25-1.5 pt/A may be applied either preemergence or postemergence in one year. Maximum rates vary by state (see Regional Use Map on herbicide label for details). -**Do not** apply more than once in a 2-year period (alternate year applications). Rotational restrictions for most vegetables is 18 months.						
14	Spartan 4F	2.25 to 6 fl oz/A	**sulfentrazone**	0.07 to 0.188 lb/A	--	12
-Labeled for preemergence application only; apply within 3 days of planting. -Injury is more likely on coarse-textured soils with less than 1.5% organic matter or when soil pH is 7.6 or higher. -Do not use on soils classified as sand with less than 1% organic matter -Risk of injury on coarse-textured soils can be reduced if there is a minimum of 7 days between application and planting. -Do not apply more than 6 fl oz/A per 12-month period or more than 6 fl oz in a single application.						

2. Postemergence

Group	Product Name (*=Restricted Use)	Product Rate	Active Ingredient	Active Ingredient Rate	PHI (d)	REI (h)
1	Select Max 0.97EC	9 to 16 fl oz/A	**clethodim**	0.07 to 0.125 lb/A	21	12
-**Select Max 0.97EC**: use nonionic surfactant (NIS) at 0.25% v/v (1 qt/100 gal spray solution). -Use lower labeled rates for annual grass control and higher labeled rates for perennial grass control. -Addition of nitrogen is not recommended. -Yellow nutsedge, wild onion, wild garlic, and broadleaf weeds will **not** be controlled. -For best results, treat annual grasses when they are actively growing and before tillers are present. Control may be reduced if grasses are large or under hot or dry weather conditions. -Repeated applications may be necessary to control certain perennial grasses. If repeat applications are necessary, allow 14 days between applications. -**Do not** tank mix with or apply within 2 to 3 days of any other pesticide, unless labeled, as this may increase the risk of crop injury or reduce the control of grasses. -**Do not** apply more than 16 fl oz/A of Select Max in a single application and **do not** apply more than 1 application per season. -Rainfastness is 1 h						
2	Raptor 1L Beyond Xtra 1L	4 fl oz/A	**imazamox**	0.031 lb/A	--	4
-Apply to control annual broadleaf weeds when the crop has 1-2 fully expanded trifoliate leaves but before bloom stage of bean growth -Add nonionic surfactant to be 0.25% of the spray solution (1 qt/100 gal of spray). **-Strictly observe all plant back restrictions.** -Raptor/Beyond Xtra are ALS inhibitors, Group 2 herbicides, and there is widespread resistance in the region to this family of herbicides. -Rainfastness is 1 h. **Do not** apply more than 4 fl oz/A per year and more than one application per growing season.						
2	Pursuit 2L	4 fl oz/A	**imazethapyr**	0.062 lb/A	--	4
-Add nonionic surfactant to be 0.25% of the spray solution (1 qt/100 gal of spray). -Pursuit residues persist in the soil after harvest and may affect following crops. Follow label instructions. -Pursit is moste effective on weeds less than 3-inches tall. -Pursuit is an ALS inhibitor, Group 2 herbicide, and there is widespread resistance in the region to this family of herbicides. -Rainfastness is 1 h.						
6	Basagran 4L Basagran 5L	1 to 2 pt/A 0.8 to 1.6 pt/A	**bentazon**	0.5 to 1 lb/A	--	48
-Apply when beans have fully expanded first trifoliate leaves. Use lower rate to control common cocklebur, mustards, and jimsonweed and the higher rate to control yellow nutsedge, common lambsquarters, common ragweed, and Canada thistle (2 applications may be needed to control nutsedge and thistle). Basagran will not control pigweed species. -Do not cultivate within 5 days before applying Basagran or within 7 days after application. -Temporary injury may be observed but edamame recover quickly. -The use of oil concentrate may increase the risk and severity of crop injury. To reduce the risk of crop injury, omit additives or switch to a nonionic surfactant when weeds are small and soil moisture is adequate. **Do not** spray when temperatures are over 90°F (32°C). -Rainfastness is 4 h.						
14	Reflex 2SL	Rates vary, refer to the specific label	**fomesafen**	0.125 to 0.375 lb/A	30	24
-Apply when beans have 1-2 fully expanded trifoliate leaves. -Use the lower recommended rate when weeds are small or when there is good soil moisture, high humidity, and warm cloudy weather causing "soft" growing conditions. Add nonionic surfactant at 0.25% of the spray solution (1 qt/100 gal of spray). -Tank mix with bentazon to improve the control of common lambsquarters, smartweed, velvetleaf, cocklebur, galinsoga, and yellow nutsedge. -Reflex provides both residual and postemergence control of susceptible weed species. -Be sure to consider rotational crops when deciding to apply fomesafen. Rainfastness is 1 h. -Maximum Reflex application: 1.25 to 1.5 pt/A IN ALTERNATE YEARS.						

Insect Control

THE LABEL IS THE LAW-see the Pesticide Use Disclaimer on the first page of Chapter F.

Recommended Insecticides

Note: For **premixes**, the group number (representing the mode of action) and active ingredient that contributes the most to control is generally listed first. In some cases, only one ingredient in a premix provides control.

Soil Pests

Seed Maggots

Seed maggots are mostly a problem in soils high in organic matter, under moist conditions, when cool springs delay seed germination, and when soil is tilled or organic matter is incorporated. For the best control, plant seeds commercially treated with thiamethoxam (Cruiser 5FS or Cruiser Max), or another comparable neonicotinoid seed treatment. Additionally, certain bifenthrin containing products also have seed maggots on the label.

Above-ground Pests

Bean Leaf Beetles (BLB), Mexican Bean Beetles (MBB), Japanese beetles (JB)

Several beetle species feed on the leaves and pods of beans including BLB (which are similar in size to spotted cucumber beetles), Mexican bean beetle adults (copper-colored ladybeetles with black spots) and larvae (yellow with spines), and JB adults. Early control measures are recommended to reduce yield loss from defoliation and to suppress pest population levels later in the season when pods are forming. Begin spraying at 20% defoliation or 2 to 3 beetles per plant.

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
1B	Dimethoate 400EC	0.5 to 1.0 pt/A	dimethoate	0[1]	48	H
3A	Pyrethroid insecticides registered for use on Edamame: see table at the end of Insect Control.					
4A	Neonicotinoid insecticides registered for use on Edamame: see table at the end of Insect Control.					

[1]Mechanical Harvest only.

Cutworms

See also section E 3.1. Soil Pests - Detection and Control.

Cutworms are a pest of seedling beans, where a single larva can mow down multiple plants. Cutworms hide during the day, but the presence of severed seedlings on the ground usually suggests their presence.

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
1B	Diazinon AG500*[1]	2.0 to 4.0 qt/A	diazinon	45	72	H
3A	Pyrethroid insecticides registered for use on Edamame: see table at the end of Insect Control.					
28	Coragen 1.67SC Coragen eVo	3.5 to 7.5 fl oz/A 1.2 to 2.5 fl oz/A	chlorantraniliprole	1	4	L

[1]Broadcast just before planting and immediately incorporate into the soil.

Mites

Check weekly for mites especially during June and July in a hot, dry season. Concentrate on the field borders and look for the early signs of white stippling at the bases of the leaves. If feeding injury is evident, press the undersides of a few damaged leaves on white paper to reveal any crushed mites. Spot-treat areas along edges of fields when white stippling along veins on the underside of leaves is first noticed. Treatment of the entire field is suggested if live mites are numerous (20 to 30 per leaflet) and more than 50 percent of the plants show stippling, yellowing, or defoliation. Broadspectrum insecticides (Group 1B, 3) may provide initial knockdown, but numbers quickly recover and continued use may result in outbreaks.

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
1B	Dimethoate 400EC	0.5 to 1.0 pt/A	dimethoate	0[1]	48	H
6	Agri-Mek SC*[2]	1.7 to 3.5 fl oz/A	abamectin	7	12	H
20B	Kanemite 15SC	31.0 fl oz/A	acequinocyl	7	12	L
20D	Acramite 50WS	0.75 to 1.0 lb/A	bifenazate	3	12	M
20D	Acramite 4SC	16.0 to 24.0 fl oz/A	bifenazate	3	12	M
21A	Magister SC	32.0 to 36.0 fl oz/A	fenazaquin	7	12	H
21A	Portal	2.0 pt/A	fenpyroximate	1	12	L
N/A	Sulfur 80WG (OMRI)	3 to 10 lb/A	sulfur	0	24	M

[1]Mechanical Harvest only.

[2]Use of a non-sticker adjuvant is required.

Potato Leafhoppers (PLH)

PLH can cause hopperburn on leaves, which can reduce photosynthesis and yield. Seeds treated commercially with thiamethoxam (Cruiser 5FS) are protected from PLH for about 3 weeks post-planting. Treat if the number of adults plus nymphs exceeds 100 per 20 sweeps.

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
1A	Lannate LV*	0.75 to 3.0 pt/A	methomyl	see label	48	H
1B	Dimethoate 400EC	0.5 to 1.0 pt/A	dimethoate	0[1]	48	H
3A	Pyrethroid insecticides registered for use on Edamame: see table at the end of Insect Control.					
4A	Neonicotinoid insecticides registered for use on Edamame: see table at the end of Insect Control.					
4D	Sivanto Prime	7.0 to 14.0 fl oz/A	flupyradifurone	7	4	M

[1]Mechanical Harvest only. [Insecticides with Suppression Only on the label: Exirel]

Soybean Aphids

In our region, soybean aphids are a sporadic pest that typically occurs late in the season. The economic threshold is 250 aphids per plant through the R5 growth stage (pods), with an increasing population 5-7 days later. After R5, plants can tolerate >1,000 aphids with no threat to yield.

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
1A	Lannate LV*	1.5 to 3.0 pt/A	methomyl	see label	48	H
1B	Dimethoate 400EC	0.5 to 1.0 pt/A	dimethoate	0[1]	48	H
4A	Neonicotinoid insecticides registered for use on Edamame: see table at the end of Insect Control.					
4C	Transform WG	0.75 to 1.0 oz/A	sulfoxaflor	7	24	H
4D	Sivanto Prime	7.0 to 14.0 fl oz/A	flupyradifurone	7	4	M
23	Boxadon 360	2.1 to 3.4 fl oz/A	spirotetramat	1	24	L
23	Movento	4.0 to 5.0 fl oz/A	spirotetramat	1	24	L
23 + 7C	Senstar	8.0 to 10.0 fl oz/A	spirotetramat + pyriproxyfen	7	24	L
29	Beleaf 50SG	2.8 oz/A	flonicamid	7	12	L

[1]Mechanical Harvest only.

Stink Bugs

Sweep netting can also be useful to detect stink bugs. Treatment is recommended if adults and nymphs exceed 7 per 50 sweeps during pod development. **Note:** Brown and brown marmorated stink bugs are less susceptible to pyrethroids than green and southern green stink bugs. Careful pyrethroid selection is advised, consult your local Cooperative Extension Service for recommendations for your area.

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
3A	Pyrethroid insecticides registered for use on Edamame: see table at the end of Insect Control.					

Whiteflies

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
4A	Neonicotinoid insecticides registered for use on Edamame: see table at the end of Insect Control.					
4D	Sivanto Prime	10.5 to 14.0 fl oz/A	flupyradifurone	7	4	M
7C + 23	Senstar	8.0 to 10.0 fl oz/A	pyriproxyfen + spirotetramat	7	24	L
21D	Portal	2.0 pt/A	fenpyroximate	1	12	L
23	Boxadon 360	2.1 to 3.4 fl oz/A	spirotetramat	1	24	L
23	Movento	4.0 to 5.0 fl oz/A	spirotetramat	1	24	L
28	Exirel	13.0 to 20.5 fl oz/A	cyantraniliprole - **foliar**	1	12	H
28	Verimark	6.75 to 13.5 fl oz	cyantraniliprole - **soil**	n/a	4	H

"Worm" Pests, Including: Corn Earworms (CEW), Beet Armyworms (BAW), European Corn Borers (ECB), Yellow-Striped Armyworms, and Loopers

Several species of lepidopteran "worm" pests attack beans. The larvae feed on leaves and many also attack pods. An action threshold of about 20% defoliation is often used pre-pod. Once bean pods form, control measures are often needed weekly to protect the crop from direct damage or infestation of the pods. It is usually recommended to include an insecticide that also kills stink bugs. **Note that CEW, BAW, and soybean looper populations have developed resistance to pyrethroids (Group 3A). BAW and soybean looper might not be adequately controlled with diamides (Group 28). These insecticides should be used with caution and rotated with other insecticide classes within a season. Efficacy of many products can be inconsistent with Soybean Looper. Consult your County Extension Service for local recommendations.**

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
1A	Lannate LV*	1.5 to 3 pt/A	methomyl	see label	48	H
3A[1]	Pyrethroid insecticides registered for use on Edamame: see table at the end of Insect Control.					
5	Blackhawk 36WG	2.2 to 3.3 oz/A	spinosad	3	4	M
5	Entrust SC (OMRI)	4.0 to 6.0 fl oz/A	spinosad	3	4	H
5	Radiant SC	4.0 to 8.0 fl oz/A	spinetoram - **except yellow striped AW**	3	4	H
11A	DiPel DF, others (OMRI) DiPel ES (not OMRI)	0.5 to 2.0 lb/A 1.0 to 2.0 pt/A	*Bacillus thuringiensis kurstaki*	0	4	N
11A	XenTari, others (OMRI)	0.5 to 1.5 lb/A	*Bacillus thuringiensis aizawai*	0	4	N
18	Intrepid 2F	4.0 to16.0 fl oz/A; 10.0 to 16.0 fl oz/A (CEW)	methoxyfenozide	7	4	L
22	Avaunt Evo	3.5 to 6.0 oz/A	indoxacarb - **CEW, ECB only**	3	12	H
28[2]	Coragen 1.67SC Coragen eVo, Vantacor	3.5 to 7.5 fl oz/A 1.2 to 2.5 fl oz/A	chlorantraniliprole	1	4	L
28[2]	Exirel	10.0 to 20.5 fl oz/A	cyantraniliprole - **foliar, CEW, ECB only**	1	12	H

[1]Resistance concerns with CEW, BAW, and soybean looper.
[2]Resistance concerns with BAW and soybean looper.

Group 3A Pyrethroid Insecticides Registered for Use on Edamame

Apply one of the following formulations (check if the product label lists the insect you intend to spray; the label is the law):
Note: Group 3A insecticides are <u>not</u> recommended for CEW, BAW or soybean looper due to resistance issues.

Product Name (*=Restricted Use)	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
Brigade 2EC*, Brigade eVo	1.6 to 6.4 fl oz/A	bifenthrin	3	12	H
Hero*	4.0 to 10.3 fl oz/A	zeta-cypermethrin + bifenthrin	3	12	H
Lambda-Cy 1EC*, others	1.92 to 3.84 fl oz/A[1]	lambda-cyhalothrin	7	24	H
Mustang Maxx*	1.28 to 4.0 fl oz/A[1]	zeta-cypermethrin	1	12	H
Warrior II*	0.96 to 1.92 fl oz/A[1]	lambda-cyhalothrin	7	24	H
Combo products containing a pyrethroid					
Besiege*	5.0 to 8.0 fl oz/A[1]	lambda-cyhalothrin + chlorantraniliprole (Group 28)	7	12	H
Brigadier*	3.8 to 5.6 fl oz/A	bifenthrin + imidacloprid (Group 4A)	7	12	H
Elevest*	4.8 to 9.6 fl oz/A	bifenthrin + chlorantraniliprole (Group 28)	3	12	H
Ethos XB*	3.4 to 8.5 fl oz/A	bifenthrin + *Bacillus amyloliquefaciens* - **soil**	3	12	H
Ethos XB*	2.8 to 8.5 fl oz/A	bifenthrin + *Bacillus amyloliquefaciens* - **foliar**	3	12	H

Group 4A Neonicotinoid Insecticides Registered for Use on Edamame

Apply one of the following formulations (check if the product label lists the insect you intend to spray; the label is the law):

Product Name (*=Restricted Use)	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
Admire Pro	7.0 to 10.5 fl oz/A	imidacloprid - **soil**	21	12	H
Admire Pro	1.2 fl oz/A	imidacloprid - **foliar**	7	12	H
Assail 30SG	2.5 to 5.3 oz/A	acetamiprid	7	12	M
Assail 30SC	2.1 to 4.5 fl oz/A	acetamiprid	7	12	M
Combo products containing a neonicotinoid					
Brigadier*	3.8 to 5.6 fl oz/A	imidacloprid + bifenthrin (Group 3A)	7	12	H

Disease Control

THE LABEL IS THE LAW-see the Pesticide Use Disclaimer on the first page of Chapter F.

Recommended Fungicides

Nematodes

See sections E 1.5. Soil Fumigation and E 1.6. Nematode Control. Edamame is susceptible to soybean cyst and root-knot nematodes (among others) and crop rotation away from soybean, other legumes and root-knot susceptible crops is recommended.

Damping-off caused by *Phytophthora, Pythium and Rhizoctonia*

Few seed treatments are labeled for edamame currently and most seed are sold nontreated. Edamame seed germination is typically less than soybean seed. Avoid fields where damping-off has been an issue in the past. Avoid over irrigation, wet soils, or poorly drained fields. Crop rotation to non-leguminous crops may also reduce disease levels. In-furrow applications of Uniform 3.72SC (mefenoxam + azoxystrobin) at 0.34 fl oz/1,000 ft row can be used in conventional plantings. See label for application details.

Bacterial and Fungal Diseases

Bacterial Pustule/Blight

Bacterial pustule, caused by *Xanthomonas axonopodis*, has been observed on edamame across the region, however, other bacterial diseases are possible. The disease first appears in the tops of the canopy infecting leaflets during periods of heavy dew or rainfall. Severe infections can lead to damaging defoliation which can cause sunscald on pods. In addition, pod infections are possible deeming them nonmarketable. Cultivars vary widely in their susceptibility to the disease. Cultural practices that reduce canopy moisture (such as avoiding overhead or over irrigation, planting in areas that receive full sunshine, etc.) are recommended. Applications of fixed copper may offer some suppression of disease; however, plant coverage is essential (check individual label for application details).

Fungal Diseases (Anthracnose, Cercospora, Phomopsis/Diaporthe, Septoria)

Edamame is susceptible to several fungal diseases, similar to those seen in commercial soybean. If there is a history of soybean production on your farm, fungicide resistant isolates may be present, and it is advisable to use a tank mix of fungicides or a premix fungicide that possesses multiple modes of actions to ensure the best disease control. In general, applications should begin around flowering (R1 growth stage). Cultivar differences in susceptibility to diseases have been noted in preliminary research on edamame in the Mid-Atlantic region, however, these differences have not been fully documented. As with bacterial diseases, cultural practices that reduce canopy moisture are encouraged (listed in the above section).

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
Rotate one of the following FRAC code 7 fungicides:						
7	Endura 70WG	6 to 11 fl oz/A	boscalid	7	12	--
7	Fontelis 1.67SC	14 to 30 fl oz/A	penthiopyrad	0	12	L
With one of the following FRAC code 11 fungicides:						
11	Headline 2.09SC	6 to 9 fl oz/A	pyraclostrobin	7	12	N
11	Aproach 2.08SC	6 to 12 fl oz/A	picoxystrobin	0	12	N
11	azoxystrobin 2.08F	6 to 15.5 fl oz/A	azoxystrobin	0	4	N
3 + 7 + 11	Revytek 3.33SC	8 to 15 fl oz/A	mefentrifluconazole + fluxapyroxad + pyraclostrobin	21	12	N