RUTGERS
New Jersey Agricultural Experiment Station

This is a section from the

2022/2023
Mid-Atlantic Commercial Vegetable Production Recommendations

The recommendations are **NOT** for home gardener use.

The **full manual**, containing recommendations specific to New Jersey, can be found on the Rutgers NJAES website in the Publications section: *http://njaes.rutgers.edu/pubs/publication.asp?pid=E001*.

This manual will be revised biennially. **In January 2023, a Critical Update** with important updates to the 2022/2023 manual will be communicated through local Extension Agents and Vegetable Specialists.

The **label** is a legally-binding contract between the user and the manufacturer. The user must follow all rates and restrictions as per label directions. The use of any pesticide inconsistent with the label directions is a violation of federal law.

Cooperating Agencies: Rutgers, The State University of New Jersey, U.S. Department of Agriculture, and County Boards of Commissioners. Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity program provider and employer.

F. Commodity Recommendations

Pesticide Use Disclaimer

THE LABEL IS THE LAW

Before using a pesticide, check the labeling distributed with the product at the point of sale for legally enforceable rates and use restrictions and precautions. Although labels are available on the Internet from electronic label services such as CDMS (*http://www.cdms.net/*), Greenbook (*https://www.greenbook.net*), or Agrian (*https://www.agrian.com/labelcenter/results.cfm)* the information contained in these electronic labels may not be identical to the labeling distributed with the product. **Please be advised that these electronic label services provide use disclaimers, and in some cases legally binding *User Agreements* assigning all liability to user of service. (**See section D 3.1. Labels and Labeling for more detail.)

Guide to the Recommended Pesticide Tables in the Following Crop Sections:

1. Pesticides are listed by **group number or code based on chemical structure and mechanism of action**, as classified by the Herbicide Resistance Action Committee (**HRAC**, *https://hracglobal.com/*) for herbicides, the Insecticide Resistance Action Committee (**IRAC**, *https://irac-online.org/*) for insecticides, and the Fungicide Resistance Action Committee (**FRAC, *https***://www.frac.info/[β]) for fungicides.
   In this guide, if the group number or code is in bold font, there are resistance concerns for the product.

2. **Restricted use pesticides** are marked with a * in the Tables. These products may only be used by certified and/or licensed pesticide applicators, and when stated on the label, those making applications under their direct supervision. Some labels may restrict use solely to certified and/or licensed applicators. (See section D 3.2.1 Restricted Use Classification Statement for more detail).

3. **In addition to the pesticide products listed in the Commodity Recommendations below, other formulations or brands with the same active ingredient(s) may be commercially available. ALWAYS CHECK THE INDIVIDUAL PRODUCT LABELING:**
   a) to ensure a pesticide is labeled for the same intended use,
   b) to ensure the pesticide is labeled for the desired crop,
   c) for differences in application rates and % active ingredient(s), and
   d) additional restrictions.

4. All pesticide recommendations contained in this document are prescribed for spray applications to a **broadcast area of 1 acre** (43,560 square feet). **Adjust the rate accordingly for banded applications** (See section E 1.3. Calibrating Granular Applicators) **or for chemigation** (check labels for amounts per 1,000 feet).

5. Check the label for and do not exceed the maximum amount of pesticide per application and the maximum number of applications per year.

6. **Bee Toxicity Rating (Bee TR)**: N=nontoxic; L=minimum impact on bees; M=moderately toxic, can be used if dosage, timing, and method of application are correct, but should NOT be applied directly to the crop if bees are present; H=highly toxic, severe losses expected, -- = data not available.

7. In accordance with the USDA National Organic Program, the Organic Materials Research Institute (OMRI) maintains a directory of all products that OMRI has determined are allowed for use in organic production, processing, and handling. These products are catalogued online in the **OMRI Products List** (see *https://www.omri.org/omri-lists*).

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 (field or oilseed) soybean, edamame seeds are traditionally larger and sweater.

Recommended Varieties

Variety	Maturity group
Gardensoy 31	3
Gardensoy 41	4
Midori Giant	
Besweet 292	
VT Sweet (and other new Virginia bred varieties as released)	5

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 recommendations found below.

		Soil Phosphorus Level				Soil Potassium Level				
		Low	Med	High (Opt)	Very High	Low	Med	High (Opt)	Very High	
Edamame	**N (lb/A)**	**P_2O_5 (lb/A)**				**K_2O (lb/A)**				**Nutrient Timing and Method**
	0	100	60	20	0	120	100	80	40	Pre-plant incorporated
	25									At planting
	25									Sidedressed

Pod characteristics

The majority of the 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.

Maturity groups

Like soybeans, edamame is classified in maturity groups (MG). The selection of a maturity group will depend on the planting location. Recommended maturity groups for southern parts of the region are late MG4 and early MG5. For Delaware, early and mid-MG4 are recommended. MG3 varieties are recommended for more Northern parts of the region.

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. Alternatively, if seed inoculum is not available, farmers should complement with supplemental fertilizer to meet the crop nitrogen requirements.

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 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 the establishment of the crop 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.

Irrigation

Edamame is a relative drought-tolerant plant, which tends to respond well to irrigation. 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 using a snap bean harvester. 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.

Note: There is limited local research on crop safety with the herbicides listed below.			
Group	**Product Name (*=Restricted Use)**	**Active Ingredient**	**Application Timing**
3	Satellite 3.3	pendimethalin	PRE
3	Satellite HydroCap	pendimethalin	PRE
7	Lorox DF	linuron	PRE
13	Command 3ME	clomazone	PRE
14	Willowood SULFEN 4SC	sulfentrazone	PRE
14 + 14	Spartan Charge	carfentrazone + sulfentrazone	PRE
2	Pursuit	imazethapyr	PRE / POST
14	Reflex	fomesafen	PRE / POST
1	Select Max	clethodim	POST
2	Raptor	imazamox	POST
6	Basagran	bentazon	POST

Insect Control

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

Soil Pests

Seed Maggots

Seed maggots are mostly a problem in soils high in organic matter, under moist conditions, and when cool springs delay seed germination. For the best control, plant seeds commercially treated with thiamethoxam (Cruiser 5FS or Cruiser Max), or another comparable neonicotinoid seed treatment.

Above-ground Pests

Bean Leaf Beetles (BLB) and Mexican Bean Beetles (MBB)

Bean leaf beetle adults, which are similar in size to spotted cucumber beetles, and Mexican bean beetle adults (copper-colored ladybeetles with black spots), and larvae (yellow with spines) chew holes in leaves, but also may cause direct injury to pods. Early control measures are recommended to reduce yield loss from defoliation and reduce population levels later in the season. 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 400 (4EC)	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.

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[2]	diazinon	45	72	H
3A	Pyrethroid insecticides registered for use on Edamame: see table at the end of Insect Control.					
28	Coragen 1.67SC	3.5 to 7.5 fl oz/A	chlorantraniliprole	1	4	L

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

Leafminers

Apply one of the following formulations:						
Group	**Product Name (*=Restricted Use)**	**Product Rate**	**Active Ingredient(s)**	**PHI (d)**	**REI (h)**	**Bee TR**
1B	Dimethoate 400	0.5 to 1.0 pt/A	dimethoate	0[1]	48	H
5	Blackhawk 36WG[2]	2.5 to 3.3 oz/A	spinosad	3	4	M
5	Radiant SC[2]	5.0 to 8.0 fl oz/A	spinetoram	3	4	M
6	Agri-Mek SC*	1.7 to 3.5 fl oz/A	abamectin	7	12	H
17	Trigard 75WSP	2.66 oz/A	cyromazine	7	12	H
28+6	Minecto Pro*	7.5 to 10.0 fl oz/A	cyantraniliprole + abamectin	7	12	H
28	Exirel	10.0 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

[1]Mechanical Harvest only; [2] Control may be improved by addition of an adjuvant

Mites

Check weekly for mites, starting throughout the summer, especially during 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) will provide initial knockdown, but their 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 400	0.5 to 1.0 pt/A	dimethoate	0[1]	48	H
6	Agri-Mek SC*	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	1.0 to 1.5 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

[1]Mechanical Harvest only

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. Sweep netting can help determine if pest densities warrant control. 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 400	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
4D	Sivanto 200SL	7.0 to 10.5 fl oz/A	flupyradifurone	7	4	M

[1]Mechanical Harvest only

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), after which time 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 400	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 200SL	7.0 to 10.5 fl oz/A	flupyradifurone	7	4	M
4D	Sivanto Prime	7.0 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
23	Movento	4.0 to 5.0 fl oz/A	spirotetramat	1	24	L
29	Beleaf 50SG	2.8 oz/A	flonicamid	7	12	L

[1]Mechanical Harvest only

Stink Bugs

Sweep netting can be useful to detect stink bugs. Treatment is recommended if adults and nymphs exceed 7 per 50 sweeps during pod development.

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.					

Tarnished Plant Bugs

Treat only if the number of adults and/or nymphs exceeds 15 per 50 sweeps from the pin pod stage until harvest.

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
1B	Dimethoate 400	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.					
4C	Transform WG	1.5 to 2.25 oz/A	sulfoxaflor	7	24	H
29	Beleaf 50SG	2.8 oz/A	flonicamid	7	12	L

[1]Mechanical Harvest only

Thrips

Treatments should be applied if thrips are present from cotyledon stage to when the first true leaves are established and/or when first blossoms form.

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.					
4A[2]	Neonicotinoid insecticides registered for use on Edamame: see table at the end of Insect Control.					
5	Radiant SC[3]	5.0 to 8.0 fl oz/A	spinetoram	3	4	M
5	Blackhawk 36WG[3]	2.5 to 3.3 oz/A	spinosad	3	4	M

[1]Resistance concerns with western flower thrips
[2]Resistance concerns with tobacco thrips
[3]Control may be improved by addition of an adjuvant

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
4D	Sivanto 200SL	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	Movento	4.0 to 5.0 fl oz/A	spirotetramat	1	24	L
28	Exirel	10.0 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
28	Vantacor	2.5 fl oz/A	chlorantraniliprole (nymphs only)	1	4	L

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

There are several species of lepidopteran "worm" pests that can attack beans. These pests feed on leaves and also attack pods. An action threshold of 30 larvae per 3 ft of row or 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. In processing snap beans, treat every 5-7 days if CEW catches in local blacklight traps average 20 or more per night and most corn in the area is mature. For lima beans, treat when CEW populations exceed 1 per 6 ft of row. **Note that some localized CEW, BAW and soybean looper populations have developed resistance to pyrethroids (Group 3A), and that these insecticides should be used with caution and rotated to other insecticide classes within a season**

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	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	Radiant SC	4.0 to 8.0 fl oz/A	spinetoram - except yellow striped armyworm	3	4	M

"Worm" Pests - continued next page

"Worm" Pests - continued

11A	XenTari, others (OMRI)	0.5 to 1.5 lb/A	*Bacillus thuringiensis aizawai*	0	4	N
11A	Dipel DF, others (OMRI)	0.5 to 2.0 lb/A	*Bacillus thuringiensis kurstaki*	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	Coragen 1.67SC	5.0 to 7.5 fl oz/A	chlorantraniliprole - **soil**	1	4	L
28	Coragen 1.67SC	3.5 to 7.5 fl oz/A	chlorantraniliprole - **foliar**	1	4	L
28	Exirel	10.0 to 20.5 fl oz/A	cyantraniliprole - **foliar** (CEW, ECB only)	1	12	H
28	Vantacor	1.2 to 2.5 fl oz/A	chlorantraniliprole - **foliar**	1	4	L
28	Vantacor	1.7 to 2.5 fl oz/A	chlorantraniliprole - **soil**	1	4	L

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):

Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
Asana XL**[1]	2.9 to 9.6 fl oz/A[1]	esfenvalerate	3	12	H
Brigade 2EC*, others	1.6 to 6.4 fl oz/A	bifenthrin	3	12	H
Hero EW*	4.0 to 10.3 fl oz/A	zeta-cypermethrin + bifenthrin	3	12	H
Lambda-Cy 1EC*, others[1]	1.92 to 3.84 fl oz/A[1]	lambda-cyhalothrin	7	24	H
Mustang Maxx*[1]	1.28 to 4.0 fl oz/A[1]	zeta-cypermethrin	1	12	H
Warrior II*[1]	0.96 to 1.92 fl oz/A[1]	lambda-cyhalothrin	7	24	H
Combo products containing a pyrethroid					
Besiege*[1]	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
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
Elevest*	4.8 to 9.6 fl oz/A	bifenthrin + chlorantraniliprole (Group 28)	3	12	

[1]Not recommended for BAW or soybean looper due to resistance issues.

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
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 3.72SE (mefenoxam + azoxystrobin) at 0.34 fl oz/1,000 ft row can be utilized 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 mode 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 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 2.08SC	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	--

If you are having a medical emergency after using pesticides, call 911 immediately.

If you have any of the following symptoms during or shortly after using pesticides: headache, blurred vision, pinpoint pupils, weakness, nausea, cramps, diarrhea, and discomfort in the chest, call a physician and the National Poison Control Center hotline (1-800-222-1222).

Your call will be routed to your State Poison Control Center.
Anyone with a pesticide exposure poisoning emergency can call the toll-free telephone number for help. Personnel at the Center will give you first-aid information and direct you to local treatment centers if necessary.

For immediate medical attention call 911. Prompt action and treatment may save a life.

In Case of an Accident

- **Remove the person from exposure.**
- **Get away from the treated or contaminated area immediately.**
- **Remove contaminated clothing.**
- **Wash with soap and clean water.**
- **Call a physician and the Poison Control Center (1-800-222-1222) or agency in your state.**
- **Have the pesticide label with you! Follow the First Aid Precautionary Statements.**
- **Be prepared to give the EPA registration number to the responding center/agency.**