Delaware Cooperative Extension

UNIVERSITY OF DELAWARE | DSU DELAWARE STATE UNIVERSITY

This is a section from the

2024/2025
Mid-Atlantic Commercial Vegetable Production Recommendations

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

The full recommendations are available online at:
https://www.udel.edu/academics/colleges/canr/cooperative-extension/sustainable-production/commercial-crops/vegetable-crops/midatlantic-vegetable-recommendations/

Printed copies of the recommendations are available for purchase at the New Castle, Kent and Sussex County Extension Offices in Delaware.

This publication will be revised biennially. In January 2025, a Critical Update with important updates for this publication will be communicated through the above website.

These recommendations were prepared and reviewed by individuals from Cornell University, University of Delaware, Delaware State University, University of Maryland, Penn State, Rutgers University, Virginia Tech, and West Virginia University with the purpose of providing up to date information for commercial vegetable growers in the Mid-Atlantic states of **Delaware, Maryland, New Jersey, Pennsylvania, Virginia,** and **West Virginia**.

Disclaimer

- The label is a legally-binding contract between the pesticide 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.

F. Commodity Recommendations

Pesticide Use Disclaimer

THE LABEL IS THE LAW

A pesticide applicator is legally bound by the labeling found on and with the pesticide container in their possession. Before using a pesticide, check and always follow 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 Proagrica's CDMS (*https://www.cdms.net/*), Greenbook (*https://www.greenbook.net*), or Agworld DBX powered by 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/*) 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 LABELING ON THE PRODUCT CONTAINER ITSELF:**
   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 physical product 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*).

Peas (Succulent)

Recommended Varieties

	Season	Variety[1]	Heat Units	Leaf Type	Reported Disease Reaction[2]
Processing Peas[1]	**First Early**	Jumpstart	1110	Normal	F1
		Strike	1140	Normal	F1
	Early	June	1160	Normal	F1
		Icepack	1170	afila	F1
	Midseason	Dakota	1190	normal	F1, PM
		Topps	1260	normal	F1
		Marias	1290	normal	F1
		Ambler (CS 455 AF)	1300	afila	F1
		Portage	1325	afila	F1
		M-14	1330	normal	F1
		GV 490	1380	normal	PM
		SV0935QF	1390	afila	F1, F2, PM, DM
	Late	Ashton	1480	normal	F1, DM(I)
		Bolero	1480	normal	F1
		Jerome (BSC 712)	1520	afila	
		Hacienda	1520	afila	F1, F2, PM
		SV7688QF	1520	afila	F1, F2, PM
		PLS 196	1550	afila	DM(I)
		Dancer	1580	afila	F1, PM, DM(I)
		Grundy	1595	normal	F1
		Quad	1600	normal	F1, PM
		SV6844QG	1600	afila	F1, F2, PM, DM(I)

[1]**Listed in Heat Units order within season.** Use varieties recommended by processors.
Consult the University of Delaware Extension website for results from recent processing peas variety trials (*http://extension.udel.edu/ag/vegetable-fruit-resources/vegetable-small-fruits-program/variety-trial-results/*).
[2]Information provided by source seed companies. F1=Resistant to Fusarium Wilt race 1, F2=Resistant to Fusarium Wilt race 2, DM= resistance to Downy Mildew; PM=Resistant to Powdery Mildew, (I) indicates intermediate resistance or tolerance.

	Use	Variety[1]	Days	Height (Inch)[2]	Reported Disease Reaction[3]
Fresh Market Peas[1]	**Shelled**	Bolero	68	30	F1
		Green Arrow	70	30	PM
		Jumpstart	56	22	F1
		Knight	61	19	F, PM
		Lincoln	67	30	F
		Mr. Big	60	30	F1, PM
		PLS 595	72	30	F1, PM(I)
		Progress #9	62	16	
		Strike	49	24	F
		SV0935QF	64	20	F1, F2, PM, DM
	Snow	Avalanche	56	26	F1
		Dwarf Gray Sugar	74	28	
		Frieda Worlds	75	72	
		Green Beauty	60	72	
		Oregon Sugar Pod II	60	28	F1, PM
	Snap	Sugar Ann	55	26	
		Sugar Sprint	55	26	PM
		Super Sugar Snap	58	60	F1, PM

[1]**Listed alphabetically within use**.
[2]Peas that are taller than 24 inches may require trellising.
[3]Information provided by source seed companies: F=general Fusarium Wilt resistant, F1=Resistant to Fusarium Wilt race 1, PM=Powdery Mildew resistant.

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.

Peas[1]		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
	40-80	120	80	40	0[2]	120	80	40	0[2]	Total nutrient recommended
	40-80	120	80	40	0[2]	120	80	40	0[2]	Broadcast and disk-in

[1]Apply 20-30 lb/A of sulfur (S) for most soils. [2]In VA, crop replacement values of 20 lb/A of P_2O_5 and 20 lb/A of K_2O are recommended on soils testing Very High.

Seed Treatment

Use seed already treated with an approved treatment or treat seed with a slurry or dust that contains an approved commercial fungicide-insecticide mixture. See the Disease Control section below.

Seeding and Spacing

Peas thrive in cool weather and can tolerate light frost. Planting for processing is based on the heat unit theory. Plant peas between February 25 and April 30 when soil conditions are favorable. For processing peas, drill 250-275 lb/A of seed in rows 6-8 inches apart. For fresh market peas, seed 80-120 lb/A (25 seeds per ft in a band) in 30-36 inch rows. Sow at a depth of no more than 1 inch unless soil is dry. Use press wheel drill or seeder to fix seeds into soil. There is the potential for mid to late summer plantings for fall harvest where local markets exist. Fall plantings usually yield less than spring plantings.

Harvest and Post-Harvest Considerations

Processing peas are mature from May 20 through July 5. Pick shelling types while they are firm, but still succulent. Harvest snow peas before seed swelling becomes too pronounced. Crisp fleshy snap types should be picked when they are round and firm, but still succulent. Peas in pod, shelled peas, and edible pod peas lose part of their sugar content, on which much of their flavor depends, unless they are cooled to near 32°F (0°C) immediately after harvest and maintained at 32°F and 90-95% relative humidity. Forced air cooling is preferred since it does not result in surface moisture formation and minimizes the risk of decay. After precooling, the peas should be packed with crushed ice (top ice) to maintain freshness and turgidity. Top ice provides the desired high humidity to prevent wilting. Temperatures should not exceed 34°F (1°C) when any moisture is present on the surface of the peas or rapid decay and deterioration will occur. Edible pod peas, peas in pod, and shelled peas are only salable for 1-2 weeks even at 32°F unless packed in crushed ice. With top ice, the storage period may be extended by a week.

Pea Shoots

Peas, preferably snap and snow pea varieties, may also be grown for shoots for local markets. Follow the instructions for planting and spacing described above. When plants are 8-12 inches tall, clip off the growing points plus one pair of leaves to encourage branching. These clippings can be used as a first harvest. Keep clipping the top 2-6 inches of each plant after regrowth, every 3-4 weeks. Harvested shoots should include the top pair of small leaves, delicate tendrils and a few larger leaves and blossoms or immature buds. Select undamaged, fresh, crisp and bright green shoots. Harvest a planting until shoots begin to taste bitter. Pea shoots for fall harvest are planted mid to late summer and harvested until a hard freeze. Shoots may also be grown in high tunnels throughout the fall, winter, and early spring. Pea shoots have a short storage life and should be marketed within 2 days after harvest. Rapidly precool shoots to 32°F, and store at 32-34°F (0-1°C) and 98-100% relative humidity. Freezing will damage leaf tissues, so maintain storage temperatures above 28°F (-2°C).

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.

1. Non-Selective or Burndown

Group	Product Name (*=Restricted Use)	Product Rate	Active Ingredient	Active Ingredient Rate	PHI (d)	REI (h)
9	Roundup PowerMax 4.5L "Generic" glyphosate 3L	16 to 32 fl oz/A 24 to 48 fl oz/A	**glyphosate**	0.75 to 1.13 lb acid equivalent/A	--	4
-Apply preplant or preemergence. Some glyphosate formulations may require an adjuvant, refer to label. -Tank mix with appropriate herbicides for residual weed control. Glyphosate controls many perennial weeds as well as annuals if applied when the weed is actively growing and has reached the stage of growth listed on the label. Repeat applications are allowed, with maximum application of 5.3 qt/A per year.						
22	Gramoxone SL 2.0* Gramoxone SL 3.0*	2.5 to 4 pt/A 1.7 to 2.7 pt/A	**paraquat**	0.6 to 1 lb/A	--	24
-Apply preplant or preemergence. Always include an adjuvant (nonionic surfactant or crop oil concentrate). Tank mix with appropriate herbicides for residual weed control. Paraquat may not control established grasses. Spray coverage is essential for optimum control. -Rainfastness 30 min. A maximum of 3 applications per year are allowed. -***Restricted-use pesticide***. Only certified applicators, who successfully complete the paraquat-specific training, can mix, load, or apply paraquat. Application of paraquat "under the direct supervision" of a certified applicator is no longer allowed. Required training link (*https://campus.extension.org/enrol/index.php?id=2201*); certified applicators must repeat training every three years.						

2. 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	1.5 to 2 fl oz/A	**imazethapyr**	0.024 to 0.032 lb/A	--	4
-Shallow, thorough incorporation improves consistency of performance when dry weather follows application. -Primarily controls broadleaf weeds. Use in combination with another herbicide to control annual grasses. -In DE, MD, and VA **do not** apply more than 2 fl oz/A to sand or loamy sand soils; other states in the region can use up to 3 fl oz/A. -Pursuit residues persist in the soil after harvest and may affect following crops (check the label). -Maximum number of applications per year: 1.						
13	Command 3ME	1.3 pt/A	**clomazone**	0.5 lb/A	--	12
-Apply to control annual grasses and many broadleaf weeds including common lambsquarters, velvetleaf, spurred anoda, and jimsonweed. Mustards, morningglory species, and pigweed species will **not** be controlled. -Some temporary injury, seen as a partial whitening of leaf and/or stem of the crop, may be observed after seedling emergence. Complete recovery from early injury will occur without affecting yield or delaying maturity. -Rates of 4 to 8 fl oz/A are often used to reduce the risk of injury. -**WARNING**: 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. -Herbicide residues may limit subsequent cropping options when Command is used for weed control in peas. See planting restrictions on the label. -Maximum number of applications per season: 1.						
15	Dual Magnum 7.62E	0.5 to 1 pt/A	**s-metolachlor**	0.48 to 0.96 lb/A	60	24
-Primarily controls annual grasses, suppresses yellow nutsedge, and suppresses or controls certain annual broadleaf weeds including pigweed and nightshade species. Common lambsquarters and common ragweed will **not** be controlled. -Recommended rates may be lower than the labeled rate to reduce the risk of crop injury. The use of less than 1 pt/A of Dual Magnum may reduce the duration or level of control of some weeds. Cold wet weather after application increases the risk of crop injury, which may delay maturity. Use the minimum recommended rate or choose another herbicide when cold wet weather is anticipated. -Other generic versions of metolachlor and s-metolachlor may be available and may or may not be labeled for use in the crop. -Maximum number of applications per season: 1.						

3. Postemergence

Group	Product Name (*=Restricted Use)	Product Rate	Active Ingredient	Active Ingredient Rate	PHI (d)	REI (h)
1	Shadow 3EC Select 2EC Select Max 0.97EC	4 to 5.33 fl oz/A 6 to 8 fl oz/A 9 to 16 fl oz/A	**clethodim**	0.07 to 0.125 lb/A	21	12
	Assure II/Targa 0.88EC	6 to 12 fl oz/A	**quizalofop-P-ethyl**	0.04 to 0.08 lb/A	15	12
	Poast 1.5EC	1 to 2.5 pt/A	**sethoxydim**	0.2 to 0.4 lb/A	15	12
-**Select 2EC**: use crop oil concentrate (COC) at 1% v/v (1 gal/100 gal of spray solution). **Select Max**: use nonionic surfactant (NIS) at 0.25% v/v (1 qt/100 gal of spray solution). **Shadow 3EC**: use crop oil concentrate (COC) at 1% v/v (1 gal/100 gal of spray solution)						

3. Postemergence Shadow, Select, Select Max, Assure, Targa, Poast - continued next page

3. Postemergence Shadow, Select, Select Max, Assure, Targa, Poast - continued

for large or stressed grasses, use nonionic surfactant (NIS) at 0.25% v/v (1 qt/100 gal of spray solution) when crop safety is a concern. **Assure II/Targa**: use COC at 1% v/v. **Poast**: use COC at 1% v/v. -The use of COC may increase the risk of crop injury under hot or humid conditions. To reduce this risk, omit additives or switch to NIS when grasses are small and soil moisture is adequate. The addition of nitrogen is not recommended. -Use lower labeled rates for annual grass control and higher labeled rates for perennial grass control. -Yellow nutsedge, wild onion, wild garlic, and broadleaf weeds will **not** be controlled. Controls many annual and certain perennial grasses, including annual bluegrass, but Poast is preferred for goosegrass control. 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 apply during bloom stage of the peas.** -Rainfastness is 1 h. -**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 8 fl oz/A of Select 2EC in a single application and **do not** exceed 2 pt/A for the season; **do not** apply more than 16 fl oz/A of Select Max in a single application and **do not** exceed 4 pt/A for the season. -**Do not** apply more than 5.33 fl oz/A of Shadow 3EC in a single application and **do not** make more than one application per season. -**Do not** exceed more than 14 fl oz/A Assure/Targa for the season. -**Do not** apply more than 2.5 pt/A Poast in a single application and **do not** exceed 4 pt/A for the season. -**Do not** exceed more than 14 fl oz/A Assure II/Targa for the season.						
2	Pursuit 2L	1.5 to 3 fl oz/A	**imazethapyr**	0.024 to 0.048 lb/A	--	4
-Apply early postemergence to control annual broadleaf weeds and some grasses when the crop is at least 3-inches tall (after 1-true leaf stage) but before 5 nodes before flowering. Add nonionic surfactant to be 0.25% of the spray solution (1 qt/100 gal of spray). -Pursuit can delay maturity if growing conditions are less than favorable at time of application. -Rainfastness is 1 h. -**Do not** apply more than 1 application per growing season.						
2	Raptor 1L Beyond Xtra 1L	3 fl oz/A	**imazamox**	0.023 lb/A	--	4
-Apply to control annual broadleaf weeds and some grasses when the crop is at least 3-inches tall but before 5 nodes before flowering. -Add nonionic surfactant to be 0.25% of the spray solution (1 qt/100 gal of spray); **do not** use nitrogen fertilizer in spray solution. -In DE and MD, Basagran must always be added to the spray mixture to reduce crop injury; mix 6 to 16 fl oz/A of bentazon (Basagran) to reduce the expression of injury symptoms or use. -**Varisto 4.18L** which is a prepackaged mixture of Raptor plus Basagran; 21 fl oz/A of Varisto = 4 fl oz/A of Raptor and 21 fl oz/A of Basagran 4L -The use of trifluralin (*e.g.*, Treflan) before Raptor application may increase the possibility and severity of crop injury. -Use Raptor only if good agronomic practices have been used to establish and maintain the crop. -Rainfastness is 1 h. -**Do not** apply more than 3 fl oz/A per year and more than 1 application per growing season.						
4	Thistrol 2L	2 to 6 pt/A	**MCPB**	0.5 to 1.5 lb/A	--	24
-Apply postemergence to control certain annual broadleaf weeds (*e.g.*, lambsquarters, pigweed, smartweed, morningglory) and Canada thistle when the crop is from shoot emergence to 3-leaf nodes before flowering. Typical application is from 6 to 12 nodes. -Tank mix with Basagran to broaden weed control spectrum. See label for additional guidelines. -**Do not** spray peas under moisture stress and when air temperatures exceed 90F. Temporary twisting may occur on some pea varieties.						
6	Basagran 4L Basagran 5L	1 to 2 pt/A 0.8 to 1.6 pt/A	**bentazon**	0.5 to 1 lb/A	30	12
-Apply after peas have more than 3 pairs of leaves. -**Do not** add oil concentrate. Ground application in a minimum of 20 gal/A is preferred. For broadleaf weed control only. See label for weed size for effective control. Rainfastness is 4 h.						

4. Postharvest

Group	Product Name (*=Restricted Use)	Product Rate	Active Ingredient	Active Ingredient Rate	PHI (d)	REI (h)
22	Gramoxone SL 2.0* Gramoxone SL 3.0*	2.5 pt/A 1.7 pt/A	**paraquat**	0.6 lb/A	--	24
-**Supplemental Label in DE for the use of both Gramoxone formulations for postharvest application to desiccate the crop.** -Apply after the last harvest. Always include an adjuvant. Spray coverage is essential for optimum effectiveness. See the label for additional information and warnings. -Rainfastness 30 min. A maximum of 2 applications for crop desiccation are allowed. -***Restricted-use pesticide***. Only certified applicators, who successfully complete the paraquat-specific training, can mix, load, or apply paraquat. Application of paraquat "under the direct supervision" of a certified applicator is no longer allowed. Required training link (*https://campus.extension.org/enrol/index.php?id=2201*); certified applicators must repeat training every three years.						

5. Other Labeled Herbicides These products are labeled but limited local data are available; and/or are labeled but not recommended in our region due to potential crop injury concerns.		
Group	**Product Name (*=Restricted Use)**	**Active Ingredient**
3	Prowl 3.3 EC / Prowl H2O	**pendimethalin**
3	Treflan	**trifluralin**
7	Lorox	**linuron**
14	Aim	**carfentrazone**
14	Sharpen	**saflufenacil**
14	Sulfentrazone	**sulfentrazone**

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

Seedcorn maggot is active about one to two weeks earlier than onion or cabbage maggot. Overwintered fly peak fly activity can be predicted with a degree day model using a base temperature of 39°F and peak emergence around 360GDD. First generation peak activity is harder to predict. Look for maggots and feeding tunnels inside seeds or stems to help distinguish seed maggot damage from that of wireworm feeding or damping off. In fields with a history of seed maggots, wait until soil conditions favor crop emergence and growth to help seeds and seedlings avoid or quickly recover from injury. When possible, incorporate cover crops, manure, or compost no less than 3 weeks before seeding. Rescue treatments are not effective. If there is enough damage to warrant replanting, wait until larvae are pupating so they will not damage new seeds.
Commercially applied seed treatments only: thiamethoxam (Cruiser 5FS).

Above-ground Pests

Armyworms and Other "Worm" or Caterpillar Pests

Armyworms often feed in groups 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. The late season worm complex may include other worm species. **Note that some localized corn earworm, fall armyworm, 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*	.75 to 3 pt/A	methomyl	see label	48	H
3A	Asana XL*	2.9 to 9.6 fl oz/A	esfenvalerate	3	12	H
3A	Baythroid XL*	1.6 to 2.1 fl oz/A	beta-cyfluthrin	3	12	H
3A	Brigade 2EC*, others	2.1 to 6.4 fl oz/A	bifenthrin	3	12	H
3A	Declare*	1.02 to 1.54 fl oz/A	gamma-cyhalothrin	7	24	H
3A	Hero*	4.0 to 10.3 fl oz/A	zeta-cypermethrin + bifenthrin	3	12	H
3A	Lambda-Cy 1EC*, others	1.92 to 3.84 fl oz/A	lambda-cyhalothrin	7	24	H
3A	Mustang Maxx*	1.28 to 4.0 fl oz/A	zeta-cypermethrin	1	12	H
3A+4A	Brigadier*	5.6 fl oz/A	bifenthrin + imidacloprid - **foliar**	7	12	H
3A+28	Besiege*	5.0 to 10.0 fl oz/A	lambda-cyhalothrin + chlorantraniliprole	7	24	H
3A+28	Elevest*	5.6 to 9.6 fl oz/A	bifenthrin + chlorantraniliprole	3	12	H
5	Blackhawk 36WG	1.7 to 3.3 oz/A	spinosad	3	4	M
5	Radiant SC	3.0 to 8.0 fl oz/A	spinetoram	3	4	M
18	Intrepid 2F	4.0 to 16.0 fl oz/A	methoxyfenozide	7	4	L
28	Coragen 1.67SC Coragen eVo	5.0 to 7.5 fl oz/A 1.7 to 2.5 fl oz/A	chlorantraniliprole - **at planting**	1	4	L
28	Coragen 1.67SC Coragen eVo	3.5 to 7.5 fl oz/A 1.2 to 2.5 fl oz/A	chlorantraniliprole - **foliar**	1	4	L

Armyworms and Other "Worm" or Caterpillar Pests - continued next page

Armyworms and Other "Worm" or Caterpillar Pests continued

28	Exirel	10.0 to 20.5 fl oz/A	cyantraniliprole **(CEW/ECB only)**	1	12	H
28	Vantacor	1.7 to 2.5 fl oz/A	chlorantraniliprole - **soil**	1	4	L
28	Vantacor	1.2 to 2.5 fl oz/A	chlorantraniliprole - **foliar**	1	4	L
28	Verimark	6.75 to 13.5 fl oz	cyantraniliprole **(FAW only) - soil**	n/a	4	H

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**
1A	Sevin XLR Plus	1.0 to 1.5 qt/A	carbaryl	3	12	H
1B	Diazinon AG500*[1]	2.0 to 4.0 qt/A	diazinon	45	72	H
3A	Asana XL*	5.8 to 9.6 fl oz/A	esfenvalerate	3	12	H
3A	Baythroid XL*	0.8 to 1.6 fl oz/A	beta-cyfluthrin	3	12	H
3A	Brigade 2EC*, others	2.1 to 6.4 fl oz/A	bifenthrin	3	12	H
3A	Hero*	4.0 to 10.3 fl oz/A	zeta-cypermethrin + bifenthrin	3	12	H
3A	Lambda-Cy 1EC*, others	1.92 to 3.2 fl oz/A	lambda-cyhalothrin	7	24	H
3A	Mustang Maxx*	1.28 to 4.0 fl oz/A	zeta-cypermethrin	1	12	H
3A	Warrior II*	0.96 to 1.6 fl oz/A	lambda-cyhalothrin	7	24	H
3A+4A	Brigadier*	5.6 fl oz/A	bifenthrin + imidacloprid - **foliar**	7	12	H
3A+28	Besiege*	5.0 to 8.0 fl oz/A	lambda-cyhalothrin + chlorantraniliprole	7	24	H
3A+28	Elevest*	4.8 to 9.6 fl oz/A	bifenthrin + chlorantraniliprole	3	12	H

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

Pea Aphids

The pea aphid is light green with unusually long legs and cornicles. Treat when there are 5-10 aphids per plant or 50 or more aphids per sweep in a 15-inch sweep net.

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	0.32 pt/A	dimethoate	0[1]	48	H
3A	Asana XL*	5.8 fl oz to 9.6 fl oz/A	esfenvalerate	3	12	H
3A	Warrior II*	1.28 to 1.92 fl oz/A	lambda-cyhalothrin	7	24	H
3A+4A	Brigadier*	3.8 to 5.6 fl oz/A	bifenthrin + imidacloprid - **foliar**	7	12	H
4A	Admire Pro	7.0 to 10.5 fl oz/A	imidacloprid - **soil**	21	12	H
4A	Admire Pro	1.2 fl oz/A	imidacloprid - **foliar**	7	12	H
4A	Assail 30SG Assail 30SC	2.5 to 5.3 oz/A 2.1 to 4.5 fl oz/A	acetamiprid	7	12	M
4D	Sivanto Prime or 200SL	7.0 to 14.0 fl oz/A	flupyradifurone	7	4	M
7C+23	Senstar	8.0 to 10.0 fl oz/A	spirotetramat + pyriproxifen	7	24	L
23	Movento	4.0 to 5.0 fl oz/A	spirotetramat	1	24	L
23	Movento HL	2.0 to 2.5 fl oz/A	spirotetramat	1	24	L
29	Beleaf 50SG	2.8 oz/A	flonicamid	7	12	L

[1]Mechanical Harvest only

Stink Bugs

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	Warrior II*	1.28 to 1.92 fl oz/A	lambda-cyhalothrin	7	24	H
3A	Baythroid XL*	1.6 to 2.1 fl oz/A	beta-cyfluthrin	3	12	H
3A	Brigade 2EC*, others	2.1 to 6.4 fl oz/A	bifenthrin	3	12	H
3A	Hero*	4.0 to 10.3 fl oz/A	zeta-cypermethrin + bifenthrin	3	12	H

Stink Bugs - continued next page

Stink Bugs - continued

3A	Lambda-Cy 1EC*, others	2.56 to 3.84 fl oz/A	lambda-cyhalothrin	7	24	H
3A	Mustang Maxx*	3.2 to 4.0 fl oz/A	zeta-cypermethrin	1	12	H
3A	Warrior II*	0.96 to 1.6 fl oz/A	lambda-cyhalothrin	7	24	H
3A+28	Besiege*	6.0 to 10.0 fl oz/A	lambda-cyhalothrin + chlorantraniliprole	7	24	H
3A+28	Elevest*	5.6 to 9.6 fl oz/A	bifenthrin + chlorantraniliprole	3	12	H

Disease Control

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

Seed Treatment

Use seed already treated with an approved seed treatment or treat seed with a slurry or dust that contains an approved commercial fungicide-insecticide mixture. Use seed treated with:

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
For Rhizoctonia and Fusarium Control:						
12	Maxim 4FS	0.08 to 0.16 fl oz/100 lb seed	fludioxonil	--	12	L
For Pythium Control:						
4	Apron XL	0.16 to 0.64 fl oz/100 lb seed	mefenoxam	--	48	N
4	Allegiance FL	0.75 fl oz/100 lb seed	metalaxyl	--	24	N

Damping-off caused *Pythium* and *Rhizoctonia*

Rotate and allow 4 to 5 years between plantings. Do not double crop with another legume of any type.

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
Apply one of the following according to the label:						
Pythium root rot only:						
4	Ridomil Gold 4SL	0.5 to 1.0 pt/A	mefenoxam	--	48	N
4	Ultra Flourish 2E	1.0 to 2.0 pt/A	mefenoxam	AP	48	N
4	MetaStar 2E AG	2.0 to 4.0 pt/A	metalaxyl	--	48	N
For Pythium and/or Rhizoctonia root rots:						
4 + 11	Uniform 3.66SE	0.34 fl oz/1000 ft of row in-furrow, see label	mefenoxam + azoxystrobin	AP	0	N
Rhizoctonia root rot only:						
11	azoxystrobin 2.08F	0.40 to 0.80 fl oz/1000 row ft	azoxystrobin	0	4	N

Bacterial and Fungal Diseases

Ascochyta Blight

Ascochyta Blight is favored by long periods of leaf wetness and heavy growth of vines that creates a moist environment under the pea vine canopy. Plant fungicide treated seed. Deeply incorporate crop debris immediately after harvest before the fungus can be dispersed by wind or rain. Scout on a regular basis; the disease can develop and spread rapidly. In fields with a history of Ascochyta Blight apply one of the following fungicides preventatively and rotate between fungicides every 7 days as long as conditions favor disease development.

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
7	Endura 70W	8.0 to 11.0 oz/A	boscalid	7	12	--
7 + 11	Priaxor 4.17SC[1]	4.0 to 8.0 fl oz/A	fluxapyroxad + pyraclostrobin	7	12	N
11	azoxystrobin 2.08F	6.0 to 15.5 fl oz/A	azoxystrobin	0	4	N
11	Headline 2.09EC	6.0 to 9.0 fl oz/A	pyraclostrobin	7	12	N

[1]Also effective for Powdery Mildew.

Bacterial Blight

The pathogen can be seedborne so source high quality seed. Avoid walking or moving equipment through fields when vines are wet, as this will spread the disease. Copper-based fungicides may provide some suppression.

Downy Mildew (*Peronospora viciae*)

Management strategies include planting recommended resistant cultivars, crop rotations of 3 years or more, and effective seed treatments (*e.g.*, Allegiance FL or Apron XL) prior to seeding. Avoid planting in fields that had peas the previous year because the pathogen can overwinter on old debris. Downy Mildew development is favored by prolonged cool, wet weather conditions.

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
7 + 11	Priaxor 4.17SC	4.0 to 8.0 fl oz/A	fluxapyroxad + pyraclostrobin	7	12	N

Fusarium Wilt

Use resistant cultivars if available. Plant as early as possible to minimize crop growth when soil temperatures are ideal for Fusarium Wilt development (68 to 72°F).

Powdery Mildew

Powdery Mildew is favored by warm, dry days and cool nights that lead to dew formation. Disease severity is usually highest in late summer. Fall plantings are most susceptible. If available plant resistant or less susceptible cultivars. At first appearance of symptoms, apply one of the following and rotate between different fungicides as long as conditions favor disease development.

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
M02	sulfur (OMRI)[1]	3.0 to 10.0 lb/A	sulfur	--	24	N
7	Endura 70W	8.0 to 11.0 oz/A	boscalid	7	12	--
3 + 7	Aprovia Top 1.62EC	10.5 to 11.0 fl oz/A	difenoconazole + benzovindiflupyr	14	12	--
7 + 11	Priaxor 4.17SC[2]	4.0 to 8.0 fl oz/A	fluxapyroxad + pyraclostrobin	7	12	N

[1]Some sulfur-based products are OMRI listed for use in organic production systems.
[2]Also effective for Ascochyta Blight.

White Mold (*Sclerotinia*)/Gray Mold (*Botrytis*)

Code	Product Name (*=Restricted Use)	Product Rate	Active Ingredient(s)	PHI (d)	REI (h)	Bee TR
Preplant. Apply 3 to 4 months prior to planting to reduce levels of sclerotia inoculum in the soil. Incorporate to a depth of 1-2 inches. Do not plow before seeding peas to avoid moving untreated sclerotia from lower to upper soil layers. See label for more detailed instructions.						
44	Contans 5.3WG (OMRI)[1]	1.0 to 4.0 lb/A	*Coniothyrium minitans*	0	4	N
At the beginning of flowering or prior to onset of disease apply:						
7	Endura 70W[2]	8.0 to 11.0 oz/A	boscalid	7	12	--
7	Fontelis 1.67SC	16.0 to 30.0 fl oz/A	penthiopyrad	0	12	L
7 + 11	Priaxor 4.17SC	6.0 to 8.0 fl oz/A (suppression only)	fluxapyroxad + pyraclostrobin	7	12	N

[1]Only effective for White Mold
[2]Apply at 7 to 10 d interval, maximum 2 applications per growing season.

Viruses

Use resistant varieties when possible and manage aphid populations.

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

POISON Help®
1-800-222-1222

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/or the National Poison Control Center (1-800-222-1222). Your call will be routed to your State Poison Control Center.
- Have the pesticide label with you!
- Be prepared to give the EPA registration number to the responding center/agency