

Chapter 21 – Peas

21.1 Recommended Varieties

Market

Early Freezer 680
Progress No. 9

Edible pod, round

Sugar Snap
Super Snap II

Processing

Use varieties recommended by processors.

21.2 Planting Methods

Because pea seed germinates in relatively cool soil (as low as 40°F), planting can begin in late March or early April and continue until May 20-30. Early plantings generally yield more than later plantings as they mature during the cooler part of summer.

Caution. Peas are very sensitive to *atrazine* residues. Do not plant in fields where more than one pound of *atrazine* was applied the previous year.

Plant at a uniform depth of no more than one inch unless the soil is exceptionally dry. Rolling or cultipacking the soil after planting will firm the ground and push stones into the soil, which facilitates machine harvest. Attaching the roller behind the drill eliminates an additional set of tractor wheel marks and too much soil compaction on some rows of planted peas.

In general, seed should not be inoculated with symbiotic bacteria that fix nitrogen. The application of nitrogen fertilizers and the presence of the bacteria in soil from previous pea crops make it a questionable practice. Fields with no history of peas in the rotation may benefit from inoculation, particularly if the nitrogen application is low.

Because seed size varies greatly between varieties, seeding rate must be adjusted accordingly. See Tables 21.2.1 and 21.2.2.

Table 21.2.1 Recommended spacing.

Type	In-row (plants/yard)	Row (inches)
Processing		
Early	18-22	7
Late	16-18	7
Fresh	18-20	32-36

Table 21.2.2 Approximate number of seeds to drop to obtain 16 to 22 plants per yard of row when laboratory germination is as indicated.

Plants/yard	Laboratory germination (percent)					
	<u>100</u>	<u>95</u>	<u>90</u>	<u>85</u>	<u>80</u>	<u>75</u>
	Number of seeds to drop per yard of row					
16	16	17	18	19	20	21
17	17	18	19	20	22	23
18	18	19	20	22	23	24
19	19	20	22	23	24	26
20	20	22	23	24	25	27
21	21	23	24	25	27	28
22	22	24	25	26	28	30

21.3 Fertility

Maintain pH of 6.0-6.5. Do not apply fertilizer in the seeded row as salt injury will occur. See Table 21.3.1 for the recommended rates of nitrogen, phosphorus, and potassium.

21.4 Harvesting

Intact peas pea pods serve as controlled atmospheric storages that maintain quality for about one week at 32°F and 90 to 95 percent relative humidity. Once shelled, quality deteriorates rapidly. For this reason, processing peas, which are shelled in the field, must be transported quickly to the processing facility.

Table 21.3.1 Recommended nutrients based on soil tests.

N pounds/acre	P ₂ O ₅ pounds/acre			K ₂ O pounds/acre			Comments
	Soil Phosphorus Level			Soil Potassium Level			
	<u>low</u>	<u>med.</u>	<u>high</u>	<u>low</u>	<u>med.</u>	<u>high</u>	
40-50	100	75	50	120	80	40	Total recommended
40-50	100	75	50	120	80	40	Broadcast and disk-in or drill deep and mix into the soil

21.5 Disease Management

21.5.1 Seed decay and root rot diseases caused by *Pythium ultimum*, *Rhizoctonia solani*, *Fusarium solani*, and/or *Thielaviopsis basicola*.

Time for concern: At planting and early growth stages

Key characteristics: Seed decay and damping off diseases resulting in poor emergence and stand establishment. Later infections result in various root-rot symptoms, depending on the pathogen. Severely infected plants are stunted, yellow, yield poorly and may die prematurely.

<i>Management Option</i>	<i>Recommendation</i>
Scouting/thresholds	Soil can be indexed for diagnosing severely infested fields. No threshold levels are available.
Resistant varieties	No resistant varieties are available.
Crop rotation	Root rot is favored by short rotations. Peas should be planted only once every four years, and fields with a history of severe root rot should be avoided. Rotations with grain crops will improve soil structure and reduce disease severity.
Site selection	Plant on healthy soils and avoid planting on poorly drained or compacted soil.
Seed selection/treatment	Purchase vigorous seed treated with a combination of Apron plus <i>captan</i> , Maxim or <i>thiram</i> . Apron is effective in controlling seed decay and root rots incited by <i>Pythium</i> species, but is not effective against <i>Aphanomyces</i> and other root rot organisms. <i>Captan</i> and <i>thiram</i> are used to protect against seed-rotting organisms. Maxim is effective against <i>Rhizoctonia</i> and <i>Fusarium</i> .
Postharvest, and Sanitation	If possible, plow under crop debris and plant a cover crop.

Compound(s)					
<u>Common name</u>	Rate/A	PHI	REI	Field	
<u>Trade name</u>	<u>Product</u>	<u>(days)</u>	<u>(hours)</u>	<u>Use EIQ</u>	<u>Comments</u>
<i>mefenoxam</i>					
Ridomil Gold EC or OLF	0.5-1 pt	—	48	7-14	Apply preplant or as a surface spray after planting. Controls <i>Pythium</i> species.

21.5.2 Fusarium wilt, *Fusarium oxysporum* f. sp. *pisi*

Time for concern: Planting to harvest, when the soil temperature exceeds 68°F

Key characteristics: Fusarium wilt causes the downward curling of leaves and stipules. Leaves and stems become brittle. Yellow to orange discoloration also occurs within the vascular tissue of roots and stems. See Reference 1.

<i>Management Option</i>	<i>Recommendation</i>
Scouting/thresholds	Soil can be indexed for diagnosing severely infested fields.
Resistant varieties	Several races of this pathogen exist. Check with seed companies about availability of resistant varieties.
Crop rotation	This fungus may remain in the soil for ten years, making rotation relatively ineffective. However, practicing rotation in relatively clean fields will help prevent disease/pathogen build-up.
Site selection	Plant in the earliest workable fields, so the crop develops during the period of the growing season when the soil temperature is below the optimum temperature for wilt development (68°F through 72°F).
Seed selection/treatment, Postharvest, and Sanitation	These are not currently viable management options.
Compound(s)	No pesticides are available to manage Fusarium wilt.

21.5.3 Ascochyta leaf spot, *Ascochyta pisi*

Time for concern: Seedling through harvest

Key characteristics: *Ascochyta* spp. causes leaf lesions with concentric ring pattern. Other species of *Ascochyta* affect seeds and developing seedlings. See Reference 1.

<i>Management Option</i>	<i>Recommendation</i>
Scouting/thresholds	Record the occurrence and severity of <i>Ascochyta</i> leaf spot. No thresholds have been established.
Resistant varieties	No resistant varieties are available.
Crop rotation	Two- to three-year rotation will be effective in reducing disease severity.
Seed selection/treatment	Purchase vigorous and fungicide treated seed. In the absence of seed treatments, pea seed should be held for one year to reduce pathogen level to one-third its previous level.
Postharvest	If possible disk and plow under crop debris immediately after harvest to reduce this source of inoculum.
Site selection, and Sanitation	These are not currently viable management options.

Compound(s)					
<u>Common name</u>	Rate/A	PHI	REI	Field	
<u>Trade name</u>	<u>Product</u>	<u>(days)</u>	<u>(hours)</u>	<u>Use EIQ</u>	<u>Comments</u>
<i>pyraclostrobin</i>					
Headline EC	6-9 fl oz	7	12		No aerial application in NYS. Do not make more than 2 applications of this on other strobilarin fungicides (group 11) per season.

21.6 Insect Management

21.6.1 Seedcorn maggot, *Delia platura*

Time for concern: At planting

Key characteristics: Adult flies are slender, 1/4 inch long, and grayish black in color. Maggots are yellowish white. Infested seeds and other plant parts are hollowed out. Damaged plants are weak and may not develop. See Reference 2.

<i>Management Option</i>	<i>Recommendation</i>
Scouting/thresholds	Record the occurrence and severity of seedcorn maggot damage. No thresholds have been established.
Natural enemies	Predators, parasitoids, and pathogens, including nematodes, help suppress infestations. Use Reference 3 or www.nysaes.cornell.edu/ent/biocontrol/ for identification of natural enemies.
Resistant varieties	No resistant varieties are available.
Site selection	Root maggots prefer soil with high organic matter. Incorporate crop residues well before planting. Do not spread manure directly before planting.
Seed selection/treatment	Purchase seed that has been treated with a fungicide, such as Apron, captan, or thiram, and then treat with an insecticide.
Crop rotation, Post-harvest, and Sanitation	These are not currently viable management options.

Seedcorn maggot (*continued*)

Compound(s)					
<u>Common name</u>	Rate/A	PHI	REI	Field	
<u>Trade name</u>	<u>Product</u>	<u>(days)</u>	<u>(hours)</u>	<u>Use EIQ</u>	<u>Comments</u>
<i>thiamethoxam</i>					
Cruiser 5FS (seed treatment) 5 lb/gal	1.28 fl oz/ 100 lbs of seed	—	—	—	Seed must be treated commercially and purchased outside of New York.

*Restricted use only

21.6.2 Slugs**Time of concern:** Early spring and fall

Key characteristics: Adult slugs are between one and two inches in length. Slugs can overwinter at any stage of development. Although slugs cannot survive prolonged subzero temperatures or desiccation, the burrows of small mammals and worms provide insulation. Slugs begin to move, hatch, feed, and lay eggs in the spring when temperatures are consistently above 40°F. There is often little or no slug activity in the field during periods of dry weather; however, there may be extensive feeding in damp areas. See www.slugcontrol.iacr.ac.uk/SlugsBrochure.pdf

Management Option	Recommendation
Scouting/thresholds	Record the occurrence and severity of slug damage. No thresholds have been established.
Resistant varieties	No resistant varieties are available.
Site selection/planting, Crop rotation, Post-harvest, and Sanitation	Practices that help dry the soil surface (e.g. conventional tillage and good weed control) will reduce slug populations.

Compound(s)					
<u>Common name</u>	Rate/A	PHI	REI	Field	
<u>Trade name</u>	<u>Product</u>	<u>(days)</u>	<u>(hours)</u>	<u>Use EIQ</u>	<u>Comments</u>
<i>metaldehyde</i>					
Deadline Bullets	20-40 lbs	—	12	13-27	

21.7 Weed Management

Key characteristics: Weed fact sheets provide a good color reference for common weed identification. See Reference 4. See Chapter 4 for information on scouting/thresholds, site selection, cultivation, and banding of herbicides.

Compound(s)					
<u>Common name</u>	Rate/A	PHI	REI	Field	
<u>Trade name</u>	<u>Product</u>	<u>(days)</u>	<u>(hours)</u>	<u>Use EIQ</u>	<u>Comments</u>
preplant incorporated					
<i>trifluralin</i> (broadleaves and grasses except ragweed and mustard)					
Treflan HFP 4 lb/gal	0.5-0.75 qt		12	13-20	Apply and incorporate about 2" within a few hours. Stunting may occur in cold, wet soils.
<i>pendimethalin</i> (grasses, some broadleaves, and velvetleaf, but not ragweed or mustard)					
Prowl 3.3EC 3.3 lb/gal	1.2-2.4 pt		24	13-27	Apply and incorporate 2" within a few hours. Stunting may occur in cold, wet soils.
Prowl H2O 3.8CS	1.5-3 pt		24	17-35	
preemergence					
<i>clomazone</i> (annual grasses and selected broadleaf weeds, e.g. velvetleaf)					
Command 3ME 3 lb/gal	1.3 pt	45	12	5	See comments on next page.

Compound(s)

<u>Common name</u>	Rate/A	PHI	REI	Field	
<u>Trade name</u>	<u>Product</u>	<u>(days)</u>	<u>(hours)</u>	<u>Use EIQ</u>	<u>Comments</u>
Apply only as a preemergent soil applied treatment prior to seeding or after seeding but prior to crop emergence. Place seed below the chemical barrier when planting. Slight to moderate injury (whitening of leaf tissue) may occur after crop emergence. This injury is generally transitory. Residual carryover of Command 3ME may injure fall-planted wheat or rye crops. See label for additional rotational restrictions.					
postemergence					
<i>bentazon</i> (nutsedge, Canada thistle, ragweed, mustard species)					
Basagran	1-2 pt	10	48	9-18	Peas must have 3 pairs of leaves before application. Two applications are necessary for control of yellow nutsedge and Canada thistle. Caution: crop oil cannot be used with Basagran on peas.
4 lb/gal					
<i>imazamox</i>					
Raptor	3 fl oz	10	4	<1	See comments below
1 lb/gal		see comments below			
Delayed flowering is a concern with this product. Raptor should be applied to peas at least 3 inches tall but prior to 5 nodes before flowering. Basagran MUST BE used with all Raptor applications as this decreases flowering delay. PHI is 10 days when used with Basagran. Only a non-ionic surfactant may be used (i.e., nitrogen based fertilizers may not be used).					
<i>sethoxydim</i> (annual grasses)					
Poast	1-1.5 pt	15	12	5-7	Apply when grasses are actively growing and not under stress. Apply with 2 pt oil concentrate per acre.
1.5 lb/gal					
<i>quizalofop P-ethyl</i> (annual and perennial grasses)					
Assure II	0.375-0.75	30	12	2-4	Apply when grasses are growing, 2-6" tall (annuals) or 6-10" tall (perennials) and not under stress. Use with 1% v/v petroleum-based oil concentrate or with 0.25% v/v nonionic surfactant. Two applications may be necessary for adequate control of quackgrass. Do not apply more than 14 oz/A in a growing season. Tank mixes with postemergence broadleaf herbicides may reduce efficacy.
0.88 lb/gal	pt				
Targa	0.375-0.75	30	12	2-4	
0.88 lb/gal	pt				
<i>metribuzin</i> (broadleaves)					
Sencor DF	2-2.66 oz	21	12	3-4	See comments below
0.75 lb/lb					
NOTE: Use requires Section 24 (c) label. Apply when weeds are less than 2 inches in height or diameter. Peas should have a minimum of 3 nodes (2 expanded leaf pairs) at application. Peas should NOT be treated after reaching 6 inches in height or in the flowering stage. Sencor DF may be tank mixed with Basagran to increase the number of weed species controlled. Sencor DF should be tank-mixed with Basagran at 1 pt/acre. Sencor DF may not be tank-mixed with Thistrol or Rhomene. Do not use surfactants with Sencor DF applications.					
<i>MCPB</i> (broadleaves)					
Thistrol 2S	2 pt		12	9	Do not apply later than 3 nodes before flowering. In early peas, those at nodes 9-11, the timing of this postemergence application is critical. Late applications in early peas cause nonuniform flowering resulting in uneven maturity.
2 lb/gal					
<i>MCPB+ bentazon</i> (broadleaves)					
Thistrol 2S	2 pt		12 (alone)	19	This combination effectively controls many emerged broadleaves if applied when the weeds are at the recommended stage of development. Note that REI for tank mix is 48 hours.
2 lb/gal					
+	+				
Basagran	1 pt		48 (alone)	17	
4 lb/gal					

Compound(s)

<u>Common name</u>	Rate/A	PHI	REI	Field	
<u>Trade name</u>	<u>Product</u>	<u>(days)</u>	<u>(hours)</u>	<u>Use EIQ</u>	<u>Comments</u>
preplant incorporated, preemergence, or postemergence					
<i>imazethapyr</i> (nightshade, redroot pigweed, and mustard species)					
+Pursuit 2 lb/gal	2-3 fl oz	30	4	<1	See comments below

Postemergence applications require a nonionic surfactant. May not be used PPI or preemergence where Treflan has been or will be applied. If applying postemergence to Treflan-treated beans, reduce the rate to 2 fl oz. Caution: do not apply to sandy or loamy-sand soils. Carefully observe the crop rotation restrictions as this is a persistent herbicide. For example, the rotation restriction periods are 18, 26, and 40 months for sweet corn, potatoes, and cabbage, respectively.

21.8 References

- 1 Hagedorn, D. J., ed. 1984. Compendium of Pea Diseases. American Phytopathologic Society. Saint Paul, Minnesota. 57 pp.
- 2 Vea, E. V., D. R. Webb, and C. J. Eckenrode. 1975. Seedcorn maggot injury. New York's Food and Life Sciences Bulletin 55. 4 pp.
- 3 Hoffmann, M. P., and A. C. Frodsham. 1993. Natural Enemies of Vegetable Insect Pests. Cornell Cooperative Extension. 64 pp.
- 4 Pennsylvania State University. 1987. Weed identification, pp. 1-32. Pennsylvania State University Cooperative Extension, University Park.
- 5 Shelton, A.M. and R.C. North. 1987. Injury and control of onion thrips on edible podded peas. J. Econ. Entomol. 80: 1325-1330.