

# 2003 New England Pea Crop Profile

Compiled for the PRONewEngland Pest Management Network  
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# I. Introduction

This profile describes pests that may be encountered by New England pea growers and the approved pesticides that may be used to control them. Only a few pests actually require treatment on an individual farm in a single year. Available effective options are listed for each pest. If treatment is needed, only one of those options would be used per application. Some pests require multiple applications for control; others require only a single application.

Information on grower practices was collected by a survey mailed to all known vegetable growers in the six New England states from July–October, 2003. The Dillman survey method was used to design and conduct the survey. Of 713 surveys sent, 364 (51%) were returned. Of those 364 responses, 94 were from people growing peas. Thus, 94 responses were used as the basis for calculating percent of growers who chose a specified response to a question.

# II. Production Overview

New England pea growers responding to the survey had a total of 67 acres in peas in 2002. In New England, peas are produced by diversified fresh market vegetable producers. The majority of peas (82% of acres), are grown for local retail fresh market, 9% are wholesaled, 7% are for pick-your-own markets, and the remaining 2% are split between processing and Community Supported Agriculture sales. Growers did not keep track of yield per acre. For the growers who responded to the survey, 79% of their crop was English/garden peas, 13% was sugar peas/sugar snap, 4% was edible podded/snow peas, and 1% was other varieties.

## Cultural Practices

Peas are a cool-season crop that may be planted as early in the spring as the soil becomes tillable. Pea seed will germinate well at soil temperatures as low as 50°F, but germination is slow. Extended periods of cool, wet weather during the germination period may cause rotting of the seed. For this reason, fertile, well-drained sandy soils should be selected

for early season plantings. Finer-textured soils with high moisture-holding capacities are preferred for late spring crops. The use of treated seed is helpful in overcoming the problem of seed decay.

Root rot organisms that attack peas usually begin at the tips of the feeder roots and progress towards the main roots, or occasionally show on the stem slightly above ground level. The prevalence of these diseases makes rotation a desirable practice when growing peas.

Peas that mature during hot, dry weather frequently show reduced yield and quality. Where hot, dry conditions normally occur, pea planting is suspended in mid-May and resumes in July for fall harvest. If hot, dry summer weather occurs for only short periods, plantings can be made throughout the summer, using heat-resistant varieties for mid-summer harvest.

Thirty-nine percent of the growers used composted manure and 18% used fresh manure. Overhead irrigation was used by 41% of the growers and drip irrigation was used by 16% of the growers. Thirty-five percent of the growers reported using staking/trellising for their pea crop. Other horticultural practices included use of commercial fertilizers (5%), compost (3%), and mulch (2%).

Sixty-three percent of the growers reported use of soil samples to determine fertilizer needs in most years. Twenty-seven percent of the growers took soil samples annually, 15% every other year, and 22% every three years.

### **Pest Management Overview**

The average number of annual pesticide applications for insect pests was 0.12, for mites 0.01, diseases 0.09, and weeds 0.37. Growers ranked the frequency of insect pests, with 13% managing corn earworm and 5% managing fall armyworm on an "annual" basis. Most growers reported that corn earworm (55% of growers), fall armyworm (60%), and pea aphid (57%) were "never a problem" in peas.

"Occasional control" was necessary for seed decay (16% of growers) and damping off (12%). But most growers reported that stem canker (53%), root rot (49%), damping off (44%), and seed decay (42%) were "never a problem."

Annual broadleaf weeds were an “annual” problem for 70% of the growers, followed by annual grasses (54%), perennial broadleaf weeds (38%), and perennial grasses (36%).

“Annual” vertebrate pest problems included deer for 8% of the growers, followed by woodchucks at 5%, and raccoons at 4%.

Fifty-six percent of the pea and carrot growers implemented IPM practices such as insect trapping, and field sampling. The largest portion of growers (42%) did their own scouting, but some had farm employees or family members (9%), or private consultants (5%) conduct the scouting. Those who used sampling methods used informal sample patterns (30%) or standardized sample patterns (7%) and used insect traps (17%).

Factors that were “very important” in choosing a pesticide were toxicity of pesticides (67% of growers), effectiveness (64%), phytotoxicity (59%), potential environmental impacts (59%), impacts on non-target organisms (52%), packaging (35%), and cost per acre (34%).

Weather information was used frequently to make pest management decisions. Sixty-nine percent of the growers frequently used rain forecasts, wind speed forecasts (52%), rainfall totals (47%), humidity (36%), and temperature (28%). Thirty-nine percent of the growers would “frequently” base their irrigation schedule on observed and forecasted weather.

Growers ranked the following sources information as being “very important” in making their pest management decisions: other growers (47%), New England Vegetable Management Guide (46%), University/Extension staff (43%), off-season education meetings (42%), and newsletters (39%). “Somewhat important” were suppliers/dealers (45%), trade publications (40%), web sites (30%), and twilight meetings (29%).

Of those growers who described their crop production, 44% reported themselves as organic, 30% reported themselves as conventional, and 28% reported themselves as IPM.

### **Worker Activities:**

Worker activities that may occur during the growing season include mulching, weeding, scouting, mowing, irrigation, fertilizing, pesticide application, and harvesting.

### III. Insect and Mite Pests

Insecticide was applied to 4.5% of the pea crop to manage pea aphids. Lannate LV was used on 4.5% of the acreage; Diazinon was used on 3% of the acreage; and Sevin XLR Plus was used on <1%.

Insecticide was applied to <1% of the pea crop to manage corn earworm. Sevin XLR Plus, pyrethrins, and Neem were each used on <1% of the acreage.

To manage fall armyworm, insecticide was applied to <1% of the pea crop.

#### 1. Corn Earworm (CEW)

**Type of Pest:** Insect

**Frequency of Occurrence:** 13% of growers reported that this pest requires annual control and 5% of growers reported that this pest requires occasional control.

**Damage Caused:** Peas are vulnerable to CEW larval feeding from bud stage to harvest. When the eggs hatch, the larvae begin feeding immediately. CEW can feed on the foliage, which results in holes. They also feed on the outside of the pod, which causes surface damage, and burrow into the pods to feed on seeds.

**Regional Differences:** None

**Cultural Control Practices:** Rotation, fall tillage

**Biological Control Practices:** Conservation enhancement

**Timing of Control:** To reduce the risk of infestation, avoid fields near corn or fields that had corn nearby in the previous year. If rotation is not feasible, protect with regular insecticide sprays, starting when the peas begin flowering.

**Post-Harvest Control Practices:** None

Active Ingredient	TRADE NAME	PHI	RATES	REI
bifenthrin	Capture 2EC	3 days (succulent only)	2.1 to 6.4 oz/A	12 hrs
carbaryl	Sevin XLR PLUS	3 days (fresh), 21 (dry)	1 to 1-1/2 qt/A	12 hrs
esfenvalerate	Asana XL	3 days	5.8 to 9.6 oz/A	12 hrs
lambda-cyhalothrin	Warrior	7 days	2.5 to 3.8 oz/A	24 hrs
spinosad	Entrust	3 days	1.25 to 2 dry oz/A	4 hrs
spinosad	SpinTor 2 SC	3 days	4 to 6 oz/A	4 hrs

zeta-cypermethrin	Mustang	1 day	3 to 4.3oz/A	24 hrs
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## **2. Fall Armyworm**

**Type of Pest:** Insect

**Frequency of Occurrence:** 5% of growers reported that this pest requires annual control. 3% of growers reported that this pest requires occasional control.

**Damage Caused:** Leaf feeding

**Regional Differences:** None

**Cultural Control Practices:** Fall tillage

**Biological Control Practices:** Lacewing larvae

**Post-Harvest Control Practices:** None

Active Ingredient	TRADE NAME	PHI	RATES	REI
bifenthrin	Capture 2EC	3 days (succulent only)	2.1 to 6.4 oz/A	12 hrs
carbaryl	Sevin XLR PLUS	3 days (fresh), 21 (dry)	1 to 1-1/2 qt/A	12 hrs
esfenvalerate	Asana XL	3 days	5.8 to 9.6 oz/A	12 hrs
lambda-cyhalothrin	Warrior	7 days	2.5 to 3.8 oz/A	24 hrs
spinosad	Entrust	3 days	1.25 to 2 dry oz/A	4 hrs
spinosad	SpinTor 2 SC	3 days	4 to 6 oz/A	4 hrs
zeta-cypermethrin	Mustang	1 day	3 to 4.3oz/A	24 hrs

### 3. Pea Aphid

**Type of Pest:** Insect

**Frequency of Occurrence:** 0% of growers reported that this pest requires annual control. 5% of growers reported that this pest requires occasional control.

**Damage Caused:** Severe aphid infestations retard growth, reduce yield, and may even kill plants. A black fungus that grows on the honeydew excreted by the aphid reduces palatability.

**Regional Differences:** None

**Cultural Control Practices:**

**Biological Control Practices:** The common ladybird beetle, *Hippodamia convergens*, is an important aphid predator. Green lacewings and other predators including bigeyed bugs (*Geocoris* spp.) damsel bugs (*Nabis* spp.), and syrphid flies also play a role. Preliminary data indicate that the major parasite of the pea aphid is *Aphidius smithi*.

**Post-Harvest Control Practices:** None

Active Ingredient	TRADE NAME	PHI	RATES	REI
bifenthrin	Capture 2EC	3 days (succulent only)	2.1 to 6.4 oz/A	12 hrs
dimethoate	Dimethoate 4EC	0 days	5.33 to 16 oz/A	48 hrs
esfenvalerate	Asana XL	3 days	2.9 to 5.8 oz/A	12 hrs
lamba-cyhalothrin	Warrior	7 days	2.5 to 3.8 oz/A	24 hrs
methomyl	Lannate LV	1 day	1-1/2 to 3 pt/A	48 hrs
pyrethrin	PyGanic EC5.0	See label	4.5 to 18 oz/A	12 hrs

## IV. Diseases and Nematodes

Seed decay was managed by 11% of the growers on 16% of the pea crop. Growers used treated seeds on 15% of the acreage. Captan was used on 6% of the acreage. Fungicide was applied to 3% of the pea crop to manage damping off. Growers used treated seed on 2% of the acreage. Bravo was applied to 3% of the pea crop to manage powdery mildew.

Forty-four percent of the growers used one or more cultural practices to control diseases in peas. Growers used crop rotation (27%), followed by cultivation (13%), hand hoeing (3%), and staking (3%). Several other practices were reported including using compost, using raised beds, and removal of diseased plants in the management of diseases. Most growers reported "excellent" and/or "good" disease management using these practices.

### 1. Damping-Off

**Type of Pest:** Disease

**Frequency of Occurrence:** 3% of growers reported that this pest requires annual control. 12% of growers reported that this pest requires occasional control.

**Damage Caused:** Seeds may be infected as soon as moisture penetrates the seed coat or a bit later as the radical begins to extend. The seed rots immediately under the soil surface (pre-emergence damping-off). This condition results in a poor, uneven stand of seedlings, often confused with low seed viability. Cotyledons may break the soil surface only to wither and die or healthy looking seedlings may suddenly fall over (post-emergence damping-off). Infection results in lesions at or below the soil line. The seedling will discolor or wilt suddenly, or simply collapse and die. Weak seedlings are especially susceptible to attack by one or more fungal pathogens when growing conditions are only slightly unfavorable. Damping-off is easily confused with plant injury caused by insect feeding, excessive fertilization, high levels of soluble salts, excessive heat or cold, excessive or insufficient soil moisture, or chemical toxicity in air or soil

**Regional Differences:** None

**Cultural Control Practices:** Well-drained soils, spacing, crowns above soil line, treated seed, and crop rotation

**Biological Control Practices:** none.

FUNGICIDE	PHI	RATE	REI
chlorothalonil, (Bravo Ultrex 82 WDG)	14 days	1.25 to 1.8 lbs/A	12 hours

## **2. Seed Decay**

**Type of Pest:** Fungus

**Frequency of Occurrence:** 2% of growers reported that this pest requires annual control. 16% of growers reported that this pest requires occasional control.

**Damage Caused:** Rotting or deterioration of seeds

**Regional Differences:** None

**Cultural Control Practices:** Treated seeds

The survey provided no specific information on which fungicides are used for this disease.

## **3. Root Rot**

**Type of Pest:** Fungus

**Frequency of Occurrence:** 3% of growers reported that this pest requires annual control. 10% of growers reported that this pest requires occasional control.

**Damage Caused:** Above ground symptoms of root rot include stunting, low vigor, or wilting on a warm day. Foliage of such plants may yellow and fall prematurely starting with the oldest leaves. The roots of a diseased plant will have some shade of brown or black and evidence of water-soaking.

**Regional Differences:** None

**Cultural Control Practices:** Plant in well drained soils, crop rotation, delay planting until 60F or higher, and cultivation.

The survey provided no specific information on which fungicides are used for this disease.

## **4. Stem Canker**

**Type of Pest:** Fungus

**Frequency of Occurrence:** 0% of growers reported that this pest requires annual control. 7% of growers reported that this pest requires occasional control.

**Damage Caused:** Plants with stem canker are often first noticed in field areas where the crop stand is thin. An infected plant will have one brown, slightly sunken lesion at the base of a branch or a leaf petiole on one side

of the stem. The lesion expands along the stem and sometimes severely girdles it

**Regional Differences:** None

**Cultural Control Practices:** Cultivation, rotation, weeding

FUNGICIDE	PHI	RATE	REI
copper hydroxide (Champ)	See label	1 to 2 lbs/A	24 hrs

## **5. Powdery Mildew**

**Type of Pest:** Fungus

**Frequency of Occurrence:** 5% of growers reported that this pest requires annual control. 2% of growers reported that this pest requires occasional control.

**Damage Caused:** Powdery mildew attacks the leaves, but stems and heads are also affected. The fungus grows primarily on the surface of the host and feeds on the living green cells. Small white or gray tufts of spore-producing fungus are most prevalent early in the growing season on the upper surface of the lower leaves. Tissue on the opposite sides of the leaf turns pale green to yellow. The fungal tufts enlarge, join, and may turn a reddish brown.

Damage occurs from reduced photosynthetic ability when green surfaces are shaded and the host is robbed of moisture and food by fungal growth. Yields may be reduced by 20% or more.

**Regional Differences:** None

**Cultural Control Practices:** Rotation, cultivation, weeding

**Biological Control Practices:** none.

FUNGICIDE	PHI	RATE	REI
chlorothalonil, (Bravo Ultrex 82 WDG)	14 days	1.25 to 2.5 lbs/A	12 hours
copper hydroxide (Champ)	See label	1 to 2 lbs/A	24 hrs

## V. Weeds

Weeds are an important category of pests in pea crops. Annual broadleaf weeds are the major weed problem, with over 70% of growers reporting that they required annual control; 54% of growers reported that annual grasses required annual control; 38% reported that perennial broadleaf weeds needed control, and 36% reported that perennial grasses needed control.

### Weed Management

Thirteen percent of the pea crop acreage received stale seedbed herbicide applications. Roundup Ultra 4S was applied to 13% and Basagran to 4% of acreage. Growers used both full and reduced rates and reported "excellent" and/or "good" control.

Eighteen percent of the pea crop acreage received preplant incorporated herbicide applications. Treflan HTP was applied to 10% of the acres, followed by Roundup on 6% and Trilin 4EC on 5%. Growers used full rates and reported "good" control.

Postemergence herbicide applications were applied to 37% of the acres. Basagran 4E was applied to 30% of the acres, followed by Poast 1.5L on 18% and Dacthal on 1%. Growers used full rates and reported "excellent" and/or "good" control.

Eighty percent of the growers reported using cultivation for weed management in peas. They also reported "excellent" and/or "good" weed suppression. Growers used other cultural weed management strategies, including hand weeding (66%), mulching (14%), and mowing (9%). Most reported "excellent" and/or "good" weed management.

### 1. Stale Seed Bed

Three percent of farmers surveyed reported treating their pea crop with stale seed bed applications.

PRODUCT	TRADE NAMES	PHI	RATE	REI
glyphosate	Roundup 4S	14 days	1 to 5 pts/A	12 hrs
paraquat	Gramoxone Max 3S (not for use on dry beans)	7 days	1.5 to 2.7 pts/A	12 hrs
pelargonic acid	Scythe 4.3	See label	3 to 10 gal/A	24 hrs

## **2. Preplant Incorporated –Transplants**

Eleven percent of growers reported treating peas with preplant incorporated herbicide.

<b>PRODUCT</b>	<b>TRADE NAMES</b>	<b>PHI</b>	<b>RATE</b>	<b>REI</b>
clomazone	Command 4EC	See label	1 pt/A	12 hrs
trifluralin	Trilin 4EC	See label	1-1/2 pt/A	12 hrs

## **3. Post Emergence**

Twenty percent of growers reported treating peas with a post-emergent herbicide.

<b>PRODUCT</b>	<b>TRADE NAMES</b>	<b>PHI</b>	<b>RATE</b>	<b>REI</b>
bentazon	Basagran 4E	30 days	1-1/2 to 2 pts/A	48 hrs
MCPB	Thistrol 2S	See label	2 to 3 pts/A	48 hrs
pelargonic acid	Scythe 4.3	See label	3% to 10%	24 hrs
sethoxydim	Poast 1.53EC	30 days (dry), 15 days (succulent)	1 to 1.2 pt/A	12 hrs

## VI. Vertebrate Pests

Twenty-seven percent of growers used strategies to manage bird damage. Scare-eye balloons were used by 12% of the growers, followed by flash tape (10%), owls (5%), propane cannons (4%), netting (3%), and row cover (3%). Most growers reported “good” control with these strategies.

Thirty-eight percent of the growers reported other vertebrate pest problems. Deer and woodchucks were most often reported by growers. Seventeen percent of growers used various management strategies for deer, including electric fences (5%), other fencing (5%) and shooting (2%). Nineteen percent of the growers had problems with woodchucks and they used smoke bombs (5%), rifles (4%), dogs (4%), and traps (2%). Other vertebrate problems included moles, raccoons, groundhogs, and mice; control strategies included shooting, trapping, baiting, and fences. Most growers reported “excellent” and/or “good” management with these strategies.

### 1. Birds

**Type of Pest:** Vertebrate

**Frequency of Occurrence:** Constant pressure. 17% of growers reported that this pest requires annual control. 9% of growers reported that this pest requires occasional control.

**Damage Caused:** Severe damage to crops.

**Timing of Control:** When damage is noticed.

**Regional Differences:** Each farm differs.

**Cultural Control Practices:** Use of scare-eye balloons reported by 12% growers, flash tape (10%), fake owls (6%), propane canons (4%), and netting (3%). Other tactics include fencing, overplanting, and shooting.

**Chemical Controls:** Bird toxicants

### 2. Deer

**Type of Pest:** Vertebrate

**Damage Caused:** 16% of growers reported that this pest requires annual control; 9% of growers reported that this pest requires occasional control.

**Regional Differences:** Each farm differs in deer damage pressure.

**Cultural Control Practices:** Control tactics reported by growers included fencing, electric fencing, canons, shooting, talk radio, and lead poisoning.

### **3. Woodchuck**

**Type of Pest:** Vertebrate

**Frequency of Occurrence:** occasional pressure

**Damage Caused:** 15% of growers reported that this pest requires annual control; 5% of growers reported that this pest requires occasional control.

**Regional Differences:** each area differs.

**Cultural Control Practices:** shooting, trapping, gas, dogs, and smoke bombs.

### **4. Minor Vertebrate Pests**

Groundhogs, raccoons, mice/voles, chipmunks, rabbits, and turkeys.

## VII. Acknowledgments

### References

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3. Farm Chemicals Handbook, 2003. R. T. Meister, G. L. Berg, C. Sine, S. Meister, and J. Poplyk, eds. Meister Publishing Co., Willoughby, OH.

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