2003 New England Peas Crop Profile

Compiled for the PRONewEngland Pest Management Network
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Note: This profile is a comprehensive list of pests that may be encountered by New England bean 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. For each pest all of the available effective options are listed. If treatment is needed, only one of those options would be used per application. Some pests require multiple applications for control, others only require a single application.

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I. Production Overview

In New England, peas are produced by diversified fresh market vegetable producers. The majority of peas (68%), are grown for local retail fresh market, 12% are wholesaled, 11% are for pick-your-own markets, 1% are for processing and 8% are grown for other uses (home use, farm stands, senior farm share, restaurants, CSAs, and unpicked). Growers reported managing an average of 72 acres for the year 2002. Over the past five years the average annual yield of peas per acre was 3959 lbs. Of the farmers who responded to our survey, 40% of their crop was English/garden peas, 36% was sugar peas/sugar snap, 23% 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 occurrence 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 in your area, pea planting should be suspended in mid-May and resume 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.

Most growers use IPM practices such as overhead irrigation, composted manure, staking/trellising, fresh manure, and drip irrigation. Seventy-one percent of farmers reported conducting IPM practices

themselves, 16% said IPM practices were done by a farm employee or family member, 9% by a private IPM scout or consultant, and 4% from other sources ~~(UOM)~~. When making pest management decisions, they most frequently used the following weather information: forecasts for next rain, wind speed, and rainfall totals. They also frequently based irrigation scheduling on weather forecasts.

Most of the sampling patterns are informal (43%) rather than on scheduled intervals, with 25% of growers reporting use of insect traps, and 22% reporting no use of sampling methods. When choosing pesticides for use on their farms, growers reported toxicity, effectiveness, phytotoxicity, and potential environmental effects as the most important factors in their decision making.

Growers use the *New England Vegetable Management Guide*, off-season educational meetings, newsletters, university/extension staff, suppliers and dealers, other growers, and twilight meetings as the most important sources of pest management information. Of the growers surveyed, 49% classify their crop production practices as organic, 33% as conventional, and 31% as IPM.

Sixty-one percent of farmers reported using soil samples to determine fertilizer needs. Of those, 40% had samples taken once a year, 22% every other year, and the remaining farmers every three years or more.

Worker Activities:

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

II. Insect and Mite Pests

1. Corn Earworm

Type of Pest: Insect
Frequency of Occurrence: 135% of growers reported that this pest requires annual control.~~the crop usually requires routine annual treatment.~~ 5% of growers reported that this pest requires occasional control.

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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, till in fall, and organic practices.
Biological Control Practices: Conservation enhancement is very important.
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
lamba-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

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.
~~6% of the crop usually requires routine annual treatment.~~
Damage Caused: Leaf feeders
Regional Differences: None
Cultural Control Practices: Till in fall, organic practices
Biological Control Practices: lacewing larvae
Post-Harvest Control Practices: None

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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
lamba-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.
~~6% of those surveyed reported this insect as an occasional pest.~~
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: Organic practices
Biological Control Practices: The common aphid predator, *Hippodamia convergens*, a reddish lady beetles attack and consume both of these aphids. Green lacewings can also be important in regulating aphids and many 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*,

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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

III. Diseases and nematodes

Over forty percent of growers surveyed reduced disease incidence with the following cultural practices: crop rotation, weed control, cultivation, compost, mulch, raised beds, sandy loam, cover crop, and burning. Of farmers surveyed, the primary viruses and diseases reported as routine or occasional problems were: Damping-Off (19% of growers reported problems), Seed Decay (22%), Root Rot (16%), Stem Canker (10%), and Powdery Mildew (1%).

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.
~~5 percent of farmers surveyed treat crop annually.~~

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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 whither 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: 7 percent of farmers surveyed treat crop annually.
Damage Caused: Rotting or deterioration of seeds
Regional Differences: None
Cultural Control Practices: Treated seeds

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

3. Root Rot
Type of Pest: Fungus
Frequency of Occurrence: 1% of farmers surveyed treat their crop annually.
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.

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

4. Stem Canker
Type of Pest: Fungus
Frequency of Occurrence: 1 percent of farmers surveyed treat crop annually.
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: 4% of farmers surveyed treat their crop annually.

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 of the cereal plant. 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
pyrethrin (PyGanic EC5.0)	See label	4.5 to 18 oz/A	12 hrs

IV. Weeds

Weeds are an important category of pests in pea crops. Thirty percent of New England growers reported using chemical controls for weeds each year. Farmers reported using cultural practices to control weeds, including cultivation, hoe/hand weeding, mowing, rototilling, flaming, crop rotation, cover cropping, and mulching. Growers reported having routine annual problems with annual broadleaf weeds (79% surveyed reported problems) and annual grasses (65 % of farmers surveyed). Forty-eight percent of farmers reported perennial broadleaf weeds and 46% reported perennial grasses as a routine annual problem.

1. Stale Seed Bed

Three percent of farmers surveyed reported treating bean 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

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

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pea, not bean, right?

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

4. Post Emergence

Twenty percent of growers reported treating peas with post emergence herbicide.

PRODUCT	TRADE NAMES	PHI	RATE	REI
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

V. Vertebrate Pests

1. Birds

Type of Pest: Vertebrate
Frequency of Occurrence: constant pressure
Damage Caused: Severe damage to crops.
Vertebrate pests are significant in New England.
Timing of Control: When damage is noticed**.**
Regional Differences: Each farm differs.
Cultural Control Practices: Scare eye balloons reported by 11% growers, flash tape (9%), netting (3%), owls (6%), propane canons (4%), other tactics include fencing, over planting, shooting.
Chemical Controls: Bird toxicants

2. Deer

Type of Pest: Vertebrate
Damage Caused: 37% of growers report deer damage was common on farms.
Regional Differences: Each farm differs in pressure from deer.
Cultural Control Practices: Control tactics include fencing, electric fencing, canons, shoot, talk radio, and lead poisoning.

3. Woodchuck
Type of Pest: Vertebrate
Frequency of Occurrence: occasional pressure
Damage Caused: 35% of the growers reported woodchucks as important pests.
Regional Differences: each area differs.
Cultural Control Practices: shoot, trap, gas, dogs, and smoke bomb

4. Minor Vertebrate Pests:
Groundhogs, raccoons, mice/voles, chipmunk, rabbits, and turkeys

VI. Acknowledgements:

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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