

New England Brambles Pest Management Survey Results

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A survey was distributed to 324 New England bramble growers in the fall of 2006. A Dillman survey methodology was used to design and conduct the survey. The original survey may be found at the website <http://PRONewEngland.org>.

New England Brambles Pest Management Survey Returns

State	#Surveys Sent	#Surveys Returned	%Return	#Growing Brambles	#Brambles Acres
MA	112	75	67	43	57.1
VT	57	40	70	20	43.6
ME	53	40	75	25	27.4
NH	47	30	64	23	24.9
CT	34	20	59	10	16.4
RI	21	8	38	5	6.3
Total	324	213	66	126	175.7

Question A2. Over the past five years, what is your average annual yield of harvested brambles per acre? (N=94)¹

Number of Growers Reporting	77
Percent of Growers ²	61
Number of Acres	118
Percent of Acres	67
Total Pounds/Year	226,586
Average Pounds/Acre	1926

¹N is used throughout the entire document and refers to the number of growers who answered the question.

²Percent of growers was calculated using the number growers who responded to the survey as the denominator, not the number of growers responding to a particular question. Many questions allowed multiple answers, thus percent responses may sum to more than 100%.

Question A3. What percent of your brambles crop are: (N=125)

Bramble Varieties	#Acres	%Acres
Summer red raspberries	88.8	50.5
Fall red raspberries	66.9	38.1
Blackberries	7.8	4.4
Summer black raspberries	3.7	2.1
Fall yellow raspberries	2.8	1.6
Summer purple raspberries	2.2	1.2

Question A4. What percentage of your brambles is sold through each of these markets? (N=125)

Markets	#Acres	%Acres
Pick-your-own	84.4	48.0
Fresh market, retail	55.2	31.4
Fresh market, wholesale	23.1	13.2
Processing	5.9	3.4
CSA	4.0	2.3

Question B1. Which of the following pruning practices do you use? (Circle all that apply.) (N=124)

Pruning Practices	#Growers	%Growers
Dormant season removal of old canes	93	73.8
March pruning	61	48.4
Dormant season thinning of primocanes	56	44.4
February pruning	9	7.1
January pruning	6	4.8

Question B2. Do you use leaf tissue analysis to determine fertilizer needs? (Circle your answer) (N= 125)

Leaf tissue analysis	#Growers	%Growers
No	103	82.4
Annually	8	6.4
Every 2 years	3	2.4
Every 3 years	7	5.6

Question B3. Do you use a soil test to determine fertilizer needs in most years? (Circle your answer) (N= 125)

Soil test	#Growers	%Growers
Annually	21	16.7
Every 2 years	21	16.7
Every 3 years	22	17.5
No	57	45.6

Question B4. Which soil/and/or nutrient management practices do you use? (Circle all that apply) (N=123)

Practices	#Growers	%Growers
Single Spring fertilizer application	67	53.2
Split fertilizer application (May/June)	44	34.9
Compost application	26	20.6

Insects and Mites Section

Question C1. Which of these insects/mites require routine annual management, require occasional management, or are never a problem in your brambles? (N=119)

Rank	Insect/Mite	Weighted Number*
1	Japanese beetles	290
2	Tarnished Plant Bug	192
3	Raspberry Cane Borer	178
4	Yellow jackets	124
5	Raspberry Crown Borer	122
6	Raspberry Fruitworm	122
7	Two Spotted Spider Mite	96
8	Aphids	94
9	Sap Beetles	80
10	Strawberry Bud Weevil	76

*The weighted number was determined by multiplying routine annual management by 4, occasional management by 2, and never a problem by 0.

Question D1. Which of the following practices do you use to manage insects and/or mite pests? (Circle all that apply.) (N=124)

#Growers	%Growers	Practices used to manage insect and mite pests
58	46.0	Read state or regional pest alerts/newsletters
55	43.7	Field scouting for Tarnished Plant bug
55	43.7	Remove weeds that may harbor insect pests
49	38.9	Avoid excess N fertilizer application
47	37.3	Eliminate wild brambles
38	30.2	Pick all berries even overripe
36	28.6	Field scouting for mites
33	26.2	Field scouting for other pests
30	23.8	Handpicking of insect pests
18	14.3	Using traps for Japanese beetles
10	7.9	none
5	4.0	Release predatory mites to control twospotted mites
5	4.0	Using traps for yellowjackets
4	3.2	Other

Question D2. Please indicate the number of applications that you made in 2006 for the following pesticides for managing insects/mites in brambles. (N=114)

Pesticide ³	#Growers	%Growers	Average number of applications
Asana XL	12	9.5	1.7
Aza-Direct	8	6.3	2.4
Brigade	2	1.6	1
Capture 2EC	6	4.8	2.5
Danitol	1	1	1
Dipel	2	1.6	1.5
Elevate	1	1	1
Fanfare 2EC	-	-	-
JMS Stylet Oil	1	1	1
Imidan	1	1	2
Lime Sulfur	1	1	1
Lorsban	1	1	1
Malathion 8E	11	8.7	1.5
Malathion 57EC	14	11.1	2.1
M-Pede	2	1.6	2.0
Oxidate	1	1	2

³See Appendix A (page 29) for Brand names and active ingredients

Provado	1	1	1
PyGanic EC	7	5.6	2.3
Pyrellin EC	2	1.6	1
Pyrenone Crop Spray	5	4.0	2.4
Savey 50 WP	3	2.4	1.3
Sevin XLR	37	29.4	1.7
Spintor	1	1	1
Surround WP	1	1	2
Thiodan	1	1	1

The following insect and mites pests (pages 5-9) are listed according to the number of growers who used pesticides to manage the pest in 2006. The survey listed several pesticides and some practices. Growers were able to write in additional pesticides and practices.

Japanese beetle	Number	Percent
(N=173)		
Acres Treated	78.6	44.7
Growers	57	45.2

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Asana	2	1.6	1.33	<1	1	1	-
Aza-Direct	4	3.2	7.7	4.4	2	1	-
Imidan	1	1	3	1.7	-	-	1
Malathion 8E	15	12	24.4	13.9	1	12	2
Malathion	1	1	1.5	<1	-	1	-
Provado	1	1	4	2.3	1	-	-
PyGanic EC	7	5.6	11.2	6.4	2	4	1
Pyrellin EC	-						
Pyrenone Crop Spray	6	4.8	6	4.7	3	2	1
Sevin XLR Plus	26	20.6	37.0	21.1	14	11	1
Surround WP	-						
Other Strategies							
Traps	5	4.0	11.4	6.5	1	3	1
Handpicking	7	5.6	6.5	3.7	2	2	1

³See Appendix A (page 29) for Brand names and active ingredients

Tarnished Plant Bug (N=114) Number Percent
 Acres Treated **79.7** **45.4**
 Growers **45** **35.7**

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Asana	5	4.0	7.3	4.2	1	3	1
Aza-Direct	4	3.2	10.7	6.1	4	-	-
Brigade	1	1	4	2.3	1		
Danitol	1	1	3	1.7	-	1	-
Malathion	4	3.2	4.9	2.8	-	4	-
PyGanic EC	7	5.6	14.5	8.3	3	4	-
Pyrenone Crop Spray	2	1.6	5.3	3.0	1	1	-
Sevin XLR	27	21.4	40.8	23.2	7	18	2
Thiodan	1	1	0.3	<1	-	1	-

Raspberry Number Percent
Fruitworm (N=118)
 Acres Treated **49.7** **28.3**
 Growers **35** **27.8**

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Asana	1	1	1	<1	1	-	-
Aza-Direct	3	2.4	8.5	4.8	3	-	-
Bacillus thuringiensis	1	1	1.6	<1	1	-	-
Imidan	1	1	3	1.7	-	1	-
Malathion	4	3.2	7	4.0	-	3	-
Pyrellin EC	1	1	4.0	2.3	-	-	1
Pyrenone Crop Spray	5	4.0	3.7	2.1	2	3	-
Sevin XLR	22	17.5	32.1	18.3	7	15	-
Other Strategies							
Release Trichogramma wasps	1	1	4.0	2.3	1	-	-
Predatory Mites	1	1	.33	<1	-	1	-

³See Appendix A (page 29) for Brand names and active ingredients

Aphids (N=110) Number Percent
 Acres Treated **46.8** **26.6**
 Growers **19** **15.1**

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Asana XL	6	4.7	13.5	7.7	4	2	-
Aza-Direct	2	1.6	5	2.8	1	1	-
Malathion 57EC	9	7.1	22.5	12.8	2	7	-
PyGanic EC	-						
Sevin	1	1	2.5	1.4	1	-	-
Provado	1	1	4	2.3	1	-	-
Thiodan	1	1	0.3	<1	-	1	-

Sap Beetles (N=110) Number Percent
 Acres Treated **37.3** **21.2**
 Growers **16** **12.7**

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Aza-Direct	2	1.6	7	4	2	-	-
Brigade	1	1	1.3	<1	1	-	-
Malathion 57EC	6	4.8	11.1	6.3	1	5	-
PyGanic EC	2	1.6	4.5	2.6	2	-	-
Pyrenone Crop Spray	3	2.4	10.7	6.1	1	2	-
Sevin	1	1	2.5	1.4	1	-	-
Other Strategy							
Harvest Ripe Fruit Quick	2	1.6	3.25	1.8	-	2	-

Twospotted Spider Mite (N=107) Number Percent
 Acres Treated **15.6** **8.9**
 Growers **11** **8.7**

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Aza-Direct	3	2.4	4	2.3	1	2	-
Brigade	1	1	5	2.8	-	1	1
Capture 2EC	1	1	0.5	<1	-	1	-
Fanfare 2EC	-						

³See Appendix A (page 22) for Brand names and active ingredients

JMS Stylet Oil	1	1	2	1.1	-	-	-
Malathion	1	1	1	<1	-	1	-
M-Pede	-						
Savey 50WP	2	1.6	2.7	1.6	2	-	-
Other Strategy							
Release predatory mite	1	1	0.33	<1	-	1	-

Potato Leaf hopper Number Percent
(N=3)
Acres Treated **7.7** **4.4**
Growers **3** **2.4**

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Carbaryl	1		6.5		1		
Malathion	1		0.75			1	
Sevin XLR	1		0.49		1		

Yellow jackets (N=1) Number Percent
Acres Treated **2** **1.1**
Growers **1** **1**

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
AzaDirect	1	1	2	1.6	-	1	-

Thrips (N=1) Number Percent
Acres Treated **0.33** **<1**
Growers **1** **1**

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Spintor	1	1	0.33	<1	-	1	-

³See Appendix A (page 29) for Brand names and active ingredients

Disease Section

Question C2. Which of these diseases require routine annual management, require occasional management, or are never a problem in your brambles? (Please circle your answers) (N=112)

Rank	Disease	Weighted Number
1	Botrytis fruit rot (gray mold)	252
2	Powdery Mildew	130
3	Cane Blight	124
4	Phytophthora Root Rot	118
5	Anthraxnose	110
6	Spur Blight	100
7	Orange Rust	86
8	Late Leaf Rust	66
9	Viruses	64
10	Verticillium Wilt	56
11	Crown Gall	52

Question E1. Which of the following practices do you use to manage diseases in brambles? (Circle all that apply.) (N=118)

#Growers	%Growers	Practices used to manage diseases
40	31.7	Remove all wild brambles within 600 feet of planting
80	63.5	Use certified virus-free plants
54	42.9	Disease tolerant varieties
24	19.0	Crop rotation
58	46.0	Application of fungicides
96	76.2	Prune out diseased plants
76	60.3	Thin to 4 to 5 canes per foot of row
31	24.6	Raised beds
80	63.5	Narrow fruit rows about 2 feet wide
43	34.1	Plant rows in direction of prevailing winds
2	1.6	Good trellis system
1	1	Rows far apart

1	1	Increase organic matter
1	1	Plant in high tunnel
1	1	Soil management
1	1	Increase drainage

Question E2. Please indicate the number of applications that you made in 2006 for the following pesticides for managing diseases in brambles. (N=117)

Pesticide ³	#Growers	%Growers	Average number of applications
Abound	1	<1	2
Aliette WDG	6	4.8	1.5
Cabrio	24	19	1.7
Captan 80WDG	36	28.6	2.4
Captac 4L	3	2.4	1.7
Cuprofix	3	2.4	2.7
Elevate 50WDG	24	19	2.1
JMS Stylet Oil	1	<1	1
Indar	1	<1	1
Kocide	9	7.14	1.6
Kumulus	-	-	-
Lime Sulfur	6	12.7	1.1
Microthiol Dispress	1	<1	2
Molasses w/fertilizer	1	<1	2
Nova 40 W	12	9.5	2
NutriPhyte	1	<1	3
Oxidate	1	<1	1
Phostrol	5	4	2.2
Pristine	18	14.3	1.9
Ridomil	12	9.5	1.5
Ronilan	1	<1	1
Rovral 50 WP	11	8.7	1.8
Switch WG	20	15.9	1.9
Topsin	2	1.6	2
Zerotol	1	<1	2

³See Appendix A (page 29) for Brand names and active ingredients

The following diseases (pages 12-15) are listed according to the number of growers who used pesticides to manage the pest in 2006. The survey listed several pesticides and some practices. Growers were able to write in additional pesticides and practices.

Botrytis Fruit Rot Number Percent
(N=117)
Acres Treated **113.4** **64.6**
Growers **59** **46.8**

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Cabrio	23	18.3	49.3	28.1	9	14	-
Captan 80WDG	26	20.6	65	37	8	17	1
Captec	1	<1	0.5	<1	-	1	-
Elevate 50 WDG	28	22.2	71.9	40.9	21	7	-
Indar	1	<1	3	1.7	-	1	-
Lime Sulfur	1	<1	1	<1	-	1	-
Milstop	1	<1	0.6	<1	-	1	-
Oxidate	2	1.6	10.5	6.0	-	2	-
Pristine	18	14.3	37.1	21.1	12	6	-
Rovral 50 WP	13	10.3	18.3	10.4	3	10	-
Switch WG	20	15.8	50.3	28.6	16	4	-
Topsin	2	1.6	9	5.1	1	1	-
Other Strategies							
Remove moldy berries	1	<1	2	1.1	-	-	-
Pruning	2	1.6	2	1.1	-	2	-

Anthraco Number Percent
(N=114)
Acres Treated **76.6** **43.6**
Growers **35** **27.8**

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Abound	2	1.6	4.5	2.6	2	-	-
Cabrio	17	13.5	36.8	20.9	7	10	-
Cuprofix	-						
Kocide	6	4.8	8	4.6	2	3	-
Lime Sulfur	13	10.3	39.6	22.6	8	5	-
Pristine WG	11	8.7	14.2	8.1	7	4	-
Captan	1	<1	8	4.6	-	1	-
Captec 4L	1	<1	1.5	<1	-	1	-

³See Appendix A (page 29) for Brand names and active ingredients

Cane Blight (N=113) Number Percent
 Acres Treated **78.4** **44.6**
 Growers **34** **26.9**

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Cabrio	2	1.6	3	1.7	-	1	1
Captan	2	1.6	11	6.3	-	1	1
Captec 4L	1	<1	1.5	<1	-	1	-
Champ Copper	1	<1	0.5	<1	-	-	1
Lime Sulfur	17	13.5	43.4	24.7	4	10	3
Nova	1	<1	1.5	<	-	-	1
Other Strategies							
Pruning for good air circulation	23	18.2	44.3	25.2	8	12	1
Keep rows narrow	2	1.6	4	2.3	1	-	-

Powdery Mildew Number Percent
 (N=113)
 Acres Treated **55.3** **31.5**
 Growers **29** **23**

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Abound	1	<1	0.5	<1	-	1	-
Bravo	1	<1	0.25	<1	-	-	-
Cabrio	18	14.3	32.5	18.5	8	10	-
JMS Stylet Oil	-						
Kumulus	-						
Microthiol Disperss	-						
Milstop	1	<1	0.6	<1	-	-	-
Nova 40 W	10	7.9	28.7	16.3	6	4	-
Oxidate	1	<1	10	5.7	-	1	-
Pristine	9	7.14	23.6	13.5	4	5	-
Switch	1	<1	0.3	<1	-	1	-
Other Strategy							
Thin Promote Air Circulation	1	<1	2	1.1	-	-	-

³See Appendix A (page 29) for Brand names and active ingredients

Phytophthora Root Rot (N=118)

Acres Treated	42.8	24.4
Growers	28	22.2

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Aliette WDG	4	3.2	3.7	2.1	-	4	-
Nutriphyte	1	<1	6.5	3.7	-	1	-
Phostrol	2	1.6	9	5.1	-	2	-
Ridomil	18	14.3	22.5	12.8	5	8	5
Other Strategies							
Raised bed	10	7.9	11	6.3	3	6	-
Resistant cultivars	7	5.6	7	3.9	2	3	1

Spur blight (N=110)

Acres Treated	55.3	31.5
Growers	21	16.7

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Abound	-						
Cabrio	9	7.1	34.2	19.5	4	4	1
Kumulus	1	<1	0.2	<1	-	-	1
Pristine WG	4	3.1	23.5	13.3	2	2	-
Captan	1	<1	8	4.6	-	1	-
Lime Sulfur	1	<1	2	1.1	-	1	-
Other Strategy							
Pruning	14	11.1	30.5	17.4	6	5	-

³See Appendix A (page 29) for Brand names and active ingredients

Orange Rust (N=112) Number Percent
 Acres Treated **26.2** **14.9**
 Growers **14** **11.1**

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Cabrio	3	2.4	10.5	5.9	3	-	-
Nova 40 W	8	6.3	11.4	6.5	2	6	-
Oxidate	1	<1	10	5.7	-	-	-
Pristine WG	3	2.4	7	3.9	2	1	-
Switch	1	<1	0.3	<1	-	1	-
Other Strategies							
Thin for Air Circulation	1	<1	2	1.1	-	-	-
Remove infected plant	3	2.4	3.5	1.9	-	-	-

Late Leaf Rust Number Percent
 (N=70)
 Acres Treated **15.2** **8.6**
 Growers **3** **2.38**

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
Oxidate	1	<1	10	5.7	-	1	-
Nova	2	1.6	13.2	7.7	1	1	-
Other Strategy							
Narrow rows	1	<1	2	1.1	-	1	-

³See Appendix A (page 29) for Brand names and active ingredients

Weed Management Section

Question C4. Which of these weeds require routine annual management, require occasional management, or are never a problem in brambles? (Please circle your answers) (N=124)

Rank	Weeds	Annual Mgmt	Weighed Number
	Annual broadleaf weeds	94	406
	Annual grasses	87	384
	Perennial grasses	84	378
	Perennial broadleaf weeds	77	362

Question F1. Which if the following weed management practices did you use for brambles? (Please circle the practices used and their effectiveness: excellent, good, poor.) (N=122)

Practices	#Growers	%Growers	Excellent	Good	Poor
Hand pulling	90	71.4	30	49	11
Banded herbicide appl. (over the row only)	49	38.9	12	33	3
Mechanical cultivation	45	35.7	13	28	4
Hoeing	39	30.9	8	24	7
Spot treatment	34	26.9	7	25	2
Shielded application (between rows)	9	7.1	4	4	-
Mowing	6		2	3	1
No-till or zone-till	3	2.4	-	2	1
Weed whacker	1	<1	-	1	-
Flaming	1	<1	-	-	1
Mulch	49	38.9	20	23	5
Wood chips	9	7.1	5	3	1
Sawdust	6	4.8	1	4	1
Compost manure	5	4.0	1	4	-
Straw/Barley straw	4	3.2	1	2	1
Hay	4	3.2	4	-	-
Leaves/chopped leaves	2	1.6	1	1	-
Bark	2	1.6	1	1	-
Plastic	2	1.6	2	-	-
Rubber mats	1	<1	1	-	-
Living grass	1	<1	-	1	-
Newspaper	1	<1	1	-	-
Cedar	1	<1	-	1	-

Established Plantings: Postemergence weed control (N=109)

Acres Treated **69.8** **39.8**
 Growers **47** **37.3**

Pesticide³	#Growers	%Growers	#Acres	%Acres	Excellent	Good	Poor
2,4-D	1	<1	3	1.7	-	1	-
Gramoxone Max	8	6.3	14.4	8.2	1	5	2
Poast	20	16.7	39.7	22.6	5	11	4
Roundup	1	<1	0.45	<1	-	1	-
Roundup Weather Max	26	20.6	29.1	16.5	8	15	3
Scythe	2	1.6	3.5	1.9	-	1	1
Sinbar	1	<1	3	1.7	1	-	-

³See Appendix A (page 29) for Brand names and active ingredients

Vertebrate Pest Management Section

Question C4. Which of these vertebrate pests require routine annual management, require occasional management, or are never a problem in your brambles? (Please circle your answers) (N= 117)

Rank	Vertebrate	Annual Mgmt	Weighed Number
1	Birds	14	152
2	Pine voles	13	92
3	Deer	15	88
4	Turkey	6	60
5	Skunks	1	18
6	Porcupines	2	12
7	Raccoons	1	10
8	Bear	0	8

Question G1. Which strategies do you use to manage birds in brambles? (Please circle the strategies that you use and their effectiveness: excellent, good, poor.) (N=47)

Strategy	#Growers	%Growers	Excellent	Good	Poor
Scare-eyed balloons	14	11.1	1	7	6
Recorded distress call devices	8	6.4	-	6	2
Cannons	7	5.6	2	4	2
Shell crackers	4	3.2	1	3	-
Shoot	3	2.4	1	2	-
Nylon flash tape	3	2.4	-	1	1
Avitrol bait	1	<1	-	1	-
Plant extra raspberry	1	<1	-	1	-
Owls	1	<1	-	-	1
Balloons	1	<1	-	1	-
Cats	1	<1	1	-	-

Question G2. Which strategies do you use to manage deer in brambles? (Please circle the strategies that you use and their effectiveness: excellent, good, poor.) (N=58)

Strategy	#Growers	%Growers	Excellent	Good	Poor
Hunting/Shoot	24	17.4	10	5	6
Dogs	11	8.7	3	5	2
Electric fence	9	7.1	4	3	2
Hanging soap	7	5.6	1	5	1
Fence (non electric)	5	3.9	3	2	-
Baited (peanut butter) electric fence	1	<1	0	1	0
Moth balls	1	<1	1	-	-
Garlic	1	<1	1	-	-
Human urine	1	<1	1	-	-
Coyote urine	1	<1	1	-	-
Capsaicin (Spray repellent)	-				
Hinder (Spray repellent)	-				
Deer Away (spray repellent)	-				

Question G3. Which strategies do you use to manage raccoons in brambles? (Please circle the strategies that you use and their effectiveness: excellent, good, poor.) (N=34)

Strategy	#Growers	%Growers	Excellent	Good	Poor
Dogs	8	6.35	1	5	-
Electric fence	6	4.8	4	1	-
Trapping	2	1.6	1	-	1
Hunting	1	<1	-	1	-
Plant trap crop at edge	-				

Question G4. Other Vertebrate Pests and Strategies (Please list vertebrate, list strategies used and circle their effectiveness) (N=67)

Pest and Strategy	#Growers	Excellent	Good	Poor
Bears (N=23)				
Shoot	2	1	1	-
Electric fence	1	1	-	-
Turkeys (N=33)				
Shoot	4	3	1	-
Electric fence	1	-	-	1
Cannons	1	-	1	-
Fence	1	1	-	-
Dogs	2	-	2	-
Scare crackers	1	-	1	-
Aluminium pie plates	1	-	1	-
Pine voles (N=34)				
Mouse baits	10	3	5	-
Cats	1	1	-	-
Mow grass	4	-	3	-
Plastic owls	1	1	-	-
Dogs	1	-	1	-
No sod	1	-	1	-
Fill in holes	1	-	-	-
Weed management	1	-	1	-

Decision Making Section

Question H1. Who does insect trapping or field scouting on your farm (Please circle all that apply) (N=115)

#Growers	%Growers	Who monitors for pests?
86	68.2	Grower
23	18.2	Farm employee or family member
11	8.7	Private IPM scout/consultant
10	7.9	University/Extension scout
10	7.9	No one
2	1.6	Customer
1	<1	Chemical Salesperson

Question H2. Please select the single option that best describes your use of monitoring for insect or mites pests. (N=108)

#Growers	%Growers	Pest Monitoring Practices
13	10	Treatments primarily made on calendar basis, with few decisions based on monitoring
73	58	Informal observations influence decisions, but formal sampling methods and thresholds not used.
19	15	Sampling according to standard procedures or traps, observations compared to pest threshold
7	6	Sampling or trapping with thresholds, plus use of pest models to determine need or timing for control

Question H3. Please select the single option that best describes your use of monitoring for disease management. (N=107)

#Growers	%Growers	Pest Monitoring Practices
19	15	Treatments primarily made on calendar basis, with few decisions based on monitoring
78	62	Decisions based on informal observations, but leaf/fruit sampling or infection period tracking not used.
17	13	Infection period duration or intensity estimated, leaf or fruit sampling for symptoms.
1	<1	Detailed infection period tracking and sampling or use of disease models.

Question H4. Please select the single option that best describes your use of monitoring for weed management. (N=111)

#Growers	%Growers	Pest Monitoring Practices
25	20	Treatment made on calendar basis, with few decisions based on monitoring
77	61	Decisions based on informal observations, but no formal weed scouting or weed mapping
12	10	Decisions based on informal observations, but weed scouting or weed map used for a few special situations
2	1.6	Weed scouting records or weed map used for most plantings

Question H5. How often (frequently, occasionally, never) do you use the following weather information in making your pest management decisions? (please circle your answers) (N=115)

Weather Information	Rank	Frequently	Occasionally	Never
Forecasts for next rain	1	80	9	21
Wind speed forecast	2	52	19	30
Rainfall total (for effect on spray residues)	3	47	15	31
Temperatures (for degree day models)	4	27	22	44

Question H6. If weather information was readily available, would you use it for? (please circle your answers) (N=107)

Weather Information	Yes	No
Forecasts for next rain	92	10
Rainfall total (for effect on spray residues)	75	20
Temperatures (for degree day models)	65	26
Wind speed forecast	76	17

Question H7. How important are these factors to you when choosing pesticides for use on your farm? (Please circle your answers) (N=112)

Factors for choosing Pesticides	Rank	Score*	Important		
			Very	Somewhat	Not
Applicator hazard (toxicity to humans)	1	374	86	15	4
Impact on beneficials (parasites, predators, pollinators)	2	356	77	24	3
Customer relations (food safety concerns)	2	356	82	14	7
Effectiveness against pest compared to alternative products	4	352	80	16	2
Label restrictions (reentry and preharvest intervals, protective equipment)	5	350	80	15	5
Other potential nontarget and environmental impacts	6	322	67	27	8
Cost per treatment	7	268	44	46	8
Formulations (liquid vs dry, water soluble bags)	8	188	27	40	29
Storage requirements	9	182	19	53	26
Size or type of packaging	10	172	20	46	32

*The score was determined by multiplying very important by 4, somewhat important by 2, and not important by 0.

Question H8. How important are these sources of information in making your pest management decisions? (please circle your answers) (N=114)

Information Sources	Rank	Score*	Important		
			Very	Somewhat	Not
New England Small Fruit Pest Management Guide	1	346	79	15	8
Extension newsletters and/or pest alerts	2	336	68	32	5
Off season educational meetings	3	310	60	35	8
University/Extension staff	4	300	56	38	8
Other growers	5	274	47	43	13
Twilight meetings	6	226	36	41	20
Trade publications	7	208	27	50	21
Suppliers/dealers	8	206	25	53	19
Web sites	9	196	25	48	26
Organic Growers Assn	10	106	17	19	61
Private consultants	11	94	16	15	60

*The score was determined by multiplying very important by 4, somewhat important by 2, and not important by 0.

Question H9. How often do you use the following personal protective equipment and protective clothing when mixing and/or applying pesticides (please circle your answer) (N=107)

Personal Protective Equipment	#Growers	%Growers	Always	Occasionally	Never	Not Applicable
Long pants	97	77	93	4	2	7
Long-sleeved shirt	96	76	79	17	3	7
Gloves	91	72	73	18	5	7
Goggles	69	55	38	31	22	7
Face shield	48	38	17	31	35	9
Nitrile gloves	69	55	47	22	15	9
Latex gloves	41	32	17	24	38	13
Cotton gloves	10	8	3	7	61	16
Chemical resistant suit	52	41	23	29	35	7
Respirator	65	52	35	30	20	10
Boots (chemical resistant)	67	53	39	28	25	8

Question H10. Which of the following pesticide application equipment do you use for brambles? (please circle all that apply.) (N=108)

#Growers	%Growers	Pesticide application equipment
60	47.6	Air blast sprayer
50	39.7	back pack sprayer
29	23	Boom sprayer without drop nozzles
13	10.3	shielded sprayer
13	10	Wipers for contact herbicides
12	9.5	Boom sprayer with drop nozzles
4	3.7	Air assisted sprayers
2	1.6	Spray gun
1	<1	HV Sprayer
1	<1	Electric tank off tractor
1	<1	Boom sprayer w/ handgun
1	<1	Berry boom spray horizontal
-		Dusters

H11. Please indicate the months that you and/or other workers are engaged in these activities for brambles. (Please indicate using an X or ✓ in the applicable boxes.) (N=120)

Activity	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Soil preparation (N=85)	85	57	38	9	5	6	8	6	-	-	-	-
Planting (N=93)	4	44	55	11	2	-	-	-	-	-	-	-
Thinning/pruning (N=107)	69	45	10	6	4	13	7	16	3	1	3	1
Hand weeding (N=103)	5	16	46	79	68	53	24	8	-	-	-	-
Summer tipping (N=44)	-	1	4	17	17	14	5	1	-	-	-	-
Hand harvest (N=111)	2	-	1	20	92	80	76	46	-	-	-	-
Leaf tissue sampling (N=30)	-	-	1	3	5	15	7	5	-	-	-	-
Post harvest field work (N=71)	13	3	1	-	1	11	26	48	4	1	-	-
Other												
Rototilling (N=1)	-	1	1	1	1	-	-	-	-	-	-	-

Tying/Trellising (N=1)	-		-	-	1	1	-	-	1	1	-	-
Mowing ever bearing (N=1)	1	1	-	-	-	-	-	-	-	-	-	-
Mechanical cultivation (N=1)	-	-	1	1	1	1	-	-	-	-	-	-

Question H12. How would you describe your crop production practices? (please circle your answer) (N=120)

Crop Production	#Growers	%Growers
Conventional	41	33
IPM	55	44
Organic	30	24
Other	9	7

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Appendix A: Pesticide Product Brand Names and Active Ingredients

Pesticide	Active Ingredient
Abound	azoxystrobin
Aliette WDG	fosetyl Al
Asana XL	esfenvalerate
Aza-Direct	azadirachtin
Brigade	bifenthrin
Cabrio	pyraclostrobin
Caliber 90	simazine
Captan 80WDG	captan
Captec 4L	captan
Capture 2EC	bifenthrin
Casoron 50WP/4G	dichlobenil
Cuprofix	copper sulfate
2,4-D	2,4-D
Danitol	fenpropathrin
Devrinol 50DF	napropamide
Dipel DF or ES	Bacillus thuringiensis kurstaki
Elevate WDG	fenhexamid
Fanfare 2EC	bifenthrin
Fusilade DX	fluazifop
Gallery 75D	isoxaben
Gramoxone Max	paraquat
JMS Stylet Oil	oil
Indar	fenbuconazole
Imidan	phosmet
JMS Stylet Oil	oil
Kerb	pronamide
Kocide	copper hydroxide
Kumulus	sulfur
Lime Sulfur	Lime sulfur
Lorsban	chlorpyrifos
Malathion 8E	malathion

Pesticide	Active Ingredient
Malathion 57EC	malathion
Microthiol Disperss	sulfur
M-Pede	potassium salts of fatty acids
NutriPhyte	Phosphorous acid
Oxidate	hydrogen dioxide
Phostrol	phosphorus acid
Poast	sethoxydim
Princep 4L	simazine
Pristine	pyraclostrobin boscalid
Provado	imidacloprid
PyGanic EC	pyrethrins
Pyrellin EC	pyrethrins/rotenone
Pyrenone Crop Spray	pyrethrins
Ridomil	mefenoxam
Ronilan	vinclozolin
Roundup Weather Max	glyphosate
Rovral 50WP	iprodione
Savey 50WP	hexythiazox
Scythe	pelargonic acid
Select	clethodim
Sevin XLR Plus	carbaryl
Sinbar 80WP	terbacil
Solicam 80DF	norflurazon
Spintor 2SC	spinosad
Surflan 4AS	oryzalin
Surround WP	kaolin
Switch WG	cypronil fludioxonil
Thiodan	endosulfan
Touchdown	sulfosate
Topsin	thiophanate-methyl
Zerotol	hydrogen peroxide