

New England High Bush Blueberry Pest Management Survey Summary

(The following survey was distributed to New England growers in the fall of 2003.
A Dillman survey methodology was used to design and conduct the survey.)

Preliminary Card Notice sent to over 350 growers	July 2003
High bush Blueberry Survey sent to 356 growers in 6 states	August 2003
Reminder card sent to 226 growers in 5 states	September 2003
Second High Bush Blueberry survey sent to 204 growers in 6 states	September 2003
Data Entry Complete	December 2003

**Table: Summary of New England High Bush Blueberry Pest Management Survey Returns
(December 2003)**

State	#Surveys Sent	#Surveys Returned	%Return	#Growing High Bush Blueberry	#High Bush Acres
CT	42	20	48	5	46.5
MA	145	105	72	68	208.8
ME	42	27	64	10	4.1
NH	87	58	67	15	52.3
RI	10	3	30	3	28.2
VT	24	18	75	13	54
Total	350	231	66	114	393.9

¹Most percents in this document have been rounded for ease of reporting.

Crop Information

Massachusetts led the reported high bush blueberry acreage in 2002 with 208.8 acres. Followed by Vermont with 54 acres, New Hampshire with 52.3 acres, Connecticut with 46.5 acres, Rhode Island with 28.2 acres and Maine with 4.1 acres.

The majority of growers (86) throughout the region reported an average yield of 2,205 pounds per acre per year (297.70 acres).

U-Pick accounted for 62.7% of the high bush blueberry acreage, followed by the wholesale market at 25.2%, retail market at 10.8%, and remaining harvest split between processing, personal use and Community Supported Agriculture (CSA).

Horticultural Management

The majority of growers 87.7% practiced dormant pruning and 72.8% removed old canes. Detailed pruning was practiced by 54.4% of the growers, but only 7% practiced summer pruning.

Forty-three percent of the growers used **leaf tissue analysis** to determine **fertilizer** needs in most years. Eighteen percent of the growers used leaf tissue analysis on an annual basis. Fifty percent of the growers used **soil samples** to determine their **fertilizer** needs in most years. Sixteen percent of the growers took soil samples annually.

The average density of high bush blueberry plants per acre (370.64 acres) was 863. The average density of high bush blueberry plants per acre per grower (107) was 953 plants.

High Bush blueberry Pest Management Overview

The average number of applications to control diseases was 2.0 applications, followed by insecticides at 1.7 applications, herbicides at 1.2 applications and miticides at 0.2 applications.

Growers ranked the frequency of insect pests with 36% managing blueberry maggot and 18% managing cranberry fruitworm on an annual basis. Approximately 53% of the growers reported that white grubs, aphids, and blueberry bud mite were “rarely a problem” or were “never a problem”.

Annual broadleaf weeds and grasses and perennial broadleaf weeds and grasses were an “annual” problem for 63% of the growers.

“Annual” vertebrate pest problems included birds for 59% of the growers, followed by voles at 14%, and deer at 13%.

The mostly frequently managed diseases were mummy berry at 45% and anthracnose at 25%. Growers reported that the certain viruses were “never a problem” including Papaya Ringspot virus at 41%, Watermelon Mosaic virus at 37%, Zucchini Yellow Mosaic virus at 36% and Cucumber Mosaic virus at 28%.

Insect Pest Management

Pesticide applications were applied to 48% of the high bush blueberry to manage **blueberry maggot**. Growers (20%) used Imidan on 26% of the acreage. Sevin was used on 18% of the acreage, followed by Malathion on 16%, Guthion on 12%, and other pesticides on 2%. The majority of growers used full rates and reported “excellent” or “good” control with these products. Another strategy for managing blueberry maggot was the use of red sticky traps (by 6 growers).

Pesticide applications were applied to 35% of the high bush blueberry crop to manage **cranberry fruitworm**. Growers (13%) used Imidan on 21% of the acreage. Malathion and Guthion were used on 7% of the acreage, followed by Sevin on 3%, and other pesticides on 4%. The majority of growers used full rates and reported “excellent” or “good” control with these products.

Pesticide applications were applied to 27% of high bush blueberries to manage **cherry fruitworm**. Growers used Imidan on 12% of the acreage. Guthion was used on 10% of the acreage, followed by Malathion on 7%, Sevin on 3%, and other pesticides on 1%. The majority of growers used full rates and reported “excellent” or “good” control with these products.

White grubs including adult Japanese beetle were managed on 25% of the high bush blueberry acreage. Sevin was used on 11% of the acreage, followed by malathion on 7%, Imidan on 6%, and other pesticides on 1%. Other strategies for managing these pests included the use of Japanese beetle traps (by 10 growers on 18 acres) and picking off beetles (by 3 growers).

Blueberry Tip Borer was managed on 22% of the acreage. Ten percent of the acreage was treated with Imidan, followed by Malathion on 6%, Guthion on 3%, and Sevin 50 WP on 2%. The majority of growers used reduced rate and reported “good” control with these products. Five growers indicated that they used **summer pruning** to control blueberry tip borer with varied success.

Pesticide applications were applied to 17% of high bush blueberries to manage **plum curculio**. Growers used Imidan on 11% of the acreage, followed by Guthion on 5%, and Sevin on 4%. The majority of growers used full rates and reported “good” control with these products.

With only 8% of the high bush blueberry treated for **scale insects**, Sunspray Ultra Fine Oil was used on 4% of the total acres and Superior Oil was used on 3%. Growers used full rates and reported “excellent” or “good” control with these materials.

Finally, blueberry bud mite was managed only by one grower using Guthion on his five acres. He used a reduced rate and reported “good” control.

Disease Management

Mummy berry was a disease managed by 48% of the growers on 56% of the high bush blueberry acreage. Growers (19%) used Orbit on 21% of the acreage. Captan was used on 17% of the acreage, followed by Captan with Benlate on 13%, Captec on 12%, Benlate on 9%, and Indar and Funginex on 8%. Other fungicides used included Switch on 4% and Chlorothalonil on 2%. The majority of growers used full rates and reported “excellent” or “good” control with these products. Six growers reported using mulch to

manage mummy berry with varied success. Other strategies reported were handpicking (by 4 growers) and application of urea (by 3 growers).

Pesticide applications were applied to 41% of the high bush blueberry to manage **anthracnose**. Growers (13%) used Captan on 15% of the acreage. Captan plus Benlate was used on 14% of the acreage, followed by Captec on 13%, Topsin on 5%, and Lime sulfur on 3%. The majority of growers used both full and reduced rates and reported “excellent” or “good” control with these products.

Botrytis blight was a disease managed by 25% of the growers on 35% of the high bush blueberry acreage. Growers (11%) used Captan plus Benlate on 16% of the acreage. Captan was used on 14% of the acreage, followed by Captec on 8%, and Benlate and Topsin on 3%. The majority of growers used full rates and reported “excellent” or “good” control with these products.

Pesticide applications were applied to 26% of the high bush blueberry acreage to manage **phomopsis twig blight**. Growers (15%) used lime sulfur on 20% of the acreage. Benlate was used on 6% of the acreage, followed by Orbit, Captec, and Topsin on 3%, and Bravo on 2%. The majority of growers used full rates and reported “good” control with these products.

Fusicoccum Canker is a disease managed by 16% of the growers on 25% of the high bush blueberry acreage. Growers (7%) used Captan plus Benlate on 13% of the acreage. Benlate was used on 5% of the acreage, followed by Captan on 4%, lime sulfur on 3%, Topsin on 3%, Captec on 2%, and Ziram on <1%. The majority of growers used full rates and reported “good” control with these products. Five growers used pruning to manage the disease with “good” results.

Pesticide applications were applied to only 3% of the high bush blueberry plants to manage **Phytophthora Root Rot**. Growers (4%) used Ridomil Gold on 3% of the acreage. Growers used full rates and reported “good” control.

Powdery mildew was a disease managed by only 2% of the growers on 1% of the high bush blueberry acreage. Growers used sulfur at full rate

Nineteen percent of the growers used one or more **cultural practices** to control diseases in high bush blueberries. Growers (10%) used **pruning**, followed by **mulching** (4%), **cut out diseased wood** (3%), **mowing** (3%), and **weed control** (3%). Most reported “good” results with these practices.

Weed Management

Forty-eight percent of the high bush blueberry acreage received **pre-emergence** herbicide applications. Princep was applied to 21% of the acreage, followed by Surflan on 18%, Sinbar on 11%, Devrinol on 10%, Caliber 90 and Casoron on 6%, and Solicam on 3%. Other herbicides, Roundup and Diuron were used on 1% and Velpar L and Corn Gluten

Meal on <1%. Growers used both full and reduced rates and reported “excellent” or “good” control.

Postemergence herbicide applications were applied to 63% of the acres. Roundup was applied to 56% of the acres, followed by Poast on 10%, Fusilade on 5%, Scythe on 3%, Gramoxone on 3%, Touchdown on 2% and Select on <1%. Growers used full rates and reported “excellent” or “good” control.

Ninety-two of the growers reported used mowing to manage weeds. Growers (64%) used other cultural weed management strategies including **mulching** (64%), **cultivation** (18%) and **hand weeding** (8%). Most reported “excellent” or “good” weed management.

Vertebrate Pest Management

Eight-four percent of the growers reported managing **birds**. The most frequent strategies used were **scare eye balloons** (39%) and **netting** (36%). Most growers indicated that scare eye balloons worked “poor” but that netting was excellent in controlling bird damage. **Flash tape** was used by 25% of the growers with both “good” and “poor” results. Twenty-four percent of the growers used **owls** with “poor” results. Distress calls were used by 21% with mixed results.

Seventeen percent of the growers reported using strategies to manage other vertebrate pests. Strategies used to control **deer** were electric fences, fences, shooting, and scare crow with “excellent” results. **Fences** (including electric) were used to control **bears** by 3 growers.

Information for Pest Management Decisions

Sixty-four percent of the growers implemented **IPM practices** such as insect trapping, and field sampling. Many of them (50%) did their own **scouting**, but some had a farm employees/family members (8%), or private consultants (6%) to conduct the scouting. Those who used **sampling methods** used informal sample patterns (22%), standardized sample patterns (7%) and insect traps (31%).

Factors that were “very important” in choosing a pesticide were **effectiveness** (74%), **toxicity** of pesticides (71%), **phytotoxicity** (69%), potential **environmental impacts** (67%), impacts on **non-target organisms** (55%), **packaging** (38%), and **cost per acre** (33%).

Growers ranked the following sources information as being “very important” in making their pest management decisions – **University/Extension staff** (54%), **New England Small Fruit Pest Management Guide** (50%), **off-season education meetings** (38%), **newsletters** (38%), **other growers** (26%) and “Somewhat important” were other growers

(26%), trade publications (25%), suppliers/dealers (19%), twilight meetings (19%), and web sites (19%).

Of those growers who describe their crop production, 40% reported **conventional**, 29% **IPM** , and 19% **organic**.

Additional Survey Information

To obtain a copy of the survey and complete results please refer to the New England Pest Management Information Network website at www.pronewengland.org

Special thanks to the growers who supported this project.

Also to the members of the New England Pest Management Network team including, Glen Koehler and James Dill-University of Maine, Candace Bartholomew-University of Connecticut, William Lord-University of New Hampshire, Margaret Siligato-University of Rhode Island, Alan Gotlieb and Sarah Kingsley-Richards-University of Vermont, and William Coli, Amanda Duphily, and Patricia Vittum-University of Massachusetts.

Submitted by Natalia P. Clifton, Department of Plant, Soil, and Insect Sciences and UMass Extension Pesticide Education Program, University of Massachusetts-Amherst, August 2005.

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Vertebrate Pest Management

Forty-two percent of the growers reported vertebrate pest problems. Deer and woodchucks were most often reported by growers. Twenty-seven percent of growers used various management strategies for **deer** including electric fences (8%), off-season permit (6%), other fencing (4%) and repellents. Nineteen percent of the growers had problems with **wood chucks** and they used rifles (5%), smoke bombs (5%), traps (4%), and dogs (3%).

Information for Pest Management Decisions

Fifty-four percent of the growers implemented **IPM practices** such as insect trapping, and field sampling. Many of them (82%) did their own **scouting**, but some had a farm employees/family members (13%), or private consultants (13%) to conduct the scouting. Those who used **sampling methods** used informal sample patterns (68%), standardized sample patterns (12%) and insect traps (6%).

Factors that were “very important” in choosing a pesticide were **effectiveness** (71%), **toxicity** of pesticides (61%), **phytotoxicity** (56%), potential **environmental impacts** (55%), impacts on **non-target organisms** (46%), **packaging** (30%), and **cost per acre** (30%).

Weather information was used frequently to make pest management decisions. Seventy-seven percent of the growers frequently use rain forecasts, followed by wind speed forecasts (53%), rainfall totals (38%), humidity (32%), and temperatures (23%). Thirty-five percent of the growers would base their irrigation schedule on observed and/or forecast weather.

Growers ranked the following sources information as being “very important” in making their pest management decisions – **New England Vegetable Management Guide** (48%), **off-season education meetings** (41%), **newsletters** (40%), **other growers** (39%) and **University/Extension staff** (39%). “Somewhat important” were suppliers/dealers (38%), trade publications (35%), twilight meetings (35%), and web sites (26%).

Of those growers who describe their crop production, 44% reported **conventional**, 35% **organic**, and 26% **IPM**.

Additional Survey Information

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