Table 26. Number of blueberry plants per acre at different spacings.

Feet Between	Spacing Between Rows		
PLANTS IN ROW	8 FEET	10 FEET	12 FEET
4	1,361	1,089	908
5	1,089	870	726
6	908	726	605

Table 27. Critical nutrient values for blueberry tissue analysis.

Element	Deficient	Below Normal	Normal	Above Normal	Excessive
N (%)	1.65	1.70	1.90	2.10	>2.10
P (%)	0.05	0.06	0.10	0.18	>0.18
K (%)	0.35	0.40	0.55	0.65	>0.65
Ca (%)	0.35	0.40	0.60	0.80	>0.80
Mg (%)	0.18	0.20	0.25	0.30	>0.30
Mn (ppm)	45	50	250	500	>500
Fe (ppm)	65	70	200	300	>300
Cu (ppm)	4	5	11	15	>15
B (ppm)	29	30	40	50	>50
Zn (ppm)	14	15	25	30	>30

Source: PennState University

Diseases

Fruit

Mummy Berry (*Monilinia vaccinii-corymbosi*): Mummy berry is increasingly important in some parts of New England, and its severity varies from year to year. It is caused by a fungus which attacks new growth, foliage and fruit, and can cause extensive losses.

The fungus overwinters in mummified fruit on the ground. The mummies form cup or globe-shaped structures called apothecia. Apothecia produce spores that infect young tissue and cause rapid wilting. This is called leaf and twig blight, or bud and twig blight. These symptoms are difficult to distinguish from frost injury. These first infections form more spores, which are spread by rain, wind and bees to blossoms and other young tissue. The fungus infects and invades the developing fruit. The fruit becomes malformed looking like a pumpkin, and turns salmon or grey by midsummer. By fall, these fruit have dropped to the ground where they turn to mummies, ready to produce apothecia the next spring.

Management: Cultural controls can be used to reduce inoculum levels in the spring. In very small plantings, mummies can be raked up and burned. On a larger scale, mummies can be buried by cultivating between rows or by covering with a new layer of mulch at least 2" in thickness. Combining cultivation and an application of 50% urea prills in the spring speeds destruction of the mummies. Urea should not be applied to areas where there is standing water, as this may cause fertilizer burn. Apply urea to drier parts of the field and go back to the wet areas later. The cultivation should be done just as apothecia start to emerge in the spring, which usually coincides with bud-break in the blueberry bushes. Cultivars exhibiting resistance to the shoot blighting phase of the disease include Jersey, Elliott, Bluejay, Duke, Stanley and Darrow. Cultivars which appear to be more susceptible are Bluehaven, Bluegold, Northblue, Sierra, Harrison, and Coville.

Several fungicides are labeled for use against this disease. Labeled materials and state registrations change annually. Check with your Extension Specialist for current recommendations in your state.

Table 28. Highbush blueberry variety descriptions for New England.

Variety	Hardiness	Comments
Berkeley	limited	Late mid-season; productive, easy to propagate, large, light blue fruit.
Bluecrop	hardy	Midseason; med. size, firm berries; some resistance to virus and mummy berry.
Bluegold	hardy	Late mid-season; very productive, firm, round fruit, sky blue, small scar.
Bluejay	hardy	Early to midseason; med. size, firm fruit; some resistance to virus and mummy berry.
Blueray	very hardy	Midseason; large, dark fruit, good flavor, spreading habit, branches may bend to ground with fruit.
Bluetta	moderate	Early season; large fruit, good quality; some resistance to mummy berry.
Brigitta Blue	limited	Late mid-season; Berries medium large, light blue, slightly tart, small dry scar, firm; stores well.
Collins	hardy	Early mid-season; moderate production, large, firm fruit, with good flavor and small scar.
Coville	limited	Late season; large firm fruit, medium scar, good tart flavor. Erratic production, suitable for mechanical harvest.
Darrow	limited	Late season; very large fruit, light blue, firm, with a large scar, excellent tart flavor.
Duke	mod/hardy	Early season; vigorous, very productive. Fruit is large, light blue, firm, mild flavor.
Earliblue	moderate	Early ripening; large, firm fruit with fair flavor; upright, vigorous growth.
Elliott	hardy	Very late-season; heavy producer of medium size, powder blue, very firm, slightly tart fruit; small, dry scar.
Jersey	hardy	Mid to late season; med. size berries, firm with fair flavor; tall, upright plants.
Lateblue	very hardy	Late season; moderate yield, flavor and scar are good.
Meader	hardy	Midseason; large, firm fruit, good flavor; erect, vigorous growth
Nelson	very hardy	Mid to late season; large, firm fruit with good flavor; productive, upright plants.
Northblue	very hardy	Mid-season; semi-dwarf bush, fruit large, dark blue, with a “wild” blueberry flavor.
Northcountry	very hardy	Mid late-season; medium sized fruit, sweet and mild, moderate vigor.
Northland	very hardy	Early mid-season; semi-dwarf bush, fruit medium blue, medium size, very sweet. Bush very productive.
Northsky	very hardy	Mid late-season; fruit sky blue, small to medium in size, stores well.
Patriot	very hardy	Early to midseason; large, firm fruit, good flavor; growth is slow, small plants; some resistance to root rot.
Spartan	hardy	Early season; fruit very large, high quality, excellent flavor; well adapted to machine harvest.
St.Cloud	very hardy	Mid late-season; tallest of the half-highs, moderate yields, fruit medium blue, medium sized , well flavored, with a small dry scar. Stores well.
Toro	hardy	Mid-season; fruit large, firm, exceptional color and flavor, concentrated ripening.

***Sources**: J. Hancock and E. Hanson, Blueberry Varieties for Michigan*

Botrytis Blight/Gray Mold (*Botrytis cinerea*): As with other small fruits, Botrytis primarily affects blossoms and ripening fruit, although under certain circumstances the fungus can cause stem blight as well. Infection occurs largely during bloom on flowers. The fungus survives the winter on dead twigs and in soil organic matter. It is present every year, but only causes severe damage during cool, wet periods several days in duration. The most critical period for infection is during bloom. Disease is most severe where excessive nitrogen has been used, where air circulation is poor, or where frost has injured blossoms. Rotted berries typically have a gray cast of the mycelium and spore-bearing structures present which gives the disease its name. Stem symptoms are hard to distinguish from those infected by Phomopsis, and the fungus usually must be isolated from the infected tissue in a diagnostic laboratory. Varieties possessing tight fruit clusters (for example, Weymouth, Blueray and Rancocas) are particularly susceptible to the disease.

Management: When weather or history indicates that *Botrytis* will be a problem, fungicides should be applied, starting at mid- bloom, with subsequent sprays at 7-10 day intervals through petal fall. See pest management schedule for recommended materials and timing.

Anthracnose (*Colletotrichum gloeosporioides*): This fungus primarily damages fruit but may also

infect twigs and spurs. It causes a salmon or rust-colored berry rot which can also ruin fruit quality. Infested fruit often exhibit a soft, sunken area near the calyx-end of the fruit. Spores spread to "good" fruit during and after harvest, causing significant post-harvest losses. The disease is especially prevalent during hot muggy weather and frequently occurs post-harvest.

The anthracnose fungus, *Colletotrichum gloeosporioides*, overwinters in dead or diseased twigs, fruit spurs, and cankers. Spores are released in spring, and are spread by rain and wind. Blossoms, mature fruit and succulent tissue are infected, and spores may be spread from these infections. Blossom clusters will turn brown or black. Infected fruit shows bright pink spore masses at the blossom end. Stem cankers are rare (but are about 1/8" in diameter, with raised purple margins when they are present). Young girdled stems die back, resulting in a brown withering of the leaves. Berkeley, Coville, Bluecrop, Blueray, and Jersey are particularly susceptible to the disease. Varieties in which the fruit hangs ripe for a long time on the bush prior to picking are especially susceptible. No varieties may be resistant when the weather conditions are favorable for the disease.

Management: The disease is controlled primarily through the use of fungicide applications, though pruning for optimal air circulation and harvesting frequently are beneficial. Old canes and small twiggy wood should be cleared out in order to increase air circulation around the fruit clusters. See pest management schedule for recommended materials and timing.

Stems and Foliage

Fusicoccum Canker (*Godronia Canker*): *Fusicoccum* is a fungus which infects blueberry stems causing dieback and plant decline. Losses from this disease can be serious. The fungus overwinters as mycelium in cankers on living plants. In Massachusetts, spores are released from March to mid-July, and infection probably occurs during this period. Spores are disseminated by rainwater. New infections occur following rains during the time tender new tissue is present and temperatures are at 50-72½ F. New infections can occur throughout the growing season. Cold stress may play a part in increasing disease damage. Leaves turn reddish-chocolate when dry and often hang-on late into the fall.

Symptoms of Fusicoccum canker are similar to Phomopsis canker on blueberry. The most unique symptom is a red-maroon-brown lesion centered around a leaf scar. A bulls-eye pattern often results. As the lesion enlarges, the margin remains red and the center turns gray and dies. On young (1-2 year old) stems, extensive stem infections quickly lead to flagging and dieback of the entire stem. On warm, dry days shoots will suddenly wilt and die due to the stem girdling.

Management: Sanitation is essential. A fungicide program should be used where incidence of the disease is high. Apply at 2-week intervals from late dormancy to petal-fall. Varieties differ in their resistance to this disease. See pest management schedule for recommended materials and timing.

Phomopsis Twig Blight (*Phomopsis vaccinii*): This disease may be the most prevalent of the canker diseases at the present time. The fungus *Phomopsis* causes stem damage similar to that caused by *Fusicoccum*.

Spores from old cankers are released in spring and, to a limited extent, in summer. Most spores are released from bud swell to petal fall, and none are released after September 1. Rain is necessary for spore release, and temperatures ranging from 70-80½ F encourage infections. The disease is most severe after winters in which mild spells are interspersed with cold weather. Periods of hot, dry weather during the growing season probably also predispose the plants to a certain degree. The fungus overwinters in infected plant parts.

Symptoms first appear on smaller twigs, and the disease spreads into larger branches and may affect the crown. It is possible for *Phomopsis* to spread downward in injured canes to the crown and then progress upward on new canes. This rarely occurs, usually only where the crown itself has been injured after a particularly severe winter, or in highly susceptible varieties. Younger tissue may show no symptoms at first, then exhibit rapid wilting and dieback. Lesions, somewhat similar to those caused by *Fusicoccum* but generally lacking the bull's-eye pattern, may appear on the stems. Leafspots have also been observed where disease is particularly severe. The disease will cause premature ripening of the berries. Earliblue, Coville, Bluecrop, Blueray, Jersey and Berkeley are susceptible to the disease. Weymouth may be the most susceptible variety.

Management: Since mechanical damage and cold stress seem to be necessary for *Phomopsis* infection, avoid careless pruning and cultivating, and do not fertilize late in the summer. Pruning the weakest canes to the ground is best for the long-term production of the bush. Keep the plants well-watered through prolonged periods of dry weather in the summer. Avoiding any stresses will help prevent this disease. Cultivars which appear to be more resistant include Bluejay, Jersey, Duke, Pioneer, Darrow, Elliott, Stanley, Bluetta, Wareham, Rubel, Cabot, Rancocas and Pemberton. Fungicide applications may also be beneficial. See the pest management schedule in this chapter for recommended materials and timing.

Coryneum Canker (*Coryneum microstictum*): This canker disease appears to be uniquely situated in the southeast part of New England. No estimates of loss from the disease are available; it is not regular in occurrence and the fungus often occurs in conjunction with other canker fungi.

The symptoms are similar to other canker diseases. The cankers are commonly seen on sun-scalded or cold-stressed bushes where the fungus produces spores in specialized structures. Wounds are apparently necessary for infection.

Management: Cultural practices which maintain vigorous growth without stimulating too much succulent growth are recommended for this canker disease as well as the others. (See the *Phomopsis* section). No chemical controls are specifically recommended.

Powdery Mildew (*Microsphaera vaccinii*): This disease affecting primarily the leaves is uncommon in New England, although localized outbreaks of the disease may occur in certain fields when weather conditions are favorable for infection by the fungus. The symptoms include a white fungal growth on the upper leaf surface, puckering of the leaves, and reddish spots on the leaf. When severe infection occurs, defoliation may occur.

Management: Some cultivars are more resistant than other cultivars. Well-timed fungicides will also control the disease.

Roots

Phytophthora Root Rot (*Phytophthora cinnamomi*): This disease is usually associated with poorly drained areas of a field. Symptoms are noted on the roots and on the above-ground portions of the plant. The very fine absorbing roots turn brown to black; larger diameter roots may also be discolored. In severely infected bushes, the entire root system is reduced in stature and is totally black. Above-ground symptoms include chlorosis and reddening of the leaves, smaller leaves, defoliation, branch dieback, death of entire canes, stunting, and death of the entire bush. The disease may be present in a few infected plants scattered throughout the planting or localized in group of plants in a low lying area of the field. The disease is worst where plants are growing in heavy
clay soils.

Phytophthora cinnamomi, in addition to attacking blueberry, attacks a number of additional susceptible Ericaceous hosts, including rhododendron, azalea, and cranberry. Lowbush blueberry appears to be immune. This species of *Phytophthora* is not an important pathogen on any other small fruit covered in this guide. The fungus thrives in wet soils and can survive for a long period of time.

Management: The disease is avoided through careful site selection before planting. Heavy soil which becomes waterlogged or suffers from a high water table should be avoided when selecting a site. Internal and surface water drainage should be improved. Plants can be grown on raised beds if desired. Most varieties are susceptible to the disease, although some varieties may better tolerate heavy infections. Bluecrop and Weymouth are two varieties which have shown promise. Mefenoxam (Ridomil Gold) can be used at planting if problems with *Phytophthora* root rot are anticipated. In both new and established plantings, it should be applied twice per growing season to remedy infection. However, the best strategy is to plant on well drained sites or improve soil drainage.

Armillaria Root Rot (*Armillaria mellea* and *A. ostoyae*): Although this disease is uncommon, it can cause serious injury to plants in fields where the fungus is present in the soil. To date, the disease has only been found in fields which were originally pine/oak forests.

Infected bushes usually decline over several growing seasons, and their symptoms can be confused with those caused by winter injury, Phomopsis twig blight, or a nutritional imbalance. Affected plants will be chlorotic, have smaller-than-usual

Table 29. Fungicides registered for use on blueberries and their primary uses.

Fungicide	Mummyberry		Phomopsis	Fusicoccum	Alternaria	Anthracnose	Botrytis	Phytophthora
	Primary	*Secondary*						
Abound	+/++	+/++	++	?	+	++++	+	?
Aliette	0	0	++/+++	?	++/+++	+++	?	+++
Bravo	++***	+	+++	+++	+	+++	++	0
Cabrio	+/++	+/++	+++	?	+	++++	+***	?
Captan	+	+/++	+++	+	+	++/+++	+	0
Elevate	+	++	+	?	0	0	++++	0
Indar**	+++	+++	+++/++++	?	+	0	?	0
Lime sulfur*	?	?	++*	?	?	?	?	0
Rovral	0	0	0	0	0	0	++++	0
Ridomil	0	0	0	0	0	0	0	++++
Ziram	++	++	+++	++/+++	++	+++	++	0

0=not effective, +=poor, ++=fair, +++=good, ++++=excellent, ?=not known.

Use lime sulfur only on late dormant or dormant bushes.* ***Do not mix with oil.*

***Indar is allowed in blueberries under Section 18 Emergency Exemptions on a state by state basis. Check with your Extension Specialist.*

**** suppression only.*

leaves, and be more susceptible to other stresses than healthy-appearing plants. Branches may suddenly wilt, followed by plant mortality in some instances. The disease may be found throughout an entire field, or it may be confined to one or a few area(s). The most important diagnostic characteristics are the presence of the fungus: white mycelial fans underneath the outer bark or the crown of the plant, black rhizomorphs (resembling shoestrings) attached to the roots or the trunk, and yellowish-brown mushrooms produced at the base of the plant in late summer or early autumn.

Two species of the fungus, *Armillaria mellea* and *A. ostoyae*, are probably causal agents of the disease. The fungus survives in the soil on root pieces of susceptible hosts (pine, oak, etc.). The fungus can infect bushes through root grafts and it can survive on wood chip mulches.

Management: The disease is best avoided by thoroughly discing the soil where blueberries are to be planted, and removing as many of the root fragments as is possible. If possible, leave the field fallow three years after the trees have been removed. Soil sterilants or fumigants are effective at killing the fungal inoculum. The disease is very difficult to control once it is present in a field. Dead or dying plants should be removed, and adjacent plants should be inspected at the soil-line for mycelial fans or rhizomorphs. Remove any plants which have these signs of the pathogen. Wood chip mulch should be removed from infection "hot spots." Although spot fumigation might be effective, chemical controls are usually not feasible in fields where the disease is present. Most varieties are probably susceptible to the disease.

Viruses and MLOs

Blueberry Shoestring Disease: This viral disease was originally described in New Jersey. In Michigan, the disease has been found in 0.5% of the bushes; an assessment has not been done for potential losses due to the virus.

The most common symptom is an elongated reddish streak along the new stems. The leaves may also show red banding or a red-purple oak-leaf pattern. Diseased leaves are narrow, wavy and somewhat sickle-shaped. Flowers may be red-streaked, and berries turn purple prematurely. Within a few years, berry production drops dramatically.

Management: Other than buying disease-free plants, destroying wild plants near the planting, and removing diseased plants, controls do not exist. As with most virus diseases, the best controls are preventing disease introduction, and detecting the disease when it is localized in a small portion of the field. The virus has been observed most often in Burlington, Jersey, June, Cabot, and Rancocas. Other varieties may possess field resistance to the disease.

Blueberry Stunt: This disease was originally thought to be caused by a virus but it is now known to be caused by a mycoplasma-like organism or

phytoplasma. The only known carrier is the sharp-nosed leafhopper, though other vectors probably exist.

Symptoms vary with the stage of growth, time of year, age of infection and the variety. Symptoms are most noticeable during mid-June and late September. Affected plants are dwarfed with shortened internodes, excessively branched, low in vigor with small downward cupped leaves which turn yellow along the margins and between the lateral veins giving a green and yellow mottled appearance. These mottled areas will turn brilliant red prematurely in the late summer, although the midrib remains a dark bluish-green. Fruits on infected bushes are small, hard, lack flavor, ripen late if at all, and remain attached to the plant much longer than they would on healthy plants.

Management: Diseased bushes cannot be cured; these must be removed from the field as soon as a diagnosis has been made. The removal process may facilitate in the further spread of the disease in the field. Agitation of the bush will dislodge the leafhoppers, causing them to hop to a neighboring healthy bush. Infected bushes should be sprayed with malathion or another appropriate insecticide before the bush is removed. Using virus indexed plants is also helpful. Bluetta, Jersey, and Weymouth are particularly susceptible, whereas Rancocas is resistant.

Red Ringspot: This is the most widespread viral disease in New Jersey at the present time. The symptoms are very distinctive, including red spots, rings and oak-leaf patterns which usually appear on the older leaves in late June or July. Production of the bush is seriously reduced and the berries become pockmarked and unattractive. Bluetta, Coville and Darrow are susceptible, while Bluecrop, Collins, Jersey, Rancocas and Weymouth are resistant or tolerant to the disease. Infected bushes must be rogued out.

Mosaic: Like some of the previously described viruses, this virus is probably indigenous in wild blueberry plants. Infected plants become unproductive. Leaves are brilliantly mottled with yellow, yellow-green and pink areas. Not all leaves will show the symptoms and some branches on an affected bush may be symptomless as well. It may take several years for a bush to show symptoms. The disease appears most commonly in Herbert and Stanley; most varieties appear to have field resistance to the virus. Infected bushes cannot be cured and must be removed promptly.

Blueberry Scorch (formerly Sheep Pen Hill Disease): This disease has not been reported in New England, but a description is provided here so that growers will be on the lookout for it. It is localized to fields in New Jersey (it was originally found in a field in the Sheep Pen Hill area), although a similar disease termed blueberry scorch has been found in Oregon and Washington. These two diseases are related but not identical to each other. Symptoms fluctuate greatly from year to year, and disease has been worst during excessively wet years.

The disease is characterized by dieback of blossoms and young vegetative shoots in the spring followed by a flush of growth in the summer and the development of a necrotic line pattern in the fall foliage. The roots suffer injury, and production of the bushes can be greatly impacted. Weymouth and Bluecrop are known to be susceptible, and Blueray may also be affected.

Management: The causal agent appears to be a flexuous rod-shaped particle (probably a virus), and it may be vectored by a leafhopper, although this is merely conjecture at this point. The sole control strategy is to remove affected bushes.

Witches'-Broom: Witches'-broom is a relatively minor disease of highbush and lowbush blueberries and other *Vaccinium* spp. in North America. Although heavily infected plants produce no fruit, disease incidence is usually so low that crop losses are negligible. However, nearly 100% of blueberry plants may be infected in fields located near fir (*Abies* spp.) trees, the alternate host of the rust fungus that causes witches'-broom.

Diseased blueberry plants have broomlike masses of swollen, spongy shoots with shortened internodes and leaves reduced in size. The brooms usually begin to develop during the year following infection and then persist for many years, producing infected new growth each spring. Young stems on the broom are initially reddish or yellow, but as the season progresses they become brown and shiny, then dull, and eventually dry and cracked. Heavily infected plants produce no fruit.

Management: Because the pathogen is perennial and systemic in blueberry crowns and rhizomes, burning and other pruning methods do not eliminate

witches'-broom. The best control strategy is to eradicate the alternate host (fir trees) within 1200 feet of the blueberry plants; this may not be practical, however, in areas where balsam fir is abundant in natural stands or in Christmas tree plantings. Eradication of diseased blueberry plants with a recommended herbicide effectively eliminates the disease from an affected field.

Bacteria

Crown Gall (*Agrobacterium tumefaciens*): There is only one bacterial disease which is a significant problem in the Northeast at present: crown gall. The disease is caused by the bacterium *Agrobacterium tumefaciens*. Since blueberries are grown on acid soils, and the crown gall bacterium does not grow well in an acid situation, the disease occurs infrequently.

Globose, pea-size to large galls occur on low branches, twigs, and at the base of canes near the ground. Injured tissue is more likely to produce galls.

Management: Sanitation, purchasing healthy nursery plants and maintaining proper soil conditions are the most reliable controls. An antibiotic called Agrocin is available for either soil treatment or for dipping the root systems of bushes prior to planting.

Post-Harvest Diseases

As with most soft fruit, blueberries have particular post-harvest disease problems. There are three fungi which can cause major post-harvest losses in the crop: *Colletotrichum gloeosporioides* (anthracnose), *Botrytis cinerea* (gray mold), and *Alternaria* spp. The diseases can cause up to 30% rot within 7 days of harvest even when refrigeration is used. Without refrigeration, berries can show 15% rot in 3 days.

Management: In New England, where virtually all highbush blueberries are sold fresh, well-ventilated containers and refrigeration should be combined with careful picking and handling.

Insects

Scale Insects (*Aspidiotus ancylus* and *Lecanium nigrofasciatum*): These insects appear mound-shaped, of varied colors, and usually measuring 1/8" or less in length. They are found on rough, loose bark of older stems and sometimes on fruit. Infestations can result in reduced vigor and yield of bushes by feeding on the plant's sap.

Management: Good pruning is the first step in control of scales on blueberries. Prune out weakened canes. During dormancy or delayed dormancy, apply superior-type oil of 60- or 70-second viscosity at 3 gallons per 100 gallons of water. To avoid injury, apply when there is no danger of freezing temperatures for at least 24 hours after treatment.

Gypsy Moth (*Porthetria dispar*): Gypsy moth larvae (caterpillars) are hairy, dark brown to black in color and marked with red and blue spots. They are large in size, from 1/4 to 2" in length, depending on their age. They are found on leaves, buds and stems of bushes. Feeding by the larvae can result in partial to full defoliation and partial to full bud (and fruit) loss.

Management: If possible, remove larvae by hand. Remove egg masses when found. If plantings are surrounded by wooded areas known to be infested, apply protectant sprays. Bt-type materials are effective only if eaten by the caterpillars and work best on young larvae. Forestry experts feel that gypsy moth outbreaks should be rare in New England now due to the presence of an introduced natural enemy *Entomophaga maimaiga*.

Blueberry Blossom Weevil; Cranberry Weevil (*Anthonomus musculus*): This is a dark reddish brown snout beetle, 1/8" long, with a curved snout. It emerges in spring and feeds and lays eggs in expanding flower and leaf buds. The weevils hide between the clustered buds, and in small infestations they may be difficult to find. Damage results when punctured flowers do not open. Damaged leaf buds produce an abnormal cluster of dwarfed leaves. Adults of the second generation sometimes feed on blueberry leaves.

Management: No insecticides are labeled for use against this pest. Disking between rows and raking/hoeing under plants is helpful. Eradication of wild blueberries or other ericaceous plants in the vicinity of the blueberry planting is advised.

Plum Curculio (*Conotrachelus nenuphar*): This dark brown snout beetle is about 1/4" long with 4 humps on its wing covers. It is found on developing flower buds and later on developing berries. The larva (caterpillar) bores into the fruit and eats its