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HIGH TUNNEL RASPBERRIES AND BLACKBERRIES

(by Marvin Pritts, Cornell University, in the March '09 NY Berry News)

New technology is allowing local growers to realize higher prices for blackberries and raspberries produced as late as November. We have examined 3 strategies for producing these fruits beyond the normal season using high tunnels. In all cases, fruit quality in the tunnel has been much improved and percent marketable fruit can be 20 to 40% higher compared to outside.

1) Grow primocane-fruiting raspberries and blackberries under late-covered high tunnels to extend the fruiting season into the fall. Primocane-fruiting raspberries and blackberries are grown throughout the season in an uncovered tunnel. Some plants are pinched in June when they are about 3 feet tall in order to delay flowering. In late August or early September, the tunnel is covered. Plants begin fruiting then. Outside plants succumb to frost in early October, but those within the tunnel continue fruiting for another 4 to 5 weeks. If plants experience extreme cold under the tunnel, they can be covered with row cover for one or two nights until temperatures warm again. Yields from fall-crop-only raspberries have been quite high, between 2,000 to 3,000 half-pints per 30x96 ft. tunnel. Canes are mowed to the ground after harvest and the cycle repeats. Heritage, Caroline, and Josephine have performed well in this system. We are currently examining the performance of Prime-Jan, a primocane-fruiting blackberry, with the intention of producing these fruits in September and October.

2) Accelerate primocane-fruiting raspberries by growing them under a continuously-covered tunnel. We grew Heritage raspberries under a continuously-covered tunnel. In addition, we covered individual rows with row covers or small plastic hoops for a short time in early spring to provide even more heat. Production was compared to uncovered plants. We found that, although some treatments accelerated flowering and fruiting, the difference with field-grown plants was not that dramatic. Yields were mostly unaffected between the various covering treatments and with field-grown plants. Mite populations were very high in the tunnel, however, and probably reduced potential yield. The other difference with field-grown plants was that primocanes grew exceptionally tall in the covered tunnels, so tall that they were difficult to harvest. Since these canes were so tall, we did not remove them after fall harvest, but overwintered them to obtain a spring crop on what were then very long floricanes. These floricanes produced significant yield, about 30 to 40% of what the previous fall crop produced. Yield potential was even higher, but new primocanes interfered with the harvest of floricanes. In addition, mites were still a problem on these canes, and berries were smaller with the summer crop. However, it could be worth keeping primocanes through the winter to obtain a summer harvest.

3) Overwinter tender blackberries and black raspberries under a continuously-covered tunnel. Many caneberries cannot tolerate the winters of Upstate New York. Blackberries with excellent flavor exist, but they often are not fruitful in our climate. We have found that blackberries and black raspberries grow and fruit exceptionally well under tunnels. Despite the fact that temperatures fluctuate more inside than outside a tunnel and that temperatures within are just as cold as those outside, the plants tolerate this quite well. This is likely due to less desiccation from cold, dry winter winds within

a tunnel. Blackberries and black raspberries are much more tolerant of mites and hot temperatures than red raspberries, so they grow exceptionally well under tunnels. Yield differences between outdoor and covered blackberries have been dramatic. Although we get very little production from most blackberries grown outdoors, it appears that we have full crops inside the tunnels. Doyle, Ouachita, Triple Crown and Chester have performed well for us. Black raspberries responded less than blackberries to the tunnel environment. A 30-page booklet describing high tunnel berry production can be found at: www.fruit.cornell.edu/Berries/bramblepdf/hightunnelsrasp.pdf.

PREVENT FUNGUS GNATS AND SHORE FLIES IN THE GREENHOUSE
(adapted from UMass Extension Floriculture web site)

The larvae of fungus gnats feed on fungi, decaying matter and plant roots, often injuring bulbs, seedlings and plants with succulent stems and roots. The burrowing of larvae in plant tissue promotes decay and adults as well as larvae can spread plant diseases. Adult flies also become a nuisance when present in large numbers. Fungus gnats and shore flies are attracted to damp locations where fungi, a major part of their diet, are apt to flourish. In the absence of a fungal food source fungus gnats can feed on healthy plant tissue, and can injure a number of flower crops in the greenhouse. Shore flies are not known to feed on healthy plant tissue.

A female fungus gnat lays up to 300 whitish eggs in clusters of 20 or more on the surface or in the crevices of moist soil or potting media rich in organic matter. Eggs hatch in about six days. Larvae feed for 12 to14 days before changing into a pupa in the soil. The pupal stage last 5 to 6 days and then adults live up to 10 days. The life cycle from egg to adult is about 4 weeks but development time decreases as temperatures increase, as is true of most insects.

Shore fly eggs are laid singly on the surface of algae. Larvae have eight pairs of short legs and a breathing tube with two dark colored openings called spiracles at the posterior end. Pupation occurs at the edge of the algae mats. Breeding takes place in stagnant, salty water found in greenhouses as a result of excessive irrigation and soil leaching.

Management strategies for both pests include sanitation practices that reduce breeding areas. Wet areas under benches should be prevented by improved watering practices, changing the construction of the floor, or improving grading or drainage in the greenhouse. Accumulations of soil, media, or decayed plants under benches should be avoided.

Moist potting soil high in organic matter that has been left outdoors for long periods may contain fungus gnat larvae. Fungus gnats and shore flies may also be introduced into the greenhouse in the media of infested plants purchased from other greenhouses. Fungus gnat problems can be especially serious in potting mixes amended with immature composts where microbial activity is high.

Eliminate algae as best you can. Several algicides are currently registered for algae control in the greenhouse. Disinfectants can be used as part of pre-crop clean up program and during the cropping cycle for routine algae management. Green-Shield, Physan 20, Triathlon (Quaternary ammonium compounds) can be applied to floors, walls, benches, tools, pots and flats as disinfectants. ZeroTol (Hydogen Dioxide) is a sanitizer also labeled for use on greenhouse surfaces. Read and follow directions on these products.

Prevention efforts should be followed by weekly monitoring of pest populations. To monitor for larvae, place raw potato chunks with peel removed on the soil surface. Larvae are attracted to the potato chunks, under which they move and congregate. Check the potato chunks daily for larvae. Potato disks cut one inch in diameter and 1/2 to1 inch thick work well. In addition, choose plants on

each bench and inspect the soil surface and around the base of the plant including the stem just below the soil line. Record the location and the level of infestation. Badly infested containers of plants should be removed as they serve as a source of infestation.

Adult flies can be monitored with yellow sticky cards placed at the base of the plant at soil line. Weekly inspections of yellow sticky cards can detect the onset of an infestation, and continued recording of the number of adults per card per week can aid in evaluating the efficacy of control efforts. Use 1 to 4 yellow sticky cards per 1,000 sq. ft. of greenhouse. Place yellow cards in a horizontal position just above the soil surface, or lay them on the top of the pots. For early detection, position cards near doorways and vents or among new plants being placed in the house. If time permits, check the cards twice weekly particularly when temperatures warm up in the spring. Once fungus gnats and/or shore flies begin appearing on sticky cards or larvae are seen under potato chunks, it's time to make treatment decisions. For a description on of biological and chemical options see: www.umass.edu/umext/floriculture/fact_sheets/pest_management/fungnat.html

AG PLASTICS MANAGEMENT AND RECYCLING WORSHOP
April 16, Vermont Technical College Farmhouse, Randolph Center, VT

Disposable plastics are now integral to most farm operations in all sectors of agriculture. Plastics are replacing glass, metal, concrete, and ceramic because they cost less, increase production efficiency, and are safer. Disposal, however, is an unsolved problem. Some waste plastics are burned in open fires on-farm, plowed into fields, or pushed out of the way in piles. When burned, they can release dioxins and other pollutants, which then can enter the food system at the base of the food chain. When left in the field, plastics pose risks to livestock, create mosquito breeding habitat, and are an ugly detriment to agri-tourism. Recycling is rare, but new opportunities are emerging. To learn about management and recycling of agricultural plastics in rural areas, come to this workshop on Thursday, April 16, 2009 at the VTC Farmhouse in Randolph Center, VT from 10- 3. Talks will be given on the status of agricultural film plastics management and recycling in Vermont; guidelines for handling of plastics to prepare for proper management and recycling; infrastructure and equipment needs; and markets. Who should attend? Farmers, Recycling Coordinators and Solid Waste District Managers, Conservation Commissions and District Managers, Extension Agents, State Agency Personnel. Visit www.newmoa.org/solidwaste/cwm/vtagplastic/ to register for the workshop. There is no cost to attend. This workshop is co-sponsored by the Vermont Small Business Development Center.

NORTHERN RICE GROWING MANUAL AND SEEDS AVAILABLE

In 2008, Akaogi Farm received a NESARE Farmer Grant to explore rice production in Vermont. As a part of this project they will distribute 100 copies of the rice growing manual and 250 packets of "Hayayuki" seed (about 30 seeds each) free of charge. If you are interested in either of these please contact Linda Akaogi at 27 Earthbridge Rd., Putney, VT 05346 or e-mail akaogi@sover.net; include your name, address, and your request (manual and/or seed packet). She will process orders once a week, first come first serve, through April 30 or until they run out. If they run out you will not receive either the seed packet, manual nor any notice. Please enclose $5.00 (shipping and handling) with seed packet requests in case free packets run out; if they are still available the $5 will be returned to you with your seed packet. (Some seed of other varieties may be available upon request.) With each packet will be enclosed a "2009 Rice Growing Observation Report Sheet" that needs to be filled out and returned by the end of October as part of the project's effort to assess potential growing areas in the

northeast. To see a summary of this project go to: www.sare.org/reporting/report_viewer.asp and search for FNE08-624.

WEED MANAGEMENT UPDATES FOR 2009

Dr. Rich Bonanno of UMass Extension has compiled a list of new uses and changes in herbicide registrations for 2009 in vegetables and small fruits. These are posted at: www.uvm.edu/vtvegandberry under 'berry production' and 'vegetable production' – scroll to the bottom of the list, or call my office for a hard copy 802-257-7967. Note that production guides from many regions are also posted.