New York Berry News

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What's Inside

Have you got your pruning done? Now is the time to get those blueberries and brambles into shape for the upcoming season. If you need a refresher or a how to, check out these articles by Marvin Pritts for more information: "Pruning Summer- and Fall-Bearing Raspberries" or "Blueberry Pruning and Rejuvenation" both found in NYBN Vol. 3 No. 2. With the season fast approaching, other berry housekeeping items include straw removal and frost protection for strawberries (NYBN Vol. 3 No.4). Concerned about possible winter injury to your strawberry crowns? Review the article by Sonia Schloemann (NYBN Vol. 4 No.2)

Don't miss the *NY Berry Industry Sustainability meeting* in Hudson, NY on March 29. See calendar right for more information. To check out the program agenda see last month's issue of the NYBN (Vol. 4 No. 2).

Wondering what to do with those old pesticide products that are no loner of use? See the article below on the CLEANSWEEP NY program for a ***free one-time*** opportunity to dispose of them safely.

Another opportunity comes from the USDA Tree Assistance Program (TAP). If you had damage from natural disasters (including cold injury) to trees, vines, or bushes (**blueberries**) harvested for commercial purposes, you may qualify for replacement assistance. See article below for information. ***Deadline today!***

Other items of interest in this month's issue include 2 new product registrations for the 2005 season, Cabrio EG fungicide and Zeal miticide, suggestions by Betsy Bihn of the National GAPS program on how to improve food safety in your operation, and funding opportunities for agricultural producers.

Features include an article on tank mixing fungicides by Natalia Peres and Tom Kucharek of University of Florida, tips on increasing strawberry productivity with early season row cover (that can be purchased in support of our New York Berry Growers Association) by Lori Bushway, the latest in strawberry cultivar information from Courtney Weber's strawberry breeding program here in Geneva, helpful hints on growing blueberries in cold climates from Kevin Iungerman and Marvin Pritts, an ID article on cankerworms and winter moths in blueberries, and some smart marketing advice on making your reputation your brand. Enjoy!

UPCOMING MEETINGS

March 29, 2005. *New York Berry Industry Sustainability Meeting*, Cornell Cooperative Extension of Columbia County meeting hall in Hudson, NY. Registration cost including lunch is $25. ***Registration deadline is March 25.*** *If you plan to attend, please contact Peggy at 518-828-3346 to leave your name, address, and phone number.*

June 13-14, 2005. *International Berry Health Benefits Symposium*, in Corvallis, Oregon. **For more information,** call Cat McKenzie, 541-456-2264, e-mail: cat@oregon-berries.com or go to: http://www.oregonstate.edu/dept/foodsci/berryhealth.htm

October 14-15, 2005. *Highbush Blueberry Council (USHBC)Fall Meeting,* Grand Rapids, Michigan. . **Contact**:

December 1-7, 2005. *International Society for Horticultural Science 9th International Rubus and Ribes Symposium*, Pulcon, Chile. **For more information contact**: Pilar Banados, Facultad de Agronomia Ingenieria Forestal, Universidad Catolica de Chile, Casilla 306-22, Santiago, CHILE; fax: 56-2-55334130, e-mail: pbanados@puc.cl or online: http://www.faif.puc.cl/rubus-ribeschile.html

SPRING CLEANSWEEP NY PROGRAM TO INCLUDE CAYUGA, CORTLAND, ONONDAGA AND OSWEGO COUNTIES

During the week of April 25, 2005 identified counties in New York will receive a one-time environmental benefit program for improved pesticide stewardship. The spring CleanSweep NY Program for 2005 will include the following counties: Cayuga, Cortland, Onondaga and Oswego counties. There will also be a fall CleanSweep Program during the week of November 6, 2005 targeting the following counties: Livingston, Monroe, Ontario, Seneca, Wayne and Yates counties. The New York State Department of Environmental Conservation (DEC), in cooperation with New York State Agriculture & Markets (Ag. & Mkts.), Soil and Water Conservation Districts, and Cornell Cooperative Extension, is directing the CleanSweep NY Program for 2005 for the environmentally safe removal of cancelled, unwanted, or unusable agricultural or commercial pesticides, most forms of empty pesticide packaging and elemental mercury from dairy manometers.

Obsolete pesticides and improperly handled pesticide packaging, can pose a significant hazard to ground and surface waters of New York State. Furthermore, accidental exposures are a health risk to anyone who, unknowingly, comes into contact with old chemicals or spent packaging, whether that person is the property owner's family, first responders to emergencies (particularly fires), or handlers at any solid waste facility. Yet, the DEC recognizes that farmers and other holders of old pesticides have been, in many respects, responsible environmental stewards, since they have not had many legal opportunities, to safely dispose of these agricultural pesticides. This program provides that opportunity.

The CleanSweep NY Program for 2005 builds on the DEC's successful experience in other areas of New York State. The Department with assistance from associated parties has collected a total of 309,000 pounds of obsolete and unwanted pesticides from previous programs conducted in Long Island, New York City, the Hudson Valley, and Upstate New York. The CleanSweep NY Program is funded by negotiated penalty settlements that channel one-time enforcement money into an AEnvironmental Benefits Program.

This CleanSweep NY funding, was specifically earmarked for the benefit of New York agriculture. For this reason, there is no charge and no limit to the quantity of obsolete pesticides or mercury that can be returned by farmers, former farm owners, and commercial applicators involved in production agriculture. Commercial pesticides *will* also be accepted free of charge from governmental and non-agricultural commercial applicators *provided* no more than 100 pounds are returned. For each pound above 100 lbs. these same holders will be charged at the current CleanSweep NY contract rate on a per pound basis. This rate ranges from $1.25 to $1.65 depending on the state of the packaging. This low rate is still substantially less than the service fee that any individual company would have to pay for privately negotiated, legal disposal.
CleanSweep NY does *not* allow routine homeowner participation. However, retail establishments selling either agricultural, commercial, OR home/garden pesticide products may also participate with the same 100 lbs. payment threshold in effect.

Since proper disposal or recycling of empty, rinsed containers is supported from separate sources, there is no limit to the quantity of metal or plastic pesticide containers, nor any restriction on the source of the plastic containers, other than the crop protection and other pesticide restrictions imposed by the industry supported Agricultural Container Recycling Council as listed at http://www.acrecycle.org/ or instructions available from contacting 1-877-952-2272.

All participation in the CleanSweep NY Program for 2005 is through advance enrollment only. Details, as they become available, and locations of collection sites will be posted at http://www.cleansweepny.org/.

Additional information and enrollment forms can be obtained by contacting your local DEC Pesticides Office, Cornell Cooperative Extension agent, Soil and Water Conservation District or from the CleanSweep NY information line at 1-877-SWEEPNY or 1-877-793-3769 or by sending a request, including your name and address, via email to info@cleansweepny.org/ .

PRODUCT UPDATES FOR THE 2005 SEASON

Cathy Heidenreich, Department of Plant Pathology, NYSAES Cornell University, Geneva

New product registrations for the 2005 season are still forthcoming. Listed below are the latest registrations for small fruit in NY:

Cabrio EG fungicide is now approved for use on berries and cherries, with supplemental labeling for use on pome fruits under condition that no product be applied via aerial application methods. Cabrio EG contains the new active ingredient pyraclostrobin ((carbamic acid, [2-[[[1-(4-chlorophenyl)-1H-pyrazol-3-yl] oxy]methylphenyl]methoxy-,methyl ester), which has not been previously registered in NY. Pyraclostrobin is a new broad spectrum foliar fungicide in the strobilurin chemical class and is labeled for control of numerous fungal diseases on many different crops with use anticipated on virtually all major crops grown in New York State (Cabrio EG, Insignia, Headline).

Cabrio EG contains 20% pyraclostrobin and is labeled for control or suppression of fungal diseases within the following crop groups: Berries, Bulb, Cucurbit fruiting, Root vegetables and Cherries. Supplemental New York State labeling was also approved for use on Pome fruits, Brassica head, stem and leafy greens, Leafy vegetables and Tuber vegetables. Applications of 8 to 16 ounces Cabrio product per acre or 0.1-0.2 lbs ai/acre, are made on 7 to 14-day intervals using ground or irrigation equipment. The maximum number of applications per season range from 3 to 6, depending on the crop. Maximum seasonal application rates equal 0.6 to 1.2 lbs ai/acres, also depending on the crop. To limit the potential for development of resistance, the numbers of sequential and total seasonal applications are limited. Only one application of Cabrio may be made in the presence of Downy mildew and Late Blight, or any disease of cucurbits, before alternating to a fungicide with a different mode of action. Otherwise, 2 applications may be made before an alternate mode of action is used. The seasonal limits on the number of applications stated above are resistance management limits, as opposed to active ingredient poundage limits.

Zeal miticide is now registered by the New York State Department of Environmental Conservation for use on pome fruit, non-bearing fruit trees and nuts, and strawberries in New York State. The active ingredient, etoxazole, is a miticide/ovacide for use in controlling the major tetranychid (spider) mite species in the egg and nymph stages of growth. Etoxazole exhibits strong translaminar movement within plant leaves. Spray contacting the upper surface of leaves will absorb into the leaves and locally translocate within the leaf. Thus, mites feeding on the undersides of leaves will be controlled. The label allows one foliar application of three ounces of product per acre. The maximum application rate is 0.135 pounds of active ingredient per acre per season.

For more information and New York labels for these products visit: http://pmep.cce.cornell.edu/

Editor's Notes:

***Indar Emergency Exemption for Mummyberry in New York*:** New York has applied to the EPA for a section 18 Emergency Exemption Label for the use of Indar 75 WSP to control mummyberry disease in blueberries. EPA has not granted the exemption yet, but we expect to hear soon. New York is among 21 states that applied for this exemption, including all the other New England States. It is of the utmost importance, if we need to petition the EPA in the future for this exemption, that **all** growers who use the material under the section 18 label, 1) carry a copy of the label at the time of application, and 2) fill out and send in the Special Use Report form to document this use. The routine annual pesticide use report forms are not sufficient.

Captevate was inadvertently omitted from the "*Cornell Pest Management Guidelines For Berry Crops 2005*". Please note it is labeled for use in NYS on the following crops.

Trade Name	Formulation	EPA Reg. #	Active Ingredient	REI-Hrs	PHI-Days
Captevate [blueberry]	68WDG	66330-48	captan & fenhexamid	72 hours	Zero Days
Captevate [raspberry]	68WDG	66330-48	captan & fenhexamid	72 hours	3 days
Captevate [strawberry]	68WDG	66330-48	captan & fenhexamid	24 hours	Zero Days

FOOD SAFETY AND FEEDBACK FROM BERRY GROWERS

Betsy Bihn, National GAPS Program Coordinator, Depart of Food Science, Ithaca, NY

Recently I had the pleasure of speaking at the New York Berry Growers Meeting in Syracuse, NY. One of my goals was to find out what the National GAPs Program could do to assist growers with the implementation of good agricultural practices (GAPs). One of the suggestions was to keep food safety on growers' minds by writing articles for grower newsletters. So, here it is. Not too long or fancy, but something to hopefully keep the topic of food safety on the radar.

With spring almost upon us, most growers are busy thinking about planting or uncovering their crops. It is also time to consider marketing, food safety, harvesting, and selling the crop. If you are a berry grower who operates a U-pick or Pick Your Own, have you considered providing toilets and hand washing facilities for your customers? Bathroom facilities encourage hand washing and minimize the need for customers to use the field when desperately in need of toilet facilities. It is never nice to consider customers relieving themselves in the field, but if no toilet is available I am willing to guess that it happens. Preventing crop contamination by human waste is very important.

Another thing to consider prior to the picking season is the picking containers used to harvest berries. Many farms allow individuals to bring their own containers for picking. Some provide containers. If you provide containers, be certain to have a standard system for washing and sanitizing containers between each customer to insure the containers do not contribute to contamination. You may want to move to single use containers to simplify the process. If you move to single use containers, do not forget to maximize your marketing by placing stickers that advertise your farm, hours of operation, and other important information. Food safety is important. Make changes that improve safety and make sense to the success of your business.

Any questions or comments, please contact me at eab38@cornell.edu, 315 787 2625, or visit our website at www.gaps.cornell.edu

FUNDING OPPORTUNITIES FOR AGRICULTURAL PRODUCERS

USDA TREE ASSISTANCE (TAP) PROGRAM

USDA Farm Service Agency's (FSA) Tree Assistance Program (TAP) provides financial assistance to qualifying orchardists to replace eligible trees, bushes and vines damaged by natural disasters, including cold injury. TAP was authorized by the 2002 Farm Bill. Eligible trees, bushes and vines (**including blueberries** and grapes) are those from which an annual crop is produced for commercial purposes. Contact your FSA office for more details. **Deadline for applications is March 18,2005, so call now!**

VALUE-ADDED PRODUCER GRANTS

USDA Rural Business-Cooperative Service (RBS) announces the availability of approximately $14.3 million in competitive grant funds for fiscal year (FY) 2005 to help independent agricultural producers enter into value-added activities. The primary objective of this grant program is to help eligible independent producers of agricultural commodities, agricultural producer groups, farmer and rancher cooperatives, and majority-controlled producer-based business ventures develop strategies to create marketing opportunities and to help develop business plans for viable marketing opportunities. The maximum award per grant is $100,000 for planning grants and $150,000 for working capital grants and matching funds are required. **Applications must be submitted by May 6, 2005.**

For more information: http://www.rurdev.usda.gov/rbs/coops/vadg.htm

NEW YORK INDUSTRIAL PROCESS AND PRODUCTIVITY IMPROVEMENT GRANTS

Program Opportunity Notice 917 from the New York State Energy Research and Development Authority announces the availability of $2,500,000 for innovative or underutilized energy-efficient industrial process improvements that improve productivity, product quality, emissions, or cost control at a New York State industrial site. **Agricultural operations qualify under the program. Proposals are due by April 27, 2005.**

For more information: http://www.nyserda.org/funding/funding.asp?i=2

(Reprinted from the ATTRA Weekly Harvest Newsletter, Sustainable Agriculture News Briefs, March 9, 2005)

TANK MIXING FUNGICIDES

Natalia Peres, Assistant Professor and Tom Kucharek, Professor, Department of Plant Pathology, University of Florida Gulf Coast Research and Extension Center

Tank mixing is a common practice that allows the grower to reduce the number of times spray machinery is used, reducing costs, soil compaction, damage to the crop, and spread of diseases. It is a complex issue and although some tank mixes are beneficial, others may be deleterious. As the number of ingredients increase in a tank mix, chances for incompatibility increase, particularly at lower spray volumes.

Loading the spray materials into the spray tank should be done with the tank at least half filled with water. The agitation system should be operating to attain thorough mixing. This minimizes the risk for physical and chemical incompatibilities because of the dilution effect of water. Dry formulations should be added to the tank first followed by the liquid formulations. As a general guide, the loading order for spray tanks should be: Wettable powders, Prills (DF's, DG's, and WDG's), Soluble powders, Flowables, Adjuvants, Emulsifiable concentrates (EC's), and Oils.

The use of adjuvants in a tank mix is a controversial topic. Adjuvants are chemicals, generally classified as non-pesticidal, that when added to a spray mix are supposed to enhance chemical effects or spray delivery. The key to success with adjuvants is to use them as little as possible because they can also cause damage to plants. Some adjuvants reduce the waxy-like coatings on the exterior of the plant. When these coatings are reduced, plants are more susceptible to chemical damage and are more likely to transpire water resulting in increased sensitivity to dry weather. The adjuvants most likely to damage plants when used with fungicides are crop oils, petroleum-based oils, and those with alcohols. Besides these adjuvants possessing phyotoxicological properties themselves, the tank mixing of them with some chemicals increases the probability for additional phytotoxicity. Another group of adjuvants that are of concern are silicon-based adjuvants. While this type of adjuvant is likely to be very beneficial in attaining entrance of herbicides into weeds and insecticides into insects, it does increase movement of bacteria into plants.

Success with tank mixing is based upon slowly acquired experience. It is not possible to test the numerous combinations that exist so if your cocktail works, don't change it until you have tested the new idea on a small scale or have asked informed sources for their opinions. While tank mixing is often essential, the grower should tank mix only what is necessary. The more chemicals that are used in the same mix, the more likely that an adverse effect on the crop will occur, and the less likely that a professional can determine what caused a problem related to the tank mix.

For more information contact : Natalia Peres (813) 744-6630 or Tom Kucharek (352) 392-1980) takucharek@ifas.ufl.edu.

(Reprinted from the Florida Berry/Vegetable Times, February 2005 Issue)

INCREASE STRAWBERRY PRODUCTIVITY WITH EARLY SPRING ROW COVER

Lori Bushway, Senior Extension Associate in Berry Crops, Department of Horticulture, CALS, Ithaca, NY

Many different cultural practices have been recommended to Northeastern strawberry growers over the years, but none has proven to be consistently beneficial to all growers. The exception to that may be the use of early spring row covers. Research at Cornell and elsewhere has repeatedly found spring row covers to positively impact plant develop carbohydrate reserves, and productivity in strawberry fields.

Row cover may be purchased from and helps support

The New York Berry Growers Association

For more information or to order:
Jim Altemus
Phone: 585-657-5328
Fax: 585-657-4642
E-mail:
goodberries@frontiernet.net

Straw mulch is applied over the strawberry planting in late fall to protect plants from winter injury. However, plants left under winter straw mulch into April show greater than 50% decline starch content, a loss of root biomass and subsequently lower yields. Creating a more favorable plant microclimate in late March and April by removing straw mulch and covering plants with synthetic row covers improves photosynthetic rates of leaves, enhances starch accumulation, accelerates plant development (including earlier fruiting) and increases total fruit yield. As a rule, March is an appropriate time to remove protective winter straw mulch and apply row

cover. The row covers should be removed soon after flowers are observed. Without wind or bee activity, pollination will be reduced and fruit will be deformed. If cold temperatures (<30F) occur when covers are still in place and flower trusses have emerged, water can be applied directly over the row covers for frost protection. The economics of row cover use is favorable if the material is reused for several springs.

Details on spring microclimate studies can be found in the following article: Lori J. Bushway and Marvin P. Pritts. 2002. Enhancing Early Spring Microclimate to Increase Carbon Resources and Productivity in June-bearing Strawberry. *Journal of the American Society for Horticultural Science* 127(3): 415-422. http://www.ashs.org/journal/

STRAWBERRY YIELDS IN GENEVA

Dr. Courtney Weber, Department of Horticultural Sciences, Cornell University, New York State Agricultural Experiment Station Geneva, NY 14456 caw34@nysaes.cornell.edu

Strawberries are one of the most variable and temperamental of the fruit crops and the choice of cultivars is extensive because individual cultivars are often adapted to a relatively small growing region. The most commonly grown cultivars in north-central and northeastern North America are June-bearing types and many new cultivars have been released in recent years. No cultivar will be perfect so growers are advised to try new ones on a limited scale to determine how they will perform in each situation. The goal of this project was to compare 7 relatively new strawberry cultivars (Sable, L'Amour, Brunswick, Darselect, Clancy, Cabot and Eros) to 3 standards in the region (Earliglow, Honeoye and Jewel) .

A replicated trial with 10 cultivars, each with three 25 ft. plots, was established in 2001 in Geneva, NY. A matted row growing system was used (Pritts and Handley, 1988) with an initial plant density of 7,260 plants per acre. Overhead irrigation was used at renovation only. Bare root plants were planted at 18 in. spacing within rows and 48 in. between rows. Napropamide (Devrinol) was applied at the labeled rate in the establishment year for weed control followed by supplemental hand weeding later in the season. During the harvest seasons weed control was accomplished using napropamide and sethoxydim (Poast) in the spring and 2,4-D at renovation and in the late autumn after dormancy had set following Cornell Pest Management Guidelines. This was supplemented with hand weeding as necessary. No fungicides or insecticides were used during this trial except in 2003 when endosulfan (Thiodan) was used for control of cyclamen mites.

The soil type in the field was Honeoye fine sandy loam with approximately 2% slope. After the establishment year, calcium nitrate was applied at the rate of 125 lb•ac^{-1} in April. During renovation, ammonium nitrate was applied at 180 lb•ac^{-1}, and SulPoMag (22%K_2O-11%Mg-22%S) with 70 lb•t^{-1} of 15% borate was applied at 225 lb•ac^{-1} was applied in late autumn.

The plots were harvested three times per week during the harvest period and total yield per acre was extrapolated based on plot totals. Harvest of each cultivar ended when the average fruit weight on a harvest day fell below 8 g per berry. Samples of 10 fruit were taken from 6 of the cultivars during the 2003 season for storage trials and 5 cultivars were included in a blind taste test with growers during a field day in Geneva. Total yield, percent marketable yield, and average fruit weight over the season were calculated (Table 1). Average harvest dates from 2002-2004 were recorded (Table 2), and results from the storage test and taste test are in Tables 3 and 4.

Initial yields in the trial were very high with Cabot topping 29,000 lb per acre in estimated yield in 2002 and Brunswick, Darselect, Jewel and Eros also over 20,000 lb per acre (Table 1). In 2003, yields decreased significantly for most cultivars but Clancy and Brunswick increased their yields and L'Amour recorded only a 6% decrease. The remaining cultivars decreased in yield between 17% (Sable) and 70% (Eros) (Table 1). In 2004, yields again decreased significantly for most of the cultivars with acceptable yields only in Brunswick and L'Amour and marginal yields in Honeoye and Darselect (Table 1). The remaining cultivars produced very small yields.

Average fruit weight did not vary widely within cultivars over the seasons. Cabot was the highest in 2 of 3 seasons and Earliglow and Sable generally the lowest (Table 1). The remaining cultivars were similar in average weight over 3 seasons. Marketable yield did vary widely among the cultivars and from year to year. L'Amour and Jewel had the fewest culls on average with over 80% marketable yield during the trial (Table 1). Eros and Brunswick had the highest cull rate with only 70% average marketable yield over the trial (Table 1).

Harvest dates could be used to group the cultivars into early season (Earliglow, Sable, Honeoye, Brunswick), mid-season (L'Amour, Jewel, Darselect) and late season (Eros, Clancy, Cabot) cultivars (Table 2). The average harvest season length varied from 9 days in Earliglow and Sable to 17 days for Clancy (Table 2).

Overall appearance ratings after 6 days of storage were best for L'Amour and Jewel at 4 on a scale of 5 and worst for Darselect and Earliglow at 2.5 and 2.3, respectively. A rating of 3 was considered marketable. Firmness, bruising, and sepal appearance all contributed to the overall appearance rating. Cabot, Eros, Sable, and Brunswick were not rated due to logistical problems.

Taste test results indicated that Earliglow was the best tasting cultivar followed by Jewel and L'Amour. However, in overall preference ranking, L'Amour ranked highest followed by Jewel. Texture, color and overall appearance contributed to this ranking.

Overall the trial showcased the potential of several new cultivars compared to the standard cultivars of Earliglow, Honeoye and Jewel. As a whole, L'Amour exhibited the greatest potential of the new cultivars in overall performance with good yields, large fruit with good storage capacity, and high grower ratings for taste and appearance. Darselect and Cabot show good potential but have some significant drawbacks. Darselect stores poorly and may renovate poorly when water management is not perfect. Cabot often has fruit deformities in the primary berries but makes up for this in total yield. Unfortunately, severe susceptibility to cyclamen mites nearly eliminated the plots by the third season. Brunswick showed very good yields all three seasons and was very vigorous but had high cull rates and dark, soft fruit that may not be suitable for many markets. Clancy performed well in the first 2 seasons but crashed due to poor water management at renovation in 2003. The fruit of Clancy is large and stores adequately but may be a bit dark and is not the classic heart shaped berry that is desired. It does have potential as a late season cultivar because there are few options. Sable did not offer any advantages over Earliglow and had softer fruit. Eros only performed adequately in the first season and went down quickly due to poor renovation and cyclamen mite problems. Its fruit quality was also poor being light and not particularly attractive.

Literature Cited:

Pritts, M. and D. Handley (eds.). 1988. Strawberry production guide. N.E. Region. Agric. Eng. Ser. Bull. NRAES-35. Cornell Univ., Ithaca, N.Y.

Table 1. Total yield, percent marketable yield and mean fruit weight for 10 strawberry cultivars in Geneva, NY. Fruit was harvested until the mean weight was below 8g/berry. Fruit over 8g with no rots, deformities, or damage were considered marketable. Yield was extrapolated from three 25 ft. plots planted at an initial density of 7,260 plants•ac^{-1} in a matted row system.

Cultivar	Total Yield (lb•ac^{-1})			% Marketable Yield			Mean Fruit Weight (g)		
	2002	2003	2004	2002	2003	2004	2002	2003	2004
Cabot	29,070	17,380	32	79	76	77	17.7	15.5	10.9
Brunswick	20,060	21,690	15,940	66	73	72	10.8	12.2	12.6
Darselect	23,530	16,120	8,290	74	76	79	11.5	12.0	12.4
Clancy (NYUS304B)	15,240	18,680	380	78	85	70	12.3	13.9	10.9
Honeoye	18,280	14,470	7,310	70	84	82	10.7	12.4	10.3
Jewel	20,250	11,650	970	77	87	78	10.5	12.9	12.3
L'Amour (NY1829)	15,930	14,950	9,210	80	77	89	12.3	11.4	11.4
Eros	22,340	6,680	640	77	68	67	12.6	10.9	11.7
Sable	12,650	10,330	2,560	51	75	88	8.7	10.2	10.3
Earliglow	13,040	8,160	1,650	60	75	89	8.6	10.2	11.6

Table 2. Average harvest dates for 2002-04 for 10 strawberry cultivars in Geneva, NY.

Cultivar	First Harvest Date	50% Harvest Date	Final Harvest Date	Harvest Length (days)
Earliglow	June 10	June 15	June 18	9
Sable	June 10	June 15	June 18	9
Honeoye	June 12	June 17	June 21	10
Brunswick	June 12	June 19	June 25	14
L'Amour (NY1829)	June 14	June 21	June 26	14
Jewel	June 15	June 20	June 24	10
Darselect	June 14	June 21	June 29	15
Eros	June 19	June 24	June 28	10
Clancy (NYUS304B)	June 17	June 25	June 30	17
Cabot	June 19	June 29	June 29	11

Table 3. Mean storage ratings for 5 strawberry cultivars in Geneva, NY. Ten fruit samples were taken at 3 harvest dates during the 2003 season and stored for 6 days at 1°C. (Scale 1-5; 5=best)

	Firmness		Bruising		Sepal Appearance		Overall Appearance	
Cultivar	Day 1	Day 6	Day 1	Day 6	Day 1	Day 6	Day 1	Day 6
Honeoye	3.7	2.7	3.7	2.3	4.0	3.7	4.0	3.0
L'Amour (NY1829)	5.0	3.7	4.7	4.0	4.7	3.7	4.7	4.0
Jewel	4.0	3.2	5.0	4.3	3.7	3.2	4.7	4.0
Darselect	4.0	2.0	3.5	2.5	3.0	3.0	3.5	2.5
Earliglow	4.7	2.7	3.7	2.7	3.0	2.7	3.7	2.3
Clancy (NYUS304B)	5.0	4.3	4.7	3.7	4.0	2.8	3.7	3.0

Table 4. Blind taste test results from 11 growers attending a field meeting on 6/24/03 in Geneva, NY. (Scale 1-10; 10=best). (Average rank is in order of preference overall.)

Cultivar	Flavor	Texture	Exterior Color	Interior Color	Appearance	Average Rank
L'Amour (NY1829)	6.5	8.2	8.4	8.2	8.1	2.6
Jewel	6.7	8.3	8.5	8.0	8.2	2.8
Darselect	6.3	7.9	7.9	7.6	7.8	3.1
Clancy (NYUS304B)	5.3	6.9	7.7	7.8	7.2	3.6
Earliglow	7.0	7.1	7.9	7.9	7.1	3.8

The following descriptions of the 10 cultivars tested are based on published reports and trials at Cornell University's New York State Agricultural Experiment Station in Geneva, NY. They are organized by harvest season.

Early Season

Earliglow is still considered the best tasting berry around. Primary berries are large and attractive and are suitable for retail or wholesale. Berry weight drops off quickly after the primary berries and yields are relatively low. Susceptible to powdery mildew after harvest.

Honeoye has reigned as the yield king for many years and produces an abundance of large, attractive, firm, berries that are suitable for all markets. Closer to an early mid-season, the look of this berry sells it, but taste is the major drawback as it can be tart and can develop disagreeable aftertastes when over ripe or in heavy soils. It is susceptible to red stele disease but is manageable.

Sable is slightly earlier than Earliglow and is equal or better in flavor. Unfortunately it lacks fruit size and firmness. This cultivar is only suitable for direct retail and u-pick operations. Frost damage can be a problem because the flowers open very early.

Mid Season

Brunswick is a new cultivar out of Nova Scotia with fruit weight and yield similar to Honeoye. However, it has a squat, round shape and tend to be dark and bruise easily. The flavor is good but can be tart when under ripe.

Darselect is a large fruited, high yielding cultivar. The berries are attractive and bright red with a long conical shape. The flavor is very good. However, it tends to be soft. It is susceptible to powdery mildew, which can be a problem in areas with morning fog.

L'Amour (NY1829) is a new cultivar from Cornell for 2004. It is an early mid-season type with excellent fruit quality. Berries are bright red and firm but not hard, with excellent eating quality and flavor. Fruit is long round conical with a fancy calyx, which makes them very attractive. No significant disease or insect problems have been noted to date.

Jewel continues to be the favorite in this season. The high quality berries are large and attractive with good flavor. Yields are moderate. On a good site, it's hard to beat. It is susceptible to red stele and can have vigor problems in poor or cold sites.

Late Season

Cabot produces impressive berries. Average fruit weight is larger than any cultivar currently available. Primary berries often top 40-50 g. The color can be pale throughout the berry and primary berries are often irregular in shape. Yields are very high. It is resistant to red stele but is susceptible to virus infection and cyclamen mites.

Clancy (NYUS304B) is a new late season release from Cornell that was developed through a joint venture with the USDA breeding program in Beltsville, MD. Its parents were resistant to red stele root rot. The fruit is a round conical shaped with darker red color and good flavor. The flesh is very firm with good texture and eating quality. The fruiting laterals are strong and stiff, keeping the fruit off the ground until they reach full size. No significant disease or insect problems have been noted to date.

Eros is a light colored late season cultivar out of Italy. The berries are large but somewhat squat and not particularly attractive. Yields are adequate in good stands but it does not renovate exceptionally well. It is susceptible to cyclamen mites.

GROWING BLUEBERRIES IN COLD CLIMATES

Kevin Iungerman, Cornell Cooperative Extension, Ballston Spa, NY and Marvin Pritts, Department of Horticulture, Cornell University, Ithaca, NY

It is tempting to assume that the presence of wild blueberry plants in a locality is a good indicator of success for their commercial cousins (**Figure 1**). However, just because wild plants grow in an area does not imply that cultivated plants will thrive. The large amount of genetic diversity in wild plants allows particular types to survive in some unbelievably harsh habitats, from windswept rocky roosts to boggy bottoms. Commercial varieties, though very stress tolerant, usually do not have the resiliency to tolerate exceptional conditions. Breeding advances have increased tolerance to some extent, but special considerations must be made to produce fruit superior to wild berries using currently available cultivars in cold climates.

Growing blueberries in cold climates presents growers with many challenges due to low temperatures, fluctuating temperatures, and low moisture. Timing and severity of injury varies, but there are ways for growers to reduce crop damage in cold climates.

Low temperatures present a significant challenge, not only because of the direct effect of cold on the plant, but due to the indirect effect of the reduction of moisture availability. Extremely cold temperatures, coupled with high winds, can desiccate buds and kill plant tissue. Few woody plants of any species can tolerate temperatures below -40°F. The hardiest blueberries will be damaged below -20°F, unless they are covered with snow. Growers living in climates where the mid-winter low temperature consistently approaches -20°F should plant only on sites that have good air drainage, and use only hardy varieties such as Patriot, Jersey and Northland. Low-statured half-high varieties (e.g. Northblue) can also be successful in cold climates because plants are frequently covered with snow that protects against desiccation in mid-winter. In Quebec, varieties that tend to produce fruit on lower branches, such as Duke and Reka, are often successful, even though they are not particularly hardy, because lower branches are usually protected by snow during extremely cold weather.

In addition to low temperature extremes, fluctuating temperatures can be damaging as well. Once the chilling requirement has been met, buds are able to grow when the weather warms. The first step in the growth process is for free water to move into the cells and vascular system at the base of the buds. If the temperature drops suddenly and the water freezes, the bud will expand and the ice may rupture cell walls and disrupt vascular connections. The result can be permanent damage to the bud even though visible damage may not show up until late spring when rapid growth begins. Avoid planting on a steep southern exposure as this location can exacerbate temperature fluctuations. Researchers in Michigan have been recording the hardiness of blueberries after exceptionally cold winters, and after severely cold springs. The ranking of varieties differs considerably between years, indicating that varieties tolerant of severe cold in winter are not necessarily tolerant of fluctuating temperatures in spring. Late-fruiting varieties are more tolerant of spring frosts than the typically winter-hardy varieties.

Figure 1. This blueberry plant appears to be a natural hybrid between lowbush (*Vaccinium angustifolium*) and highbush (*V. corymbosum*) blueberry and is growing in the Adirondack Mountains in a very cold region of New York State.

Woody plants growing in cold climates often have many of the same adaptations as desert plants (thick leaves, narrow vessels, small stomata, ability to store salt in leaves), because the fundamental problem in both climates is the lack of water. In the desert it does not rain; in cold climates during winter, the soil water is in the form of ice and the air is exceptionally dry. Blueberries have several adaptations that allow them to tolerate a relatively large amount of water stress and desiccation. Despite these adaptations, adequate soil moisture is necessary during the growing season in order to realize a reasonable yield. It is also important to make sure that plants are well irrigated going into the winter to compensate for inevitable water loss that occurs when temperatures and humidity fall. Preventing desiccation by using windbreaks can also help minimize winter damage. Some growers use a floating row cover over half-high blueberries to increase survival in cold climates (**Figure 2**). Excessive nitrogen fertilizer or late applications can make plants susceptible to cold temperatures too. Balanced nutrition, determined with a foliar analysis, will help ensure that plants have the capacity to harden properly as winter approaches.

Figure 2. Overwintering half-high blueberries under a floating row cover in Minnesota.

Mulches help conserve moisture and protect roots when snow cover is absent. Mulch is particularly important for young plantings that have not yet established a strong root system, as it prevents extreme temperature fluctuations in the soil. Repeated soil freezing and thawing can heave out new blueberry plants, causing a significant economic loss. This will most likely occur with fall planting.

Excessive soil water can be problematic as well, particularly when roots are growing. Root growth involves respiration, which in turn, requires oxygen from the surrounding air pockets in the soil. If air spaces are filled with water, then no oxygen is available and roots accumulate toxic metabolic waste. Flooded or saturated soil brings a risk of oxygen starvation. Although 60°F is optimal for root growth, roots grow at temperatures as low as 43° F. So, even if the plant appears to be dormant, some root growth may be occurring. If the soil is flooded in fall when the plant is attempting to move starch and nitrogen compounds in to the roots for winter storage, then plant growth the following spring may be compromised. Installing drainage or planting on raised beds can be good practices for blueberries, even though they are less prone to soil diseases as some other fruit crops (**Figure 3**).

Figure 3. Raised beds help prevent stunting and disease development in wet sites.

It is unusual for a mature blueberry plant to die suddenly from cold temperature injury; the decline is most often gradual. First, shoot growth is reduced and, as a result, a low number of floral buds are produced on the shoots. Since the floral buds are formed at the tips of shoots, and winter injury always starts at the tips and works down, the first buds to die are flower buds. Vegetative buds are hardier than floral buds. Blueberries growing in cold climates may exhibit reasonable vegetative growth, but little fruiting. Winter-injured blueberry plants are susceptible to cane diseases, particularly Phomopsis canker (**Figure 4**). This fungus can invade canes through dead buds and further weaken the plants. But even without canker, repeated winter injury will result in poor shoot growth and low yields.

Figure 4 (right). Phomopsis canker often infects plants through winter-injured wood.

A second level of winter injury occurs when plants appear to be healthy in spring, but shoots suddenly collapse and die when the weather warms significantly. Although Phomopsis canker can cause these symptoms (**Figure 5**), they also may be due to vascular collapse as previously injured vascular tissue is unable to support the rapidly growing shoot.

Figure 5 (left). Vascular collapse of an entire cane on a young plant infected with Phomopsis canker.

Active connections are too few, so the shoot wilts, despite what may be abundant water in the soil. A third level of injury occurs when the temperature drops low enough at the wrong time of the year so that both floral (**Figure 6**) and vegetative buds are killed. Although new canes will usually develop from buds below the ground, injury of this degree will set back the planting by several years. Growers with established plantings can minimize winter injury with windbreaks, and ensure that nutrients and water are managed properly. Planting low-statured varieties on good sites may enable growers to produce blueberries in regions once considered too cold for commercial production, particularly if row covers and windbreaks are used.

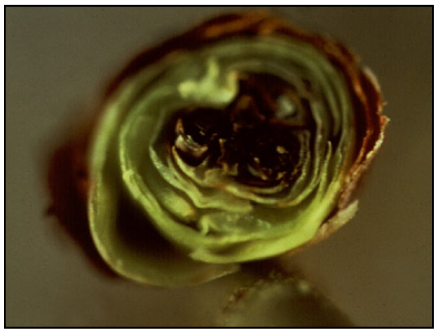

Figure 6 (right). Cold temperatures during winter have killed the floral buds.

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(Reprinted with permission from: New York Fruit Quarterly, Vol. 13, No. 1, Spring 2005)

CANKERWORM AND/OR WINTER MOTH IN BLUEBERRIES

Bob Childs and Deborah Swanson, University of Massachusetts, Amerherst Extension

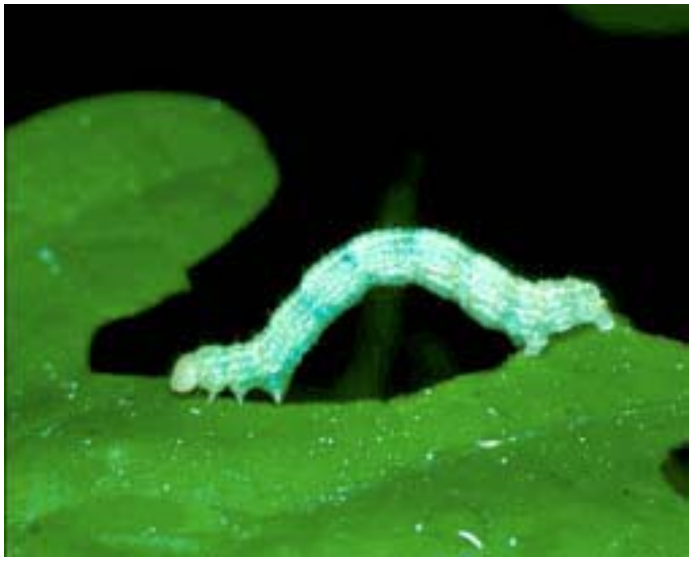
(Editor's Note: Adapted for blueberries by Sonia Schloemann, Small Fruit Specialis, tUniversity of Massachusetts Amerherst Extension.)

In recent years, many blueberry growers in eastern, and especially southeastern Massachusetts, have reported serious damage from early season feeding of a small green caterpillar originally thought to be green canker worm. Last year, we determined that this caterpillar is more likely the larval stage of an insect called Winter Moth and the potential for serious damage to blueberries and other host plants is high. Winter Moth is a new pest in Massachusetts. Prior to its introduction, both spring and fall cankerworms were not uncommon in our area. However, the level of damage from Cankerworms was typically less severe and occurred less frequently compared to the damage we are now finding from Winter Moth. Cankerworms, both fall and spring, are native insect pests. Cankerworm populations will appear in an area and exist in damaging numbers for several years before going into decline due to natural controls. Then they may not reappear in that area for one or more decades. The winter moth, however, is an introduced insect pest and as such does not 7 have sufficient natural controls yet to cause the populations to decline. Here is what we know about Winter Moth, its life cycle, damage and how to control it. **Winter Moth** (*Operophtera brumata* (L.))

Origin: Winter moth is an insect pest that was introduced to North America from Europe. Its introduction has been known for years in various regions of eastern Canada, including: Nova Scotia, Prince Edward Island, and parts of New Brunswick. It has also been a pest in the northwestern region, namely Vancouver, British Columbia. Winter Moth was introduced into the United States and has warranted control measures in Washington and Oregon. This pest is now in Massachusetts in, at least, the southeastern region and parts of Cape Cod. It is the first known occurrence of it in outbreak proportions in New England. It is also, currently, a problem in the United Kingdom (England and Scotland).

Injury and Host Plants: Many different deciduous plants are susceptible. These include: oaks, maples, basswood, white elm, crabapples, apple, **blueberry**, and certain spruces such as Sitka spruce (Scotland). Young larvae or caterpillars, resembling inchworms, tunnel into and feed inside buds, especially on fruit trees (apple, **blueberry**, cherry, and crabapple) in the early spring before bud break. These caterpillars move from bud to bud as they feed. Delayed bud opening due to cool weather conditions can lead to bud death as the caterpillars have longer time to feed. Older larvae feed in the expanding leaf clusters and are capable of creating defoliation in high populations. Research in Canada has shown that four consecutive years of partial defoliation of deciduous hosts can lead to branch mortality while complete defoliation in each of those years leads to tree mortality. In certain regions of Nova Scotia, this pest is responsible for a 40% red oak mortality in forested stands.

Life Cycle: Moths, or the adult stage, of the winter moth emerge from the soil usually in late November and can be active into January. The adults are strongly attracted to light and can often be found flying around outside lamps or holiday lights. The male moths are 4 cm , light brown to tan in color and have four wings that are fringed with small elongate scales that give the hind margins a hairy or fringed appearance. The female is gray, wingless and, therefore, cannot fly. She emits a sex pheromone or scent that often attracts clouds of male moths. Females are usually found at the base of trees but can be found almost anywhere. After mating, the female deposits an egg cluster on tree trunks and branches, in bark crevices, under bark scales, under loose lichen, or elsewhere. The adult moths then die and the eggs over-winter. Eggs hatch when temperatures average around 55°F. It is believed that egg hatch in Massachusetts occurs when 20 – 50 Growing Degree Days (base 50) have accumulated. This means that this usually occurs in the spring, before bud break of most of its host plants. Newly hatched larvae often crawl up tree trunks and produce a long 8 silken strand of silk which makes them air buoyant. This larval dispersal method is known as “ballooning”. In certain situations, winter moth caterpillars can arrive in areas where they have not expected to be a problem, given topography and wind patterns. Larvae are pale green caterpillars with a white longitudinal stripe running down each side of the body. Winter moth larvae are loopers or inchworms and have just 2 pairs of prolegs. At maturity, these caterpillars will be approximately one inch long. They will feed voraciously until mid-June, whereupon they migrate to the soil for pupation. They will stay in the soil in the pupa stage until they emerge in late November as adult moths.



Feeding: In certain years, winter moth eggs may hatch in March. After ballooning, the larvae will tunnel into buds, especially the flower buds of fruits (apple, blueberry, cherries, and flowering trees). They will feed on both fruit and foliar buds but fruit buds are preferred. Once a bud has been devoured from within, the caterpillar will migrate to other buds and repeat the process. Once leaf buds open, the small caterpillars can be found within the tight clusters of new leaves during the day. During cool springs, if weather hinders leaf expansion, the winter moth caterpillar can cause high levels of injury to these leaves. Winter moth caterpillars often leave these clusters to become free feeders at night. They may also "drop" or "balloon" to plants that are located beneath infested trees. These caterpillars may then feed on a whole host of herbaceous perennials, roses etc. that are near or beneath these trees. Winter moth caterpillars are often found in association with both the fall and spring cankerworms, which look and have similar feeding patterns to the winter moth caterpillar.

Photographer: Louis-Michel Nageleisen, Département de la Santé des Foréts - France

What can be done? •- Scout: Orchardists need to be particularly aware of the winter moth. The potential exists for both apple and blueberry crops to be heavily damaged. By the time one realizes that the flower buds have been consumed, it will be too late for action. Therefore, favored host plants in susceptible areas should be monitored carefully. Bark crevices should be inspected for egg clusters. By late winter, winter moth eggs will be reddish-orange in color. Upon hatching, winter moth caterpillars climb high into the host plant and produce a long strand of silk to make themselves air buoyant. They will be carried by the wind to a new host plant. This process of dispersal is called "ballooning". •- A **dormant oil spray** to the blueberry bushes may be helpful in killing the overwintering eggs before they hatch. However, some egg clusters are under bark flaps and loose lichen and may be protected from oil sprays. Eggs may also be in other locations on or off the host plant. Caterpillars may also invade host plants by ballooning onto them after treatment has been applied. •- ***Bacillus thuringiensis*** (B.t. (kurstaki), a bacterium specific to caterpillars of butterflies and moths, works very well on the younger larvae of both winter moth and cankerworms while they are free feeders. • **Spinosad** products (SpinTor® and Entrust®), both of which are labeled on blueberries are a biorational compound that works well against both of these species. • **Insecticidal soap** may be effective against the younger caterpillars but only when they are exposed on the host plant. • **Chemical insecticides.** Few compounds, are labeled for this pest although many are being tested and may receive supplemental labels in the future. Confirm® insecticide is labeled for loopers, spanworms and other lepidopterous pests in blueberry and should be effective. Imidan® may also be effective. Consult your local supplier and always read, understand and follow all label directions for pesticide products. • **Plants heavily defoliated** by winter moth caterpillars will be severely stressed. Blueberry bushes must put out a second flush of growth in order to survive. **Water is critical to the bushes at that time.** Supplemental watering of bushes will be necessary if a drought or little rainfall occurs naturally.

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REPUTATION AS YOUR BRAND

Brian M. Henehan, Senior Extension Associate, Department of Applied Economics and Management, Cornell University

Many marketers of agricultural products are small businesses owned by individual producers or entrepreneurs. Customers typically associate the products marketed or services delivered with an individual or small group of people. Their individual or group reputation can become a key reason for doing business with them. And so their own names become, in many ways, the "Brand" for their products.

Most small businesses have limited resources to promote and build a brand name. But given that your reputation can be a key element of your brand identity, it is worth giving some thought to how your customers view your reputation. This becomes more important for food marketers operating in small or local markets resulting in a "small world" of contacts and relationships. Word can travel fast about transactions that didn't turn out well for buyers. Reputations can be quickly enhanced or tarnished in markets with a small number of players. This market reality creates both challenges and opportunities. Your positive reputation can give you a competitive advantage over those seen in a less positive light.

In fact, more publicly-traded firms are reviewing strategies to build their "reputational capital". With the recent flurry of ethical breakdowns of firms like Enron, Tyco, or World Com, companies are realizing that building reputational capital can result in improved investor or 2 lender relations as well as creating a more positive work environment for managers and employees.

Small businesses with limited resources for conventional approaches to building a brand name like promotion and advertising might give some thought to relatively low-cost approaches to building your reputation. A starting point can be gaining a better understanding of how your customers view your reputation. Do your customers view you and your employees as conducting business in an honest and ethical way? Are you reliable and consistent in delivering the services or products that you market? How do you address complaints from customers about not being treated fairly? When customers think about your business, would the words "dependable", "sincere", or "trustworthy" come to mind?

Some strategies to consider when building or maintaining a positive reputation: •

- When conducting customer surveys, incorporate a question or two about how they perceive your reputation. •
- Develop a values statement for your business that all staff understands. • Set and practice high standards for ethical behavior. •
- Establish fair terms of trade that are transparent and understood by your customers to minimize misunderstanding. •

- Gain a better understanding of business practices that might have a negative impact on your reputation.

Your reputation is an integral part of the "story" that you tell to customers or consumers. Some segments of consumers are very interested in how you produce a product or the values you adhere to in conducting business. Some examples include: the ethical treatment of animals, utilizing environmentally sound practices, or how employees are treated. Highlighting your reputation or the standards you set for conducting business can be a productive marketing strategy

In many situations, there are relatively low-cost, effective ways to build your reputation that can add value to your brand. Being perceived as a reliable, trustworthy business that treats customers fairly can yield increased sales as well as a more fulfilling work environment for you or your employees. Nice guys may indeed finish first as smart marketers!

(Reprinted from: Smart Marketing February 2005)

SMALL FRUIT REFERENCE LIBRARY REVIEWS

Cathy Heidenreich, Plant Pathology, NYSAES Cornell University, Geneva, NY

Here is the latest in a series on building your small fruit library. (See full article in the October 2004 Issue of NYBN). Careful planning and selection of materials for your reference library can provide you with a broad knowledge base that is timely and in some respects, timeless.

This month we have hot off the press *Currants, Gooseberries, and Jostaberries: A Guide for Growers, Marketers, and Researchers in North America,* by Danny Barney and Kim Hummer.

Book Review: *Currants, Gooseberries, and Jostaberries: A Guide for Growers, Marketers, and Researchers in North America*

Danny L. Barney, PhD
Professor of Horticulture, University of Idaho Sandpoint Research and Extension Center
Kim E. Hummer, PhD, MS, BS
Research Leader USDA-ARS National Clonal Germplasm Repository, Corvallis, Oregon

Rediscover the economic potential of growing Ribes cultivars in the United States and Canada!

Currants, Gooseberries, and Jostaberries: A Guide for Growers, Marketers, and Researchers in North America explores the biology and history of growing these small fruits as commercial crops in North America. This book provides authoritative information on the potential risks and profits of establishing a currant or gooseberry farm and offers step-by-step details for cost-effective set-up, maintenance, and post-harvest activities. This book will be a reliable reference for prospective growers and Ribes researchers.

Currants, Gooseberries, and Jostaberries presents in detail the necessary components of successful Ribes culture farming, including:

- site and soil selection
- design of planting site
- plant propagation
- cultivar selection
- cultural practice
- pest and disease management
- harvesting and marketing

The book supplies the latest production figures for Ribes crops worldwide to help you choose which crops to grow. It also contains detailed information on fruit biochemistry, allowing you to market to human health industries. "*Currants, Gooseberries, and Jostaberries*" is the first North American publication to focus exclusively on Ribes culture in more than 50 years." It's your one-stop resource for up-to-date information this side of the Atlantic Ocean.

Currants, Gooseberries, and Jostaberries provides you with tables, figures, and appendices, such as:

- a table of the state regulations governing the importation and growing of currants, gooseberries, and jostaberries as listed by the Department of Agriculture

- calendars of what you need to do throughout the year to prepare, plant, and manage Ribes crops
- a list of cultivars available in North America
- tables of suggested parentage for currants and gooseberries to breed for improved fruit and juice quality, disease resistance or frost resistance, or improved mechanics for harvest
- a site selection checklist
- an enterprise budget showing typical costs of producing currants and gooseberries for sale in the market

***Reviews*:**

"AN EXCELLENT, MODERN GUIDE...There is no other publication that I know of that addresses the many aspects of production of this fruit. This will be VALUABLE FOR ALL PRESENT AND FUTURE GROWERS AND MARKETERS. Most of the information on Ribes production is more than fifty years old, and none covers the subject as well as this book. The authors are well-known, very careful researchers, and are probably the most knowledgeable sources of information about Ribes in this country."
E. F. Mashburn, Past President and current Board of Directors member, The International Ribes Association

"AS AN EXTENSION EDUCATOR, I am constantly asked for reference materials on Ribes and am happy to have one source, one guide that I can recommend rather than an incomplete packet of articles and pamphlets. THIS GUIDE IS COMPLETE AND IS VALUABLE FOR SMALL-SCALE TO LARGE-SCALE GROWERS AS WELL AS EDUCATORS AND RESEARCHERS. Literally all relevant subjects have been covered in the guide, and I am sure that it will find its way to all pomologists' reference shelves alongside the NRAES guides for other berry crops."
Steven McKay, MS, Extension Educator, Cornell Cooperative Extension

Approx. 299 pp. with Index. Available from: Haworth Press, Inc., hardcover &59.95, softcover, $34.95.

Check out the NYSAES Tree Fruit and Berry Pathology web site at:
www.nysaes.cornell.edu/pp/extension/tfabp

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