New York Berry News

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What's Inside

The New York Berry News is celebrating its 5th year with the release of the January 2006 issue. We wish to thank all of our contributing authors and readers for their support during the past 4 years. We are looking forward to another year with anticipation and excitement. And as always, we welcome your comments and input on how the New York Berry News might better serve the berry industry in New York and the Northeast. Please direct any suggestions/comments to Cathy Heidenreich at mcm4@cornell.edu. Now, on with the show!

We start with opportunities for education and training during the winter months, listed in Upcoming Events. There's sure to be one or more that will benefit your agri business, so get out that calendar and register right away to get the early bird specials. News brief provide information on local events of note.

Our in-depth articles are both written by new NYBN authors/contributors. The first is a report on strawberry weed control research by Robin Bellinder and Christopher Benedict. The second is a synopsis of a keynote address on raspberry disease control given by Wayne Wilcox at the 10th International Rubus and Ribes Symposium held in Chile last month. Other in-depth articles include a double hitter from our Canadian neighbors and friends on nematode problems in berry crops, and finally an article on year round marketing of your agricultural enterprise by Bob Weybright and Wen Fei Uva.

UPCOMING MEETINGS

January 26, 2006. *Connecticut Vegetable and Small Fruit Growers Conference* ,Tolland County Agricultural Center, 24 Hyde Avenue (Route 30) in Vernon, CT. For more info, contact Jude Boucher at (860) 875-3331 or Jude.Boucher@uconn.edu or Lorraine Los at (860) 486-6449 or Lorraine.Los@uconn.edu.

January 28-30, 2006. *Organic Farming & Gardening Conference*. Syracuse, NY. For more info contact Mayra Richter (607 652-6632 or email office@nofany.org.

January 31 – February 2, 2006. *Mid-Atlantic Fruit and Vegetable Convention*. For more info contact the Pennsylvania Vegetable Growers Association at pvga@pvga.org or visit http://www.pvga.org/.

February 2, 2006. *Agricultural Drip/Trickle Irrigation Workshop*. Kemptville, Ontario, Canada. For more info or to register: http://www.omafra.gov.on.ca/english/crops/conferences/20060130.htm

February 3-5, 2006. *NY State Farmers Direct Marketing Conference*, Cobleskill, NY. For more info or to register: Dianne Eggert, 315-475-1101.

February 13-16, 2006. *Empire State Fruit and Vegetable Expo*. Onondaga Convention Center, Syracuse, NY. For more info or to register: 315-687-5734 or email: nysvga@twcny.rr.com.

February 15-16, 2006. *NABGA Regional Meeting*, at the *Empire State Fruit and Vegetable Expo*. See news brief below for more info.

February 21-23, 2006. *Hudson Valley Commercial Fruit Growers School, with new Berry and Grape Day*. See news briefs below for more info.

NASS NEW YORK FIELD OFFICE LAUNCHES REDESIGNED AGRICULTURAL STATISTICS WEB SITE

Albany, Dec. 5, 2005 - The New York Field Office of USDA's National Agricultural Statistics Service (NASS) today launched its newly redesigned web site. The new website can be accessed at www.nass.usda.gov/ny.

With a click of the mouse, there is now more agricultural data available at your fingertips. The entire NASS web site, including pages for its 46 field offices, has been completely revamped to better serve the needs of NASS customers, whether farmers, researchers, government officials, journalists, teachers or others.

"NASS continues to strive to meet the needs of all of our data users. The new web site will further our mission by providing a user-friendly and abundant resource of statistics in service to New York agriculture," said Steve Ropel, Director of the NASS New York Field Office.

"Anyone interested in New York or U.S. agriculture will find the new site is not only informative and easy to use, but it makes the most of the latest technology," added Ropel.

Technological enhancements include a new Google-powered search engine, an SVG interactive mapping application, an RSS news feed and XML technology. To complete the redesign effort, the site also received a new look and feel to mirror the official USDA web site.

At the same time, the site continues to provide comprehensive statistical data on New York agriculture. Features such as the Quick Stats Agricultural Statistics Database provide the most up-to-date state and county agricultural statistics. Data users can search for state and county level data by commodity and easily download information for use in a database or spreadsheet.

Data users of New York agricultural statistics are encouraged to bookmark the site and visit it often, as it will be frequently updated with new information. USDA reports, such as the monthly Crop Production publication, will continue to be available online just minutes after release. Additionally, up-to-date information on surveys currently being conducted, as well as upcoming initiatives such as the 2007 Census of Agriculture, is just a click away.

AG CENTER RELEASES UPDATED WORKER PROTECTION STANDARD HOW TO COMPLY MANUAL

EPA news release: The Worker Protection Standard for Agricultural Pesticides How to Comply Manual has been updated to reflect amendments to the Worker Protection Standard (WPS), a regulation designed to protect agricultural workers and pesticide handlers. The WPS contains requirements for pesticide safety training, notification of pesticide applications, use of personal protective equipment, restricted entry intervals following pesticide application, decontamination supplies, and emergency medical assistance. The revised manual provides detailed information on who is covered by the WPS and how to meet regulatory requirements. The updated manual will facilitate better protection of pesticide workers and handlers in agriculture from the potential risks of pesticides. The new How to Comply with the Worker Protection Standard for Agricultural Pesticides: What Employers Need to Know [2005 WPS How-to-Comply (HTC) Manual; (EPA 735-B-05-002, September 2005)] supersedes the 1993 version. The original 1993 WPS HTC Manual has been updated to reflect amendments made to the WPS in 1995, 1996, and 2004.

For further information:

1. Download a copy online @ http://www.epa.gov/agriculture/epa-735-b-05-002.pdf.
2. To obtain print and/or CD-ROM versions of the REVISED manual, or for additional information about the WPS, please visit: www.epa.gov/agriculture/htc.html. To order the HTC Manual on CD-ROM with additional resources, please contact the Ag Center at agcenter@epa.gov or by calling their toll free number (1-888-663-2155). You can also obtain the HTC CD-ROM by contacting the National Service Center for Environmental Publications (NSCEP) @ www.epa.gov/ncepihom/ordering.htm#order. When ordering, please use EPA document number EPA 305-C-05-001.
3. WPS Quick Reference Guide (PDF, 547KB, 2 pages); http://www.epa.gov/agriculture/quickreferenceguide.pdf.
4. Publications - Ag Center Fact Sheets; See WPS fact sheets @ www.epa.gov/agriculture/factsheets/index.html. See order blank @ http://www.epa.gov/agriculture/awor.html

(Source: Courtesy of Audrey Moore, USEPA Region 2 Regional Ag Policy Specialist and Patricia D. Hastings, Rutgers Cooperative Research and Extension of New Jersey.)

HUDSON VALLEY COMMERCIAL FRUIT GROWERS SCHOOL

Michael Fargione, Extension Educator, Cornell Cooperative Extension of Ulster County, Hudson Valley Regional Fruit Program, Hudson Valley Lab, Highland, NY 12528

The Hudson Valley Commercial Fruit Growers School will be held February 21-23, 2006 at the Holiday Inn, Kingston, Ulster County. Note that the program has been expanded to a third day during which grape and berry topics will be covered.

There will be an opportunity to meet with ag-related business at the Trade Show on the evening of February 21st. The registration fee for that day includes a ticket for the Trade Show.

Attendees will save $$ by pre-registering by mail this year The program agenda and pre-registration information is available on our web page and can be reached by clicking on the following link:
http://hudsonvf.cce.cornell.edu/calendar.htm

Please Contact Mike Fargione if you have questions or any problems accessing this information or for more information on the Tree Fruit programs. Contact Steven McKay for more information on the Berry and Grape programs.
Thank you.

SMALL FRUIT SCHOOL: BERRY AND GRAPE DAY

Steven McKay, Extension Educator, Hudson Valley Commercial Fruit Program, Cornell Cooperative Extension of Columbia County, Hudson, NY 12534

The potential for growing more grapes and berries in the Hudson Valley is enormous. People are finally realizing that the potential exists and want to know how to get started. The major metropolitan areas surrounding us, the availability of water, and plenty of open land are all factors in favor of success for producers. A limitation, of course, can be winter cold. The big question is, how should one get started? Which crops should be selected, and then, how does one enter the market and successfully move a volume of product without spoilage, and at the end of the process get paid.

This year, the Hudson Valley Fruit School, traditionally aimed at tree fruit, will have an extra day, February 23, added for berry and grape growers. The presenters will be farmers who have recently started in the business, and well as experienced growers. They will be able to share their experiences in getting started and how they feel one should proceed. The tree fruit days will be February 21 and 22. On February 22 there will be some presentations both for tree fruit and small fruit, but all people interested in fruit growing are invited to all days.

Two concurrent sessions will be running at the same time, so producers can select the crops they are interested in. Pre-registration is preferred so that we can better plan for seating. For that reason, a $5 discount will be given for all those who pre-register. Cost: $30 including buffet lunch. Pesticide Credits: pending.

Berry Agenda

9:00-9:15	Registration
9:15-10:15	Overview: So You Want to Grow Berries, Perspectives in the Hudson Valley, Panel: Mike Biltonen, Don Secor, Borchert Farms, Ray Tousey
10:20-11:05	Black Currants, Greg Quinn
11:10-12:00	Gooseberries, Red Currants, Elderberries, Aronia, Steven McKay
12:00- 1:00	Lunch
1:00-2:30	Common Berries, Moderator: Courtney Weber
1:00-1:30	Blueberries Don Secor
1:30-2:00	Strawberries Don Secor
2:00-2:30	Raspberries Mike Biltonen
2:35- 3:15	Berry Cultivars, Courtney Weber
3:20- 4:00	"Out of the Box": CA storage of berries, value added products, new packaging concepts, Panel: Mike Biltonen, Steven McKay

Grape Agenda

9:00-9:15	Registration
9:15-10:15 am	Overview of Potential for Grape Production in the Hudson Valley, Panel Presentation: Steven McKay- Moderator, Mike Migliore- HV Wine and Grape Producers and producer perspective, Jeff Zitz- Need for site evaluation and some pointers, Dave Rosenberger- Hudson Valley Lab and new positions and Senator Larkin task force and efforts, Susan Spence- NYS Wine and Grape Foundation.
10:20- 11:05	Getting Started in Grape and Wine Production, What to do first, developing a plan, finding resources. Panel: Steve Olsen, John Bruno, Doug Glorie
11:10- 12:00	IPM approaches to Pest Control, Tim Weigle, IPM Senior Extension Educator
12:00-1:00	Lunch
1:00- 1:45	Cultivar selection, Panel: Richard Eldrige, John Hudelson
1:50- 2:30	Training Systems for the Hudson Valley, Panel: John Graziano, Steven McKay
2:35-330	Perspectives in Wine Making in the Hudson Valley, Panel: Dragana Dimitrijevic, Ceasar Baeza, Richard Eldridge

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To pre-register, complete and mail the form below with your check to Cornell Cooperative Extension, 10 Westbrook Lane, Kingston, NY 12401. This form <u>must reach us no later than February 16, 2006</u> in order to receive the pre-registration discount price. Please register at the event if your payment will not reach us by February 16. Contact: Jenny at (845) 340-3990 for further information.

PRE-REGISTRATION FORM 2006 Hudson Valley Commercial Berry School, February 23, 2006
Please indicate number of people attending each session:

Thursday, February 23, 2006: - Grape or Berry (Concurrent) Sessions

Grapes: ____ $25.00 includes lunch ($30 if purchased at door)
____ $20.00 registration only ($25 if purchased at door)

Berries: ____ $25.00 includes lunch ($30 if purchased at door)
____ $20.00 registration only ($25 if purchased at door)

Name:
____

Business name:
____

Address:
____

Telephone:
____

E-mail:
____

Total enclosed: $________________ (**makes check payable to CCE Ulster county**)

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STRENGTHENING COOPERATION: A WORKSHOP FOR NEW AND EMERGING FARMER-OWNED BUSINESSES

NY AG INNOVATION CENTER
An initiative of the New York Farm Viability Institute
Building a More Innovative NY Agriculture

Jude Barry, Extension Associate, Department of Applied Economics and Management (AEM), Cornell University, Ithaca, NY, 14853

By attending the Strengthening Cooperation workshop, leaders, managers and advisors will learn effective strategies for growing new and emerging businesses that are owned by groups of farmers. The workshop, will be held on **February 21st and 22nd, 2006 at the Holiday Inn Carrier Circle in Syracuse, New York.**

There are a number of new and emerging businesses owned by groups of farmers across the Northeast that face similar challenges as they start-up new ventures. This 2-day workshop will provide information on:

- Creating a common vision for the business.
- Developing a strategic plan, including feasibility analysis and managing risk.

- Understanding finance and member/stakeholder equity.
- Building board and management capacity.
- Developing effective marketing strategies.

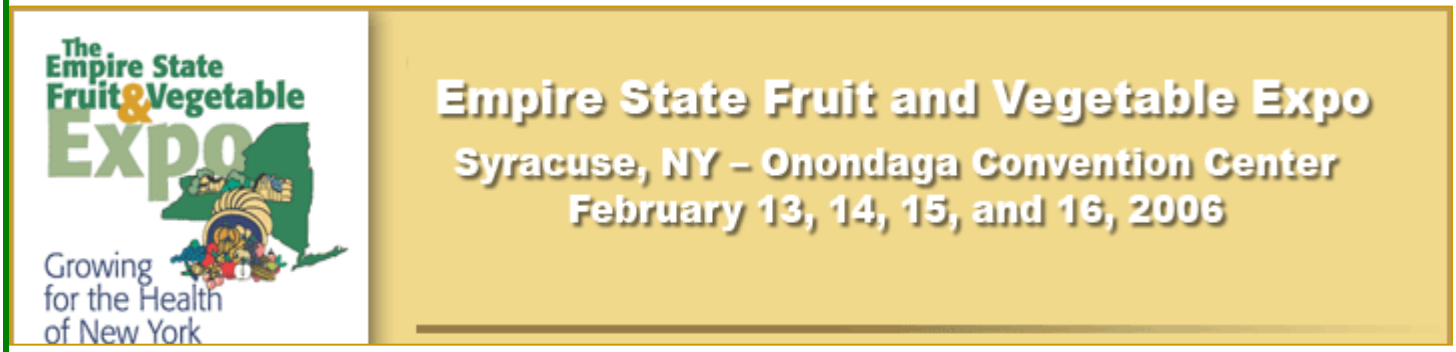
In addition the workshop will provide an opportunity for producers from different groups working in cooperation, to share experiences and network.

This workshop is supported by*: Cornell University Small Farms Program, Cornell Cooperative Extension, Cornell Cooperative Enterprise Program, Department of Applied Economics and Management, Cornell University, Farm Credit, Kentucky Center for Cooperative Development (TBC), New York Agriculture Innovation Center a part of the New York Farm Viability Institute, Northeast Cooperative Council, Northeast Cooperative Development Institute, Rutgers University (State University of New Jersey)*

Registration Information:

The workshop registration fee is ***$95*** if registered **by** February 1st**, *2006*** and ***$115* after February 1st, *2006***. The registration fee will cover lunch and evening meal on Tuesday February 21st, breaks during the workshop, and resource materials. Please note the deadline for early bird registration is February 1st, 2006 and our numbers are limited, so please register early! The workshop will be limited to ***50*** participants.

In addition the workshop will provide an opportunity for producers from different groups working in cooperation to share experiences and to network. To view the program agenda, registration details, lodging information, directions etc, visit: http://aem.cornell.edu/special_programs/business_workshop_2006.pdf For more information contact Jude Barry, 607-254-4741 or jab267@cornell.edu.



Berry Sessions

Wednesday, February 15th

Morning Session (Sponsored by NABGA)

BRAMBLE GROWERS ROUNDTABLE

10:00 Grower to grower discussions with topics including securing and keeping good labor and management of perennial weeds – *Debby Wechsler, North American Bramble Growers Association, Chair*

11:00 ADJOURN

Afternoon Session (Sponsored by NABGA)

ABC'S OF RASPBERRY PRODUCTIO

2:00 What you need to do before you plant– *Marvin Pritts, Cornell*

2:30 Plant types and recommended varieties– *Courtney Weber, Cornell*

3:15 Management of raspberries and blackberries – *Marvin Pritts, Cornell*

4:00 Bramble Disease Management- An Ounce of Prevention ids Worth a Pound of Cure – *Cathy Heidenreich, Cornell*

4:30 Experiences from the field – *Dena Fiacchino, CCE Oswego County, Nate Nourse, Nourse Farm, South Deerfield, MA, other growers TBA*

5:00 ADJOURN

Thursday, February 16th

Morning Session

NYS BERRY GROWERS ANNUAL EDUCATIONAL MEETING

9:00 Welcome and announcements –*Craig Michaloski, NYSBGA President*
9:05 Black raspberry potential: pitfalls and progress – *Courtney Weber, Cornell*
9:30 Fruiting raspberries in the fall using high tunnels – *Marvin Pritts, Cornell*
10:00 North American Bramble Growers Association Update – *Ervin Lineberger, NABGA*
10:15 What's new from industry?
10:25 New developments for efficient pesticide applications – *Emilio Gil, Cornell*
10:50 Fruit products – 21st Century style – *Anna Dawson, Hometown Foods, LLC*
11:20 LUNCH & VISIT TRADE SHOW

Afternoon Session

NYS BERRY GROWERS ANNUAL EDUCATIONAL MEETING

2:00 NYS Berry Growers Assoc., Inc. Annual Meeting – *Craig Michaloski, NYSBGA*
2:15 Economics of high tunnels in berry/fruit production – Ed Weaver, Weaver's Orchard
2:55 "Plugging" Northeastern varieties of strawberries – Dale Riggs Stone Wall Hill Farm, LLC
3:20 What's new from industry?
3:30 Blueberry disease research at NYSAES–Dena Fiacchino, CCE Oswego; Cathy Heidenreich, Cornell
3:55 Reducing weed pressure in strawberries using buckwheat –Thomas Bjorkman, Cornell
4:15 Current research on control of strawberry powdery mildew –Dave Gadoury, Cornell
4:35 ADJOURN.

For more information on the Expo, contact: Lindy Kubecka, 315-687-5734, email nysvga@twcny.rr.com.

WEED MANAGEMENT RESEARCH IN STRAWBERRIES

Robin Bellinder and Christopher Benedict, Department of Horticulture, Cornell University, Ithaca, NY

Seeing an opportunity to help growers in an area where needs aren't being met, Dr. Robin Bellinder has decided to conduct herbicide research in strawberries. She has been encouraged to do this by colleagues in the field and on campus. This fall, greenhouse trials were initiated to evaluate the tolerance of strawberries to 16 new and old herbicides. Preliminary results indicate good crop safety with 10-12 of the products and offer the possibility of integration into and improvement of existing herbicide programs. Additional greenhouse trials this winter will assess crop safety when applied prior to transplanting, post-transplant, during runnering and at renovation.

Figure 1. Overview of a section of our trial this winter. We evaluated over 40 herbicides in greenhouse trials, which will set the stage for field trials this summer.

Figure 2. Also from a recent greenhouse trial evaluating strawberry tolerance to new herbicides, in this case Mesotrione (Callisto). Whitening occurs from the inhibition of carotenoid synthesis.

Information generated from these trials will be used to design field trials that will occur at the H.C. Thompson Research Farm in Freeville, NY in the spring of 2006. The field trials will a) screen new products in two varieties, and b) develop potential herbicide programs. Working with other weed scientists across the U.S., plans are being made to get supporting data and then request IR-4 residue trials for strawberries in 2007. Also scheduled for 2006 is an IR-4 residue trial for oxyfluorfen (Goal) for pre-transplant use.

On the registration front, Valent Agricultural Products has submitted Valor/Chateau (flumioxazin) to the EPA for registration as a post-directed application and is currently developing a package for pre-transplant applications. Filing occurred in September, 2004 and tolerances will be established in 2006. It should be registered in New York in 2007.

Dr. Bellinder's contact information is--phone: 607-255-7890; email: rrb3@cornell.edu. Chris Benedict, the project's Research Specialist, has training in fruit crop production and will be an invaluable asset to the planned research. His contact information is—phone: 607-255-9085; email: cab223@cornell.edu. Both welcome contacts with growers and county educators to learn more about the specific weed problems that need attention. Chris and Robin will be sending a survey to NYS strawberry growers in January. The survey will attempt to quantify the weed control problems and weed management strategies being used currently. When you get the survey, please take a few minutes to respond.

ADVANCES IN THE DIAGNOSIS AND CONTROL OF ROOT ROT AND OTHER FUNGAL AND BACTERIAL DISEASES OF RASPBERRIES

Wayne F. Wilcox, Professor, Department of Plant Pathology, Cornell University, New York State Agricultural Experiment Station, Geneva, NY 14456 USA, wfw1@cornell.edu

(**Editor's Note**: This is a reprint of an abstract from a keynote address given by Dr. Wilcox at the 9th International Rubus and Ribes Symposium, held in Pucón, Chile from Dec. 4-7, 2005. In attendance at the symposium were over 200 scientists, educators, producers, and exporters representing approximately 30 different nations. Dr. Wilcox had research and extension responsibilities for berry crop diseases in the Geneva Plant Pathology department from 1984-2000, and concentrated particularly on the cause and control of Phytophthora root rot of raspberries. Dr. Wilcox asked we note this address was intended as an overview of recent developments around the world, not just our own work here in the US.

Phytophthora fragariae var. *rubi*, the primary cause of raspberry root rot, is a difficult organism to culture, which has led to its widespread dispersal in undiagnosed propagation material. Prospects for its diagnosis have been improved by the development and use of both a nested PCR technique specific for *P. fragariae* and the adaptation of a bioassay originally developed to detect *Phytophthora fragariae* var. *fragariae* in strawberry plants.

Various components of integrated programs for control of this disease continue to be examined and refined. Raised-bed planting systems have become common. Gypsum and other sources of calcium appear to provide some benefit, although sources providing a slow release of calcium ions may be more limited in their effect, and those with a high salt index (e.g., calcium chloride) may be phytotoxic. An element of biological control by the fungus *Gliocladium virens* has been demonstrated (possibly the result of *in situ* production of the antibiotic, gliotoxin), but is most likely to be provided under low to moderate disease pressure. Disease suppression by manure amendments has been shown, although similar attempts using brewery compost appeared to result in phytotoxicity. In addition to the standard fungicide, metalaxyl/mefanoxam (Ridomil), foliar applications of phosphite (phosphonate) salts have shown efficacy, as with Phytophthora diseases on other hosts.

However, genetic resistance to the disease has consistently proven to be the single most efficacious component of root rot control programs, and is critical for plant survival under high pressure (wet) conditions. The recent development of a hydroponic system to screen for root rot resistance provides the opportunity to impose uniform selection pressure, in a very limited amount of space, at any time during the year. It may thus allow more rapid identification of resistant genotypes, while also allowing multiple non-destructive observations of the root-pathogen interaction. This latter factor has provided evidence that the long-observed resistance of cv. 'Latham' may be an induced response following initial attack by the pathogen, opening a new and potentially valuable line of future research into control of the disease.

Chemical control of *Botrytis* has long been limited by the low efficacy of most fungicides against this organism and the development of pathogen resistance to the benzimidazoles and dicarboximides. The relatively recent registration and deployment of multiple new fungicides (or classes) active against *Botrytis*, each with a unique mode of action, provides the opportunity to improve chemical control of the disease while rotating fungicides to limit the development of resistance. The demonstrated efficacy of delivering biological control organisms to raspberry flowers via honey bees also improves the prospect for maximizing the potential for biocontrol of this common fruit rot.

Opportunities for control of the bacterial disease, fire blight (*Erwinia amylovora*), have been improved by recent studies providing insight into its etiology, epidemiology, and the differences in susceptibility of different raspberry cultivars to the pathogen.

NEMATODE PROBLEMS IN BERRIES

Pam Fisher, Berry Crop Specialist, Ontario Ministry of Agriculture, Food and Rural Affairs

(**Editor's note:** This article has been slightly modified to include nematode testing information relevant to New York growers)

Nematode problems can be common in some years. On both raspberries and strawberries, symptoms of nematode injury include:

- Uneven plant growth
- Poor plant establishment
- Weakening plants over time
- Poor root growth
- Fine feeder roots often have witches broom appearance (root lesion nematode) (Figure 1)
- Reddish -brown lesions on feeder roots (root lesion nematode) (Figure 2)
- Swellings or galls on feeder roots (root knot nematode) (Figure 3)

In addition, on raspberries, the dagger nematode can spread tomato ringspot virus. Infested raspberry plants have crumbly berries, mottled leaves, and cane die-back. (Figure 4).

Nematode populations are usually highest in May-June and September-October. Always test soil for nematodes before planting berry crops if:

- Soil is sandy or sandy loam, or
- Berries have been grown for many years. or
- Field is an old orchard site (dagger nematode can be a problem here).

Nematodes can be identified from soil samples, or from plant roots.

- Sample plant roots and soil to diagnose an existing problem.
- Sample soil to predict a problem before planting.

Getting accurate counts from plant soil can be tricky because nematodes move in and out of plant roots, and because they move up and down in the soil profile. The best time to sample soil in an annual crop is after the crop has died down and while the soil is still moist, in the fall or the spring. For information on how to sample, see 2006 Cornell Pest Management Guidelines for Berry Crops.

Figure 1: Root lesion nematodes brushy root symptoms on raspberry

Figure 2: Root lesions on strawberry roots

Figure 3: Root knots nematode symptoms on strawberry

Figure 4: Leaf mottling is a symptom of virus disease, spread by dagger nematode on raspberry

Nematode samples should be treated very carefully. Only living nematodes will be counted in the lab. Keep samples cool and ship immediately to the Pest Diagnostic Clinic in Guelph. Call to pre-arrange payment. Sample submission forms are found in the back of publication #360, or at: http://www.uoguelph.ca/pdc/

Nematode problems on berry crops

Nematode	Symptoms	Threshold in soil	Threshold in roots
Root lesion nematode *(Pratylenchus spp.)*	Roots are sparse, brushy. Reddish lesions and brown patches evident.	Strawberry: 500 /kg soil Raspberry: 1000/kg soil	50/gram dry root
Root knot nematode *(Meloidogyne spp.)*	Sausage like swellings or small galls present on roots.	1000/kg soil	??
Dagger nematode *(Xiphenema spp.)*	On raspberries, berries are crumbly, leaves may be mottled.	100/kg soil	Not found in roots

(**Reprinted with permission from**: Ontario Berry Grower, Volume 6, November 2005)

NORTHERN ROOTKNOT NEMATODE WOES

Michael Celetti, Berry Crop Specialist, Ontario Ministry of Agriculture, Food and Rural Affairs

The northern rootknot nematode (*Meloidogyne hapla*) was more prevalent in many vegetable and berry crops grown in Ontario this past season than in previous years. Last year's wet and cool growing season followed by this year's hot summer were ideal for this microscopic worm-like pest to invade and multiply in roots of many host crops. In fact, the optimum soil temperature for reproduction of the northern rootknot nematode is 20-25°C. Unfortunately, these nematodes remain active in soil as long as the temperatures are above 10°C and are not destroyed by our cold Ontario winters.

The northern rootknot nematode has an extensive list of suitable hosts, including strawberries, cane-berries, tomatoes, potatoes, celery, carrots, melons, vinifera grapes, sugar beets, peas and many other legumes, to name a few. Dandelion, thistles and numerous other weeds are also hosts.

In the absence of host roots, the northern rootknot nematode survives as eggs and young nematodes, called juveniles, in soil and leftover infested root debris. When soil conditions become favourable, the eggs hatch and the young female nematodes migrate to the roots of host plants. Young nematodes may travel over a meter in search of host roots, although most live in the top 60 cm of the soil. Once they reach the preferred host roots, the young female nematodes penetrate just behind actively growing root tips using their hypodermic needle-like stylet mouthpart. They then burrow deeper into the root, to the water and nutrient

conducting vascular tissue, and develop to the adult stage. Once established at a feeding site in the root, the adult female rootknot nematode remains sedentary for the rest of its life. Males, on the other hand, will move out into and through the soil and along roots searching for mates; males are not known to feed or cause much damage.

Female rootknot nematodes stimulate root cells to enlarge and become galls which act as specialized sinks that supply nutrients to the nematodes as they feed. These enlarged cells may appear as individual 1-mm galls linked like a string of beads or, as more and more nematodes establish feeding sites, they may join together to become one larger root knot, as much as 2.5 cm in some hosts (Figure 1). The size and shape of the knots depends on the host crop and the number of females feeding. Often the roots of some crops, such as strawberries, will produce many small secondary roots around the feeding site giving a "hairy root" appearance (Figure 2). Regardless of the symptom, rootknot nematodes disrupt the transport of water and nutrients from the roots to the shoots resulting in reduced plant growth and yield. Plants that have a slight infestation often do not show any above-ground symptoms. However, severely infected plants can appear stunted, unthrifty and will frequently wilt during the heat of the day. The leaves of heavily-infested tomato plants may appear purplish on the undersides of leaves, resembling symptoms of phosphorus deficiency. Infested carrot roots may be forked near the end of the taproot. In addition to the disorders caused by the root knot nematode alone, several studies have shown this nematode can enhance the severity of diseases caused by other pathogenic organisms or reduce nodulation on legume crops.

Figure 2. Root Knot nematode symptoms on strawberry roots appear as small secondary roots produced around the feeding site of female nematodes creating a "hairy root"

So, what can you do if you have a northern rootknot nematode problem? This will depend on the soil type, crop to be grown and soil population levels. The nematode tends to be more prevalent in muck and sandy soils than in clay. The soil population threshold for northern rootknot nematode varies from "zero tolerance" for carrots to 1000 per kg of soil for most other crops including berry crops. Preventing the introduction of rootknot nematodes into fields by planting healthy transplants is the first step all growers should take. Always inspect transplants for root swellings and tiny knots and never plant seedlings that appear to have symptoms of rootknot damage on the roots. Once this pest becomes established in a field, it becomes more expensive to manage and eliminate completely. Unfortunately, since this nematode has a long list of hosts, crop rotation is often not a good option unless the grower is prepared to rotate to grasses, cereals or corn, which are not hosts. Long periods of fallow have proven to reduce population levels but this is not always an economically viable solution either. Soil fumigation provides rapid and effective control, and certain nematode-suppressing Brassica cover crops have shown promise in reducing populations below threshold levels. In one study, researchers found that planting carrots in the early spring when soil temperatures were around 6 to 8°C resulted in significantly less root knots and increased marketable yields by 20 to 50% compared with planting later when soil temperatures had warmed up to 15°C.

Growers who suspect or have observed northern rootknot nematode damage to their crop should have their soil tested this September or early next spring and take appropriate action, particularly if populations exceed threshold levels. Otherwise, northern rootknot nematodes may become a serious problem next year, particularly if the trend for warm summers continues.

*(**Reprinted from**: Hortmatters, Vol. 5 No. 25, September 15, 2005; published by the Ontario Ministry of Agriculture, Food and Rural Affairs.)*

YEAR-ROUND MARKETING OF THE SEASONAL AGRICULTURAL ENTERPRISE- *SHOULD I OR SHOULDN'T I?*

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The summer and fall growing/selling season is done, the holiday sales season is but a memory as well. So now it is time to tuck away the tools and stress from a hard season and take that well earned rest. Right or **WRONG?** Ultimately this is a personal and business specific decision that you will determine for yourself. But to give you something to think about during your downtime, we would like to offer some thoughts to consider as you look towards the next business cycle.

First, many if not all farm and agriculture related enterprises would classify their sales activities as having some type of seasonality. Of course, there may be a variation in the length and time of the season, but, nonetheless, all are faced with finding ways to entice their customers back to them year after year. It becomes more complicated since during the off-season, the customer has been given sufficient time to become accustomed to making his/her purchases elsewhere.

To address this dilemma, there are generally two basic strategies employed in the agriculture sector. The first, used by many large agriculture producers in the major growing regions of the US, is to find a way to provide year round products from a range of growing regions or conditions. This can be in the form of protected production (i.e. hot house or greenhouse), or a more common approach, establishing a presence in other growing regions (i.e. the south, west, or overseas). In the case of very large producers, this is economically feasible and desirable due to efficiencies in modern large scale production and relatively low cost of transportation (although that card has been dealt a significant blow this past fall with the increase in fuel costs).

For smaller growers or growers who for whatever reason do not care to or can not afford to pursue the last strategy, their option is to look for methods and techniques to bring the customer back each year when products become available. A fairly common approach employed by a significant number of small growers is to be passive about any marketing efforts until just prior to the start of the next harvest or the selling season. While this approach may have worked in the past, all signs indicate that the growing number of dual career families in the future results in a selling environment where people have less and less time available for errands and shopping. This comes at a time where there is increased competition for consumer dollars from a variety of industries each year. Consumers often do not have time to plan ahead and adjust their shopping habit to the seasonal schedule, or do not want to go through the trouble. Combining all of these factors, we see that customers will be more difficult to come by. So what can be done?

Industry statistics indicate that to retain ones past customers is a much more efficient use of time, effort and marketing dollars than working to establish or re-establish a new customer base each year. Admittedly, this is easy to say, yet difficult to do when a business is not open, or does not have products to sell during part of the year.

To begin working towards resolving this dilemma the first step is to take stock of the resources a business has to work with. We would offer that a solid first step is to realize that a primary reason many people shop at smaller businesses is due to emotional, social, and environmental attributes not found at larger big boxtype outlets. These consumers are buying based on VALUE (see the August 2004 Smart Marketing article for insights into determining value). To keep the demand for your closed business means that you must keep your business name and value proposition front and center in the consumers mind. You will know you have succeeded when the customer sees or thinks of your business during the off season and pines for the next season when they can utilize your services again.

Some means to accomplish this would include generating creative and innovative points of contact during the off selling season. What might this look like in real life? It can be simply summarized as any effort that focuses on the unique personality and characteristic of each specific business. A fruit grower might send a post card with a picture of their orchard being pruned in the late winter. A vegetable grower might send a similar card showing the fields being plowed or tilled in the late fall or early spring. Essentially creating some point of contact that provides a visual and ultimately mental connection to the agriculture operation that maintains the emotional bond enjoyed by the customer and keeps them looking forward to the experience again.

Regardless of the method or message chosen, the key is to determine what it is that makes your business special and memorable. Keep your presence in your customer's thoughts and plans. Give them a story to tell. Your assignment this

month is to determine how you want to spend your marketing efforts and dollars. In part 2 of this article, we will look in more detail at some techniques to consider if it makes sense for you to market your business all the year around.

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