

The Ontario Berry Grower

JANUARY 2010

High tunnels extend your season one hoop at a time Ontario Fruit and Vegetable Convention 2010

Over the past several years, producing fruits and vegetables in high tunnels has been promoted and adopted in many North American locations. It provides an opportunity to extend the production season.

If you have been thinking about venturing into high tunnel production and are looking for more information, plan on attending the *2010 Ontario Fruit and Vegetable Convention* in St. Catharines (www.ofvc.ca). A **high tunnel session** will be held on **Thursday, February 25**. The session features several local and international speakers who will be presenting on high tunnel construction, management and aspects of crop production to help you decide if high tunnels are right for you.

The morning session starts with the nuts 'n bolts of high tunnel selection and construction and then digs deeper into the challenges of soil, water and microclimate management. Topics include:

- *Basics of high tunnel production and construction*, Adam Montri, Out Reach Specialist, Dept. of Horticulture Science, Michigan State University, East Lansing, MI
- *Challenges of managing soil and water*, Judson Reid, Cornell Vegetable Program Extension Associate, Penn Yan, NY
- *Field-scale climate control with high tunnels* Graham Moore, FAST Ltd, and Group Agronomist, Haygrove Ltd, UK

The afternoon builds on the morning presentations by focusing on high tunnel crop production:

- *Berry Production in HighTunnels: trends and new developments in Britain & Northern Europe*, Graham Moore, FAST Ltd, and Group Agronomist, Haygrove Ltd, UK
- *Vegetable Production in High Tunnels in New York*, Judson Reid, Cornell Vegetable Program Extension Associate, Penn Yan NY
- *High Tunnels in Ontario: what's the future* John Cooper, Strawberry Tyme Farms Inc., Simcoe, and Carl Halstead, TunnelTech, LaSalette

Question & Answers - both sessions finish with an open forum with the presenters

If you would like any more information about the high tunnel session, please contact the session chairs: Pam Fisher pam.fisher@ontario.ca or Christoph Kessel, christoph.kessel@ontario.ca. This session is generously supported by **A&L Canada Laboratories Inc.**, London, Ontario.



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High tunnel production research at University of Guelph, Ridgetown

Berry Programs at the Ontario Fruit and Vegetable Conference

The Ontario Berry Growers Association Annual Meeting, February 23, and the Ontario Fruit and Vegetable Conference February 24-25, 2010, provide berry growers with three days of excellent programming and updates. The programs feature discussions for blueberry, raspberry and strawberry growers and many excellent speakers, bringing news from the UK, the USA, British Columbia, New Brunswick, and Ontario. The topics are diverse and include pest management, production, research, and marketing.

Tuesday February 23, OBGGA Annual Meeting and Conference, Four Points Sheraton Suites, St. Catharines. Please pre-register with Kevin Schooley, OBGGA, 613-258-4587, kconsult@alltreem.net.

Wednesday February 24, Ontario Fruit and Vegetable Convention, Brock University Walker Complex, Berry Program, Room 202.

Thursday February 25, Ontario Fruit and Vegetable Convention, Brock University Walker Complex. Take in one of the concurrent sessions, the trade show and poster sessions. Of particular interest to berry growers is the session on High Tunnels, Room 204.

Don't miss these highlights.

Marketing

- **Small Farm, Big Ideas:** Sue Hilborn, Red Barn Berries, Woodstock. The parking lot is always full at Red Barn Berries, especially when its time for pick-your-own strawberries. Find out how Sue Hilborn uses her marketing skills to sell berries and other fresh produce.
- **Value-Added Markets and Opportunities for Berries:** John Kelly, Erie Innovations and Commercialization. John brings the big picture to small fruit and will discuss the opportunities he sees in our backyard.
- **Dealing with the Media in Difficult Times:** Kevin Schooley, Ontario Berry Growers Association. When unfortunate weather becomes front-page news, the whole industry is affected. How to talk to the media the day after a disaster.

Trends

- **Organic Berries: A Conventional Future?** Graham Moore, FAST Ltd, United Kingdom, A dynamic market, new research and resistant pests are encouraging British berry growers to adopt a more a more biological, less synthetic approach to fruit growing.
- **Day Neutral Strawberries In and Out of Tunnels** Becky Hughes,
 - University of Guelph, New Liskeard. This research team from the University of Guelph has just completed two years of work on crop management of day neutral strawberries.
- **Modified Poly-Tunnels for Raspberries** Jean-Pierre Privé, AAFC, Bouctouche, New Brunswick. Dr. Privé has lots of good ideas for improving yield and quality of raspberries with reflective ground covers and mini-tunnels.
- **Berry Industry Trends in British Columbia**, Mark Sweeney, BCMAF, British Columbia. Find out how growers in BC are using their collective strength to deal with imports and the profit squeeze.

For details on the conference and all sessions see www.ofvc.ca



New crop management system to improve shelf life of raspberry fruit in New Brunswick

Dr. Jean-Pierre Privé, Lindsay Russell, and Anita LeBlanc, Agriculture & Agri-Food Canada and Dr. Gaétan Moreau and Charles Comeau, Université de Moncton

A field trial was conducted during the 2008 and 2009 growing seasons at Agriculture and Agri-Food Canada's Senator Hervé J. Michaud Research Farm in Bouctouche, New Brunswick, in collaboration with researchers from the University of Moncton and the Really Local Harvest Cooperative. The objective of the study is to evaluate the use of poly-tunnel rain shelters with and without reflective groundcover - a crop management system that is the first of its kind in Canada - and determine whether such a system can benefit commercial raspberry production by improving fruit yield, quality and shelf life. Data collected thus far are pending analysis; preliminary results and observations are reported.

In the Atlantic provinces, the growing season is short and inadequate light can be a limiting factor to the production of a quality, high-yielding crop. There has been a trend towards cool, rainy growing seasons, which can promote the development of fungal diseases (such as anthracnose, blight, botrytis and rust) that can cause yield losses and reductions in fruit shelf life. Excessive soil moisture can also stunt plant growth. This study involved field plots of 'Nova' and 'Killarney' raspberry plants; rain shelters were installed in one half of the plots and of these plots, another half had white, polymer reflective groundcover (Extenday) on both sides of the plant rows. The rain shelters were constructed of greenhouse-grade clear plastic secured to steel hoops, and can be used with existing trellis systems; they can provide complete plant row coverage and enable harvesting of fruit even when it is raining. The groundcover enhances the canopy light environment by reflecting sunlight to the crop that would otherwise be absorbed by the ground.

Preliminary results indicate that the rain shelter/reflective groundcover system alters the canopy microclimate. The light supplied to the plant canopy by reflection from the groundcover compensates for the reduction in incident light that is observed with use of the rain shelter, to varying degrees. Seasonal levels of soil temperature were observed to be lowest in plots with reflective groundcover. In 2009, seasonal levels of soil moisture were observed to be lowest in plots in which only the rain shelter was used and greatest in plots with reflective groundcover. Seasonal levels and patterns of canopy air temperature and relative humidity were not observed to differ according to rain shelter/groundcover use. Leaf gas exchange results will reveal whether photosynthetic activity is impacted by the differences in microclimate associated with use of the system.

Seasonal growth patterns indicate little to no positive effect of the rain shelter and/or reflective groundcover on primo-

cane vigour (height and diameter). Informal field observations suggest that the rain shelter may slow leaf senescence late in the growing season and that the reflective groundcover may extend the fruit ripening period at both ends of the growing season. The incidence and severity of spur blight were reduced in 'Nova' plants grown under rain shelters. The rain shelter/reflective groundcover system appears to have favoured the percentage marketable yield but had no effect on marketable fruit size, firmness, sugar content and total yield. The shelf life of 'Nova' fruit was extended with the use of rain shelters: rate of fruit spoilage was slowed by about a half day to a day.

Identification of the ground beetle species (beneficial insects that predate upon insect pests such as mites, leaf beetles and weevils) collected from the field plots during the growing seasons is currently underway in order to assess the impact of the rain shelter/reflective groundcover system on beetle population dynamics.

The rain shelter/reflective groundcover management system holds great promise for the commercial production of high-value crops with limited shelf life, particularly in regions prone to an over-abundance of rain during the growing season and/or a high risk of fungal disease. Preliminary results indicate that the system may lead to increased marketable yield and extended shelf life of raspberry fruit, which could translate to greater returns for producers. Interest in the system has thus far been high, and through consultation with growers and crop specialists, adjustments to the design of the rain shelter continue to be made with the aim of improving practicality, performance and production efficiency. Pending funding and producer interest in collaborating on field trials, the plan is to expand the study to a national scale in the upcoming growing season in order to evaluate the system across a range of cultivars and growing conditions.



Where berry plants come from

Becky Hughes, New Liskeard Agricultural Research Station and
Adam Dale, Department of Plant Agriculture, University of Guelph

Before you order your strawberry and raspberry plants for this coming spring, you might want to consider what steps are taken to ensure that you receive healthy plants that are true-to-type. In Ontario, we continually take steps in our propagation program to improve the quality and plant health of the plants that you receive.

The Ontario plant propagation program is run by the Achene Committee of the Ontario Berry Growers Association (OBGA). It has representatives from all sectors of the Ontario berry industry, growers, propagators and directors of the OBGA, and the research and extension community.

Stock plants are maintained and virus tested at the SPUD Unit of the New Liskeard Agricultural Research Station (NLARS), University of Guelph in northern Ontario. Stock plants of every variety in the program are maintained in the aphid-proof greenhouse protected from insect vectors and disease. These plants are used as a source of plants for micropropagation. In micropropagation, a very small piece of a plant's growing point is grown in sterile conditions to produce a plant that can be multiplied very rapidly.

Plant quality is checked at several stages of the program. Before we use any cultivar, its stock plants must test virus negative. Once it has tested negative for viruses, it is DNA tested to ensure it is the correct variety. The OBGA began DNA testing the stock plants in the propagation program in 2000 and this process already has been able to identify some mixes before the plants were sold.

Most strawberry and raspberry propagation programs throughout the world micropropagate at least some of their plants. At the SPUD Unit we have been micropropagating strawberries for the Ontario program for 14 years. We micropropagate for no more than ten generations to ensure that no off-types occur. As part of this process the very small plants are grown on media to test for the presence of fungi and bacteria. Once they have been shown not to be infected they go through the final stages of micropropagation, are acclimatized in an isolated screened greenhouse and sent to the propagators. The propagators then grow the plants for three years. The first year they are grown in an insect proof greenhouse, followed by two years in the field. Throughout the time the plants are in the program, strict guidelines to reduce pests and disease and the potential for infection are enforced. This includes specified isolation distances, soil and root samples for nematodes, and tolerance levels for viruses, fungi and insect pests.

To ensure that the guidelines are followed, the greenhouses and field are inspected twice a year. The inspector inspects the fields for disease problems and varietal mixtures. Greenhouse plants or varietal blocks in the field are destroyed if the disease tolerance levels are not met.

Our philosophy in the program is to build in as many checks as possible. Consequently, observation plots of micropropagated plug plants of all varieties are planted at the Simcoe Research Station, of the University of Guelph. These plots are checked for disease symptoms, plant abnormalities and variety mixtures and are inspected at least once a year by a group made up of growers, propagators and scientists. They are fruited for two years and the results of the inspections communicated to the propagators and the SPUD Unit. If a problem is found, it can be traced throughout the whole propagation program, as we have developed a tracking system to follow each lot through the program.

Our propagation program may seem fairly simple, but at any one time there are plants at five different stages of propagation: nuclear stock, micro-propagated plants, greenhouse, and two generations of field plants. So, to provide healthy plants which are true-to-type requires the care and dedication of many people from a number of organizations. Our propagator is Strawberry Tyme Farms Inc, RR2, Simcoe, ON N3Y 4K1, phone 519-426-3099. Their plants are the only ones grown in the Province under the Ontario Strawberry and Raspberry Plant Propagation Program and are carefully monitored and checked for their health status and trueness-to-type. In addition, they support the program with a check-off from their sales of plants. Through our efforts, we hope that you will receive healthy, true-to-type strawberry and raspberry plants for many years to come.

Review of June-bearing strawberry varieties

Pam Fisher, Berry Crop Specialist, OMAFRA

Ontario strawberries are grown in several different climatic zones and in a diverse range of soil types and conditions. They are sold in a variety of markets and where consumers have different preferences. Unfortunately there are few if any varieties which meet the needs of all conditions or markets.

Standard varieties in Ontario for local shipping, and on farm market sales, are Annapolis (early season) and Jewel (mid-late season). For pick-your-own and on-farm sales Cavendish (early-midseason) and Mira (mid-late season) are reliable. Honeoye (early season) and Kent (mid season) are grown for these markets also. These varieties grow well in most locations, although Honeoye and Kent are susceptible to black root rot and fruit colour tends to be too dark in southern Ontario.

Many other varieties have value but should be limited in extent of planting. In Ontario, these varieties include (from early to late) Mohawk, Wendy, Brunswick, Glooscap, Cabot, Sapphire, and Governor Simcoe. Some may have done well in trial plantings and warrant further commercial experience. Others may be adapted to a specific region or be useful only for selected markets. Some work well on a small scale and fit certain gaps in production. For example, Mohawk is valued for its great taste and earliness, although yields are too low for extensive production. Governor Simcoe is a high yielding orange-red firm variety on the sandy soils of south-central Ontario, but not as popular in eastern or northern Ontario.

There are many new varieties available, and although they always sound exciting at first, growers should test them on a small scale for several years. Varieties recommended for trial in Ontario include V151, L'Amour, L'Authentique Orleans, R14, St. Pierre, Serenity, Valley Sunset. Information on how these varieties respond to diseases is especially important because some varieties will require more fungicides and different management practices to prevent pest damage.

Following are some comments on newer or lesser known varieties which are worth consideration.

Early Season Varieties

V151 (University of Guelph, Simcoe, Ontario, 2007). This is an early variety with medium-large, bright, medium-red, triangular-shaped fruit. Fruit is firm with good quality. Yields are high but later fruit tends to be smaller. V 151 is very susceptible to anthracnose fruit infections, and also appears to be susceptible to green petal disease. Flavour sometimes bland. It is interesting as an early shipping variety, and recommended for trial.

Mohawk (USDA, Beltsville, 1994) Vigorous very early variety. Fruit medium sized, irregular or heart-shaped bright, orange-red, with pale interior. Fruit is firm with excellent flavour. Resistant to red stele, tolerant to mildew. Yields may be low, expect two good early picks. Recommended for local markets and early shipping.

Wendy (AAFC, Kentville, N.S. 2006) This is a productive early season variety with vigorous plants. Primary fruit is wedge-shaped, others conic. Compared to other early-season varieties, fruit is larger than Evangeline but skin strength is softer than Annapolis. Wendy is susceptible to verticillium wilt and extremely susceptible to angular leaf spot. The fruit tend to be dark and softer in SW Ontario. Plants do not stand up well in stressful conditions. Recommended for early season PYO and local markets, in eastern and northern Ontario.

Mid-late season varieties:

Sapphire (University of Guelph, Simcoe, Ontario, 2002). This variety is late mid-season, similar in season to Kent. The fruit is large and of very good quality with consistently shaped bright red large berries with good, sometimes mild flavour. The plants are vigorous and tolerant to Sinbar. On the down side, seeds are prominent, fruit is susceptible to botrytis, and otherwise, disease tolerance unknown. Yield is low to moderate. Recommended for PYO and fresh market, trial only.

Mira (AAFC, Kentville N.S, 1996) Mira is mid-season to late mid-season, ripening a few days after Kent. Plants are high yielding, and semi-vigorous; fruit is bright red but has a white interior. Berries are relatively large, conical, firm and uniform in shape. Yields are similar to Kent, but berries are firmer and have better quality compared to Kent. The fruit maintains good quality and does not darken in hot weather. Mira is resistant to red stele and most leaf diseases, but seems to be susceptible to black root rot. On the downside, the flavour of Mira is fair and may be tart. Berries may be uniformly coloured before they are completely ripe with full flavour. Berry texture becomes mealy under hot conditions. Mira is very sensitive to Sinbar. It is suitable for fresh market, not as popular for PYO.

St. Pierre (AAFC, St. Jean- sur- Richelieu, Québec 2002.) This is also a very late variety, high yielding with large bright, light red fruit. St. Pierre has a large green calyx and excellent fruit quality, consistent fruit size, good flavour and good shelf life. It is very susceptible to anthracnose fruit rot and powdery mildew. St. Pierre has potential for fresh market and shipping and is recommended for trial.

Very late season varieties

Serenity (University of Guelph, Simcoe, Ontario, 2003) This is a late variety, with large firm, conical fruit. It produces high yields of very large, bright soft-skinned fruits. Berries are especially large in early picks. However, Serenity is very susceptible to anthracnose fruit rot. Fruit tips can be seedy, and skin easily bruised. Berries in later picks are small and pointy. Plants are either susceptible to root diseases or winter injury, as some plantings have lost vigour. For this reason, Serenity is recommended for trial only, for shipping and fresh markets.

Valley Sunset (AAFC, Kentville, Nova Scotia 2006). This is a late flowering and fruiting variety with large bright red fruit and moderate yields. Fruit has a mild sweet flavour, slightly soft skin, and is somewhat seedy. This variety is not likely suitable for shipping but will be a big hit with pick your own. Harvest period is short and although this variety starts after Jewel, it is finished at about the same time. Valley Sunset is susceptible to powdery mildew and angular leaf spot. It is recommended for local fresh market and PYO to extend the season, for trial only.

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MARK YOUR CALENDARS.....

- January 11-14, 2010 NASGA Farm Tour in Mexico for more info visit www.nasga.org
- February 23, Ontario Berry Growers Association Annual Meeting, Brock University, St. Catharines <http://www.ontarioberries.com/>
- February 24, 25, **Ontario Fruit & Vegetable Convention**, Brock University, St. Catharines. For more info visit www.ofvc.ca

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