

Cornell University Cooperative Extension

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astern NY Commercial Horticulture Program

Spring Berry To Do" List

Berr

All Crops

Pay attention to new plantings as winter approaches. All fertilizer applications should be discontinued and irrigate only if droughty. Look for pest problems and make a weed map.

Blueberries

- Scout for scale insects.
- Scout for weevil notching
- on leaves and for adult weevils. See photo at right
- Scout for blueberry gall midge damage.

Raspberries and

Blackberries

- Understand the situations that place your berry crops at high risk for Spotted Wing Drosophila infestations:
 - Large, unpruned bushes that have lots of shade
 - Spray intervals that exceed 7 days
 - Hedgerows close to the field that are loaded with wild hosts
 - Ripe fruit that is not being picked
 - Warm days with high humidity
 - No cooler for immediate post-harvest treatment

These parameters will lead to SWD infestation levels that aren't manageable. Make sure to understand the risk.

- Scout for cane collapse.
- Scout for mite infestation.
- Scout for rust.

Strawberries

If you still haven't applied necessary nitrogen to strawberries, you can still do it if you act quickly. This warm weather and long-term forecasts that point to an

for quackgrass control. Include 1 percent crop oil concentrate in the mix.

Strawberry root weevil adult – telltale notching on blueberry leaf margins. Photo courtesy Washington State Univ. Extension

be applied into early October. But do it NOW. Control grasses that have emerged with Poast or Select Max. Use the highest labeled rate of these herbicides

extended fall will mean that 20#actal N/acre could still

If composite or legume weeds become a problem in late summer or fall, apply Stinger in a separate spray. Day Neutral strawberries should be monitored for tarnished plant bug and mites. Continue to remove runners

into September. Look for curling leaves with yellow distorted edges that signify potato leafhopper damage. These pests can do a lot of damage to overall vigor.

See article in this issue about removing runners on day-neutrals.

- Keep Day Neutrals wa-•
- tered and continue with ferti-

lizer throughout September. This is the fruiting season and plants should be receiving approximately 5# actual N per acre each week – preferably a little bit with each watering.

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Serving the educational and research needs of the commercial small fruit, vegetable and tree fruit industries in Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Montgomery, Orange, Putnam, Rensselaer, Saratoga, Schoharie, Schenectady, Ulster, Warren and Washington Counties

Late Leaf Rust of Red Raspberries

Michael A. Ellis and Omer Erincik, Department of Plant Pathology, The Ohio State University

Late leaf rust is a potentially serious disease of red raspberries. Late leaf rust does not affect black raspberries or blackberries. The disease can affect leaves, canes, petioles, and fruit. Economic losses occur from fruit infection and premature defoliation. Because it usually appears late in the season, and only occasionally in a severe form, some consider it to be a minor disease. However, losses due to fruit infection have reached 30 percent in commercial red raspberry plantings in Ohio. The wild red raspberry, Rubus strigosus, in the eastern United States is very susceptible to this disease. A number of cultivated varieties originating from this species also are highly susceptible. While late leaf rust occurs throughout the northern half of the United States and southern Canada, it is more common east of the Mississippi River. In recent years, its occurrence has increased in the northern areas of the Midwest, and it has caused significant losses.



Figure 1. Early season symptoms of late leaf rust on infected red raspberry leaf. Note the chlorotic,

Symptoms

On mature leaves, small chlorotic, or yellow, areas initially form on the upper surface of infected leaves (Figure 1). These spots may eventually turn brown before leaves die in the fall. Unless the disease is severe, foliar infections may be difficult to see. Small pustules filled with yellow to orange powdery spores (not waxy like the spores of orange rust) are formed on the underside of infected leaves (Figure 2). Badly infected leaves may drop prematurely, and in years when the disease is severe, canes may be bare by September. Flower calyces, petioles, and fruit at all stages of development may be attacked (Figure 3). On

fruit, pustules develop on individual drupelets, producing yellow masses of spores (Figure 4), which make the berries unattractive and unacceptable for fresh market sales. Infections may also occur on leaf petioles and canes.

Disease Development

Late leaf rust is caused by the fungus *Pucciniastrum americanum*. Unlike the fungus that causes orange rust (a common disease on black raspberry and blackberry), the late leaf rust fungus is not systemic. The fungus attacks two different hosts at different stages of its life cycle. The rust fungus produces two types of spores (urediniospores and teliospores) only on red raspberries. The alternate host for the rust is white spruce (*Picea americanum*), on which another type of spore (aeciospore) is produced.

Acciospores are released from infected white spruce in mid-June to early July and are capable of infecting raspberry during this period. In early July, urediniospores (powdery-yellow to orange spores) start to form on the



Figure 2. Small pustules filled with yellow powdery

underside of infected raspberry leaves or flower parts. These urediniospores can continue to cause infections on raspberry leaves and fruit throughout the growing season.

Another type of spore (teliospore) develops on infected leaves in the fall and serves as the overwintering form of the fungus. In the following year, the teliospores germinate and form yet another type of spore (basidiospore), which infects white spruce needles during rainy periods from mid-May to early June.

Several recent studies indicate that the fungus apparently does not need the aeciospore stage to survive on raspberries, because the disease is found year after year in regions remote from any spruce trees. It is probable that the



Figure 3. Late leaf rust symptoms on red raspberry fruit. Note the pustules on individual drupelets.

ungus overwinters on infected raspberry canes as urediniospores or teliospores that serve as the source of primary inoculum for new infections the following season.

Disease Management

- 1. Use healthy, disease-free planting stock. One of the best ways to avoid the disease is to start the planting with healthy planting stock. Since the fungus can be carried in or on planting material, inspection of the planting materials before planting is recommended.
- 2. Site selection. Select a site with good air movement and full sun exposure. Never plant raspberries in shaded areas. Good air movement and sunlight help the foliage and fruit to dry off quickly after a rain or heavy dew. Rapid drying will reduce the incidence of fruit and leaf diseases in general.
- Canopy management. Keep row width between 1 6. and 2 feet in order to encourage air movement and faster drying. Cane density should not exceed three or four canes per square foot. Always select large, healthy canes when thinning. Control timing and the amount of 7. nitrogen fertilizer to prevent excessive growth.



Figure 4. Pustules on individual drupelets on infected fruit. Note the masses of yellow spores.

tween the rows is essential. Weeds in the planting prevent air circulation and increase drying time, resulting in wet fruit and foliage for longer periods.**Sanitation**. Remove and destroy infected and old fruited canes. Previously infected plant parts serve as a source of inoculum for the disease. Removing and destroying old fruited and infected primo canes greatly reduces the amount of disease inoculum in the planting.

- 5. Eradication of alternative and wild hosts. As previously mentioned, the late leaf rust fungus requires white spruce trees as an alternate host to complete its full life cycle. Eradication of white spruce trees interrupts the life cycle of the fungus and should aid in disease control. Eradication of nearby wild red raspberries that serve as a reservoir for disease is also beneficial for control of the disease.
- 6. Use of disease resistance. Black raspberries and blackberries are immune to the disease. Unfortunately, there are no commonly grown red raspberry varieties that are resistant to the disease.
- 7. **Fungicide use**. Fungicides that are effective for control of late leaf rust are currently available and are commonly used in commercial plantings.
- 4. Control weeds. Good weed control within and be-

Runner Removal Increases Albion Yields Becky Hughes, John Zandstra, Toktam Taghavi and Adam Dale, University of Guelph

Source: Ontario Berry Grower, Vol. 5, Issue 9, 2016

Many growers in Ontario have planted day-neutral strawberries in recent years to take advantage of a longer marketing season. Day-neutral production systems are very different than those we have used for years to produce June-bearing strawberries. For day-neutrals, plants are set at a high density on plastic-mulched, raised beds. Cultural practices are used to produce large multi-crown plants for the greatest fruit production. In most of Ontario, fruit is usually harvested in the first year and the spring of the second year in a modified annual system. Runner removal is a costly but recommended practice in day-neutral strawberry production. A trial was planted at Cedar Springs in southwestern Ontario and New Liskeard in northeastern Ontario in 2014 to examine the effects of runner removal on harvest distribution, harvest efficiency/ recovery, yields and plant growth. Runners were removed weekly starting six weeks after planting, three times a season at six, nine and twelve weeks after planting, once a season at ten weeks after planting or not at all. The effects of runner removal on yields and plant growth depended on the year, cultivar and site. Runner removal

treatments were continued in 2015, however there were few treatment effects on yield in the second year at either site.

There were many effects of runner removal in the planting year. This article will concentrate on the effects on yields. At both sites, all fruit was harvested twice a week and sorted into marketable (no rot and regularly shaped with a diameter greater than 1.5 cm) and unmarketable. Fruit in each category was weighed and counted. Berry weights (g/fruit) were calculated for marketable fruit only.

Runner removal increased the yield of Albion in the planting year. Runner removal increased the total and marketable yields of Albion in the planting year at both sites. In Cedar Springs, the total yield of Albion was reduced by 30% when runners were not removed (Table 1). Removing runners weekly took almost twice as much time as the other two runner removal treatments at both sites. However, the amount of plant material removed by the once-a-season runner removal treatment was six times that of the other two runner removal treatments. The time recorded for runner removal was the time to cut the stolons from a meter of row and didn't include the time to remove the plant material from the field. This would be necessary



Runners waiting to be removed. Photo courtesy of NC State Cooperative Extension

with once-a-season runner removal given the amount of material present. As the work crew also preferred removing younger runners with less plant material, removing runners every week or two may be the best compromise from a labour and yield point of view.

Runner removal treatment	Albion yields 2014 (kg m ⁻¹)		Albion berry wt	Seascape yields 2014 (kg m ⁻¹)		Seascape berry wt.
	Total	Marketable	(g/berry)	Total	Marketable	(g/berry)
Weekly	1.92 a ¹	1.72 a	16.4 a	2.33 a	1.99 a	12.7 a
3 times	1.81 a	1.65 a	15.4 a	1.92 a	1.60 a	12.2 a
1 time	1.90 a	1.60 a	15.9 a	1.96 a	1.65 a	12.3 a
Never	1.32 b	1.21 b	15.6 a	2.12 a	1.83 a	12.3 a

Table 1. The effects of runner removal at different intervals on the total and marketable yields, and berry weights of Albion and Seascape in Cedar Springs in 2014.

¹ Numbers within a column with different letters are significantly different.

Seascape responded to runner removal only in the more challenging northern climate in New Liskeard. In the cooler climate, both Albion and Seascape produced greater yields in the planting year with weekly runner removal but not with the less frequent treatments (Table 2).

Table 2. The effects of runner removal at different intervals on the total and marketable yields of Seascape, and berry weights of Albion and Seascape in New Liskeard in 2014.

Runner removal treatment	Seascape yields 2014 (kg m ⁻¹)		Berry wt. (g/berry)	
	Total	Marketable	Seascape	Albion
Weekly	1.52 a ¹	0.89 a	13.2 a	21.1 a
3 times	1.32 ab	0.76 ab	13.3 a	19.4 ab
1 time	1.23 b	0.60 b	13.3 a	19.7 ab
Never	1.25 b	0.64 b	13.8 a	13.8 b

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¹ Numbers within a column with different letters are significantly different.

The timing of runner removal was more critical at the northern site with early, more frequent runner removal giving the best results. Removing runners weekly took almost twice as much time as the other two runner removal treatments at both sites. However, the amount of plant material removed by the once-a-season runner removal treatment was six times that of the other two runner removal treatments. The time recorded for runner removal was the time to cut the stolons from a meter of row and didn't include the time to remove the plant material from the field. This would be necessary with once-a-season runner removal given the amount of material present. As the work crew also preferred removing younger runners with less plant material, removing runners every week or two may be the best compromise from a labour and yield point of view.

Overwintering Strawberries Laura McDermott, ENYCHP

The task of overwintering strawberries has become more complex as winter weather is increasingly unpredictable and strawberry growers manage a wider variety of cultural systems.

Strawberry plants enter dormancy slowly during the late summer and early fall. During this period there is less visible plant growth but lots of bud growth in the

plants' crown. This growth continues well into the winter. The initial stages of dormancy are triggered by

decreasing day length and declining temperatures, but most strawberry plants do not become hardy until mid-to late November. "Hardiness" refers to the plant's ability to resist lethally low winter temperatures. The plant exhibits dormancy by showing no new leaf growth, and becoming "flattened" as the petioles (leaf stems), hug the ground. Older leaves also turn red. The plants will begin to lose their hardiness as the days lengthen and the temperatures climb. When there is enough heat – the plants will begin to grow.

For traditional June bearing, matted row systems, most growers apply straw mulch from wheat or other grains when the soil temperature drops below 40°F at a 4-inch depth for 3 consecutive days. Mulch should be applied after the plants have attained substantial cold hardiness, but before low temperatures injure the plants.

The straw mulch insulates the plants and prevents winter heaving and crown desiccation. Straw will help to delay bloom in the spring, reduce weed pressure and helps keep fruit clean during the picking season. When incorporated at renovation, straw helps to improve soil organic matter content. The downside is that straw is difficult for small



Floating row cover on overwintered plasticulture berries in South Carolina in January. Photo, L. McDermott

growers to handle, and if you have to purchase it, the cost can be considerable. Additionally, straw mulch can delay spring growth and hold too much water, especially on heavy ground. The biggest problem is that straw with weed seeds makes weed control an enormous problem.

Level plantings with no raised beds, require 2.5 to 3 tons of straw per acre – about 150 forty-pound small, square bales. This

will result in a 2-3" layer across the planting. If you have small acreage, applying mulch by hand is the way to go – just shake it out with pitchforks evenly over the plants. If you have large acreage, you will want to use a bale chopper. Keep an eye on the most windswept areas of your field during the winter and replace the mulch if it has blown off.

Plastic-covered raised bed systems require 5-6 tons of straw per acre because of the tendency for the straw to drift into the alleys. Cold injury to the plant crown is more likely on raised beds because soil temperatures in the bed changes quickly during a snowless winter due to the increased surface area relative to the soil volume. Floating row covers placed over the entire planting can slow the loss of the soil heat.

Heavy weight floating row covers (1.25 oz/sq yd or 42 g/ sq m) have been used successfully for winter protection in areas with moderate winters. Anchor the row cover with rocks or other weights. Many growers are using a combination of straw and floating row covers, particularly those that are trying to overwinter a day neutral strawberry planting. You will want plenty of help and a still day to

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apply this mulch effectively.

If you are trying to use floating row covers for winter protection, be aware that a prolonged (>3 days) period of temperatures above 60° F with no snow cover, may stimulate buds resulting in freeze damage when temperatures return to normal. Removing floating row covers during warmer

FYI

winter periods can help to delay bud activity and reduce susceptibility to later freezes. Row covers need to be replaced when freezes are expected. Highest yield potentials are usually obtained by uncovering and covering in the late winter and spring based on expected temperatures when compared to the practice of keeping heavy weight winter row covers on continuously into the flowering stage.

• The NYS Department of Environmental Conservation (NYSDEC) has announced that their new online pesticide product registration database is available. The new database (<u>http://www.dec.ny.gov/nyspad/products</u>) replaces the PIMS system hosted by Cornell. <u>Please note that</u> <u>PIMS is no longer updated with current product registration</u> <u>information, including labels.</u> Those who need to look up

current product registration information for New York State will

now need to use the NYSDEC's database.

Please contact the NYSDEC Pesticide Product Registration Section at <u>ppr@dec.ny.gov</u> or (518) 402-8768 if you have any questions or comments regarding this new database.

• The Federal Insecticide, Fungicide, and Rodenticide Act Scientific Advisory Panel (SAP) will meet October 18-21, 2016, to consider and review a set of scientific issues being evaluated by the Environmental Protection Agency (EPA) regarding EPA's evaluation of the carcinogenic potential of the herbicide glyphosate.

EPA has published meeting materials in docket <u>EPA-HQ-OPP-2016-0385</u> at <u>www.regulations.gov</u>, including a <u>glyphosate issue paper</u> with the Agency's proposed classification that glyphosate is not likely to be carcinogenic to humans at doses relevant for human health risk assessment. The charge to the SAP is also posted on the <u>Scientific Advisory Panel</u> website.

The peer review panel has 90 days to provide EPA with a written report. Once EPA has reviewed the SAP report and made any appropriate changes to our risk assessment, we intend to release all the components of our full human health and ecological risk assessments for a 60-day public comment period. We are currently scheduled to publish the human health and ecological risk assessments in spring 2017.

For those who want to get to the point, from the top of page 141:

"For cancer descriptors, the available data and weight-of-evidence clearly do not support the descriptors "carcinogenic to humans", "likely to be carcinogenic to humans", or "inadequate information to assess carcinogenic potential". For the "suggestive evidence of carcinogenic potential" descriptor, considerations could be looked at in isolation; however, following a thorough <u>integrative</u> weight-of-evidence evaluation of the available data, the database would not support this cancer descriptor. The strongest support is for "**not likely to be carcinogenic to humans**" at doses relevant to human health risk assessment."

• FarmersWeb team (<u>www.farmersweb.com</u>) are offering a <u>free wholesale consultation</u> to any farm interested. Whether you're looking to do wholesale for the first time or have already started, these one on one consultations will offer best practices and pro tips for how to streamline your wholesale operations. From when to send out your availability list to how to manage buyers' expectations, bring your questions and hear from the team on how farms across the country navigate the ins and outs of wholesale. E-mail <u>info@farmersweb.com</u> to schedule your free consultation which will take place by phone or web chat.

Farmers' Market Pricing Project Survey & Evaluation

As August nears its end, our Farmers Market's Research Project is concluding. For the past few months, various staff members have traveled to markets attended by yourself, your friends, and neighboring farmers to collect the prices of specific products. These prices were each week according to region to create price summaries for your viewing.

YOUR FEED-BACK NEEDED!

The individual offices and dedicated staff of Cornell Cooperative Extension strive to provide valuable educative material and

research to farmers just like you each and every day. Help us ensure that we continue to succeed at this goal by taking our brief online survey.

Follow this link to take the survey online Or go to: <u>https://</u> cornell.qualtrics.com/jfe/form/



Upcoming Events

Cover Crop Field Day: Not what grandpa used to plant!

ENYCHP would like to invite you to see hands on over 20 different species and combinations of cover crops <u>planted no-till directly into standing sweet corn</u>! Guest speakers will discuss species selection, and our host farm will demonstrate their Unverferth Ripper Stripper unit and discuss their reduced tillage and cover crop experiences used for vegetables.

<u>Guest Speakers</u>: Dr. Paul Salon, Northeast Soil Health Specialist & Dave Wilson, Research Agronomist and Cover Crop Specialist Thursday, October 13,

10:30 am - 2:00 pm

Stanton's Feura Farm

210 Onesquethaw Road

Feura Bush , NY 12067

\$5 per person (lunch provided)

Please Pre-Register!

To register visit http://enych.cce.cornell.edu/event.php?id=609

or call Abby at 518-746-2553

For more information about the program, call Chuck Bornt at 518-859-6213

Calendar of Events

September 27- Farm Lease Workshop: Understanding and Writing a Good Farm Lease– 6pm-8pm, CCE of Ulster County, 232 Plaza Road in Kingston, NY 12401 Join Cornell Cooperative Extension of Ulster County and agricultural consultant Jerry Cosgrove for an evening workshop where we will go over farm rental lease best practices. Bring a copy of your current lease or a draft of a lease to discuss.

This program is free, and refreshments will be served, but space is limited, so register early! Please RSVP to Carrie Anne at 845-340-3990 ext. 311 or email <u>cad266@cornell.edu</u> by 9/26

October 13 - Organic Soil-borne Disease Management Webinar - Noon – 1pm. Contact Laurie George (<u>ligeorge@illinois.edu</u>) or James Theuri (<u>itheu50@illinois.edu</u>). Preregistration required: <u>https://web.extension.illinois.edu/registration/?RegistrationID=14944</u>

October 27th – GMO's: Distinguishing Fact from Fiction, Gardenworks Farm, 1055 County Rte 30, Salem, NY 12865 <u>http://gardenworksfarm.com/</u>. Register at: <u>http://</u> <u>www.sunyacc.edu/academics/continuinged</u>

November 16th -17th - GAPs and FSMA Produce Rule training, 17th Brattleboro, VT

For Farmers: The first day will provide training on Good Agricultural Practices (GAPs) *and* the Produce Rule of the Food Safety Modernization Act (FSMA). **This one-day workshop will satisfy the FSMA Produce Safety Rule requirement for growers who are covered by FSMA outlined** in § 112.22(c) that requires "*At least one supervisor from the farm must complete food safety training at least equivalent t o the standardized curriculum recognized by the FDA*." If you are unsure of whether the farm will be covered under the rule, you can use this online decision tree we de veloped at the Agency of Ag to find out if you are likely to be covered: <u>https://www.surveymonkey.com/r/vtfsma</u>.

For GAPs Educators and Agricultural Service Providers only: The second day is for GAPs educators and other agricultural service providers – it goes more in-depth into information on FSMA, the module content, and adult education. Attending both Day 1 & Day 2 would satisfy the PSA Train the Trainer requirement for potential trainers of the PSA curricula.

The workshop will be limited to 30 growers and 20 ag service providers. We will be sending out details about both workshops in the coming weeks!

Questions? Contact Ginger Nickerson: <u>gnickers@uvm.edu</u> or Hans Estrin: <u>hans.estrin@uvm.edu</u>

December 1st – Table Grape Production for Diversified Farms, Albany County CCE, Voorheesville, NY. More details to come.

December 1st - The New Bread Basket - How grain growers, plant breeders and local food enthusiasts are redefining our daily loaf. The Lovejoy Building, part of the Cambridge Freight Yard Campus, 11 Freight Yard Way, Cambridge, NY 12816 (<u>http://hubbardhall.org/visit/</u>). Register at: <u>http://www.sunyacc.edu/academics/continuinged</u>.

Save the Date for NYS Berry Growers Association sponsored workshops: *Protected Culture of Berries* – More details to come

> December 14, 2016 in Portland, NY January 17, 2017 in Syracuse, NY March 7th 2017 in Riverhead, NY

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