

UTAH BERRY GROWERS ASSOCIATION NEWSLETTER

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WE'RE GOING ELECTRONIC

Due to increasing printing and postage costs we are hoping to send this newsletter electronically, whenever possible. If you are currently receiving a printed copy of the newsletter but could use an electronic (pdf) version, please send an email to Lori Johnson (lori.johnson@usu.edu). If you can't or don't receive electronic mail, you can still receive the UBGAs newsletter.

To stay on the hard copy mailing list give Lori a call at 435-797-2255.

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SUMMER FARM TOUR



Mark your calendars for the afternoon of August 13. This year, the Utah Berry Growers Farm tour will be held in conjunction with the Utah State Horticulture Association and the Utah vegetable growers' farm tours at the USU Kaysville Research Farm. We know it is difficult to get away from the farm this time of year, so we are trying something new. We are going to conduct three separate tour times which should allow everyone to find an hour or two to get to the farm. Tour times will be 1-2:15; 2:30-3:45 or 4:00-5:15 pm. During each time period you can choose to see research on tree fruit, small fruit or vegetables. If you are only interested in tree fruit, come at the start of any of these times and you will go see the tree fruit research. If you stay for the whole afternoon, then you could see the tree fruit, small fruit and vegetable research and do it in any order. Here is what will be covered. Dr. Brent Black will highlight the research work being done on raspberry and blackberry varieties and different trellis options. Thor Lindstrom will give an overview of rootstock evaluations. Dr. Jennifer Reeve will discuss organic and conventional peach production approaches. You will get updates from Dr. Kent Evans (Extension Pathologist) on fire blight management and Marion Murray will give us a fruit pest update. Dan Drost will talk about organic vegetable production (broccoli, beans and sweet corn) and focus on cover crop selection for weed and nutrient management. All growers are welcome to come and stay as long as you wish. We will have raspberries and ice cream at the end of each tour.

Come and make an afternoon of it at the Kaysville Research Station. The entrance to the farm is located at 350 S 50 W in Kaysville. You can find detailed directions to the Research Station and the Utah Botanical Center at <http://utahbotanicalcenter.org/htm/visiting>



On May 22, 2008, the Food, Conservation, and Energy Act of 2008 (2008 Farm Bill) became law. This new legislation increases funding and creates new opportunities for conservation and agriculture. The new provisions build on the conservation gains made by farmers and ranchers through previous Farm Bills. The new legislation simplifies existing programs and creates new programs to address environmental goals.

Here are some highlights of the 2008 Farm Bill:

- Reinforces the importance of conservation on working lands.
- Increases the nation's investment in conservation programs administered by NRCS—by \$4.2 billion over the life of the 2008 Farm Bill.
- Reauthorizes all key programs in our conservation portfolio.
- Expanded our Environmental Quality Incentives Program (EQIP) by adding the new Agricultural Water Enhancement Program (AWEP).
- Authorizes new activities, including the Wetland Reserve Enhancement Program (WREP) and the "Open Fields" Program.

We are currently in the rulemaking process for the 2008 Farm Bill. During this time we draft regulations and establish standards to support the legislative mandates.

For more information about 2008 NRCS Farm Bill Conservation Programs or the rulemaking process, please go to: <http://www.nrcs.usda.gov/programs/farmbill/2008/index.html>

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We hope you find the information in this newsletter useful. If you have comments regarding information in this newsletter, or would like to see in future newsletters, please contact:

Brent Black, Extension Fruit Specialist

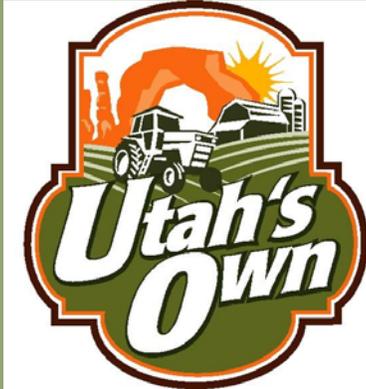
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BORERS IN YOUR RASPBERRIES?

Are you having problems with boring insects attacking your raspberry primocanes? If so, you're not alone. An insect known as the raspberry horntail is common in Utah. USU Extension Entomologist Diane Alston wrote an article on this pest for the October 2006 UBGA newsletter. To access this article or any previous issues of the newsletter go to the "Fruit" section under the "Horticulture" heading of the USU extension website (extension.usu.edu/publications).

Archive issues download as pdf files.



Utah growers are some of the toughest in the industry. They have to be, to deal with strange weather and shortened growing seasons, rising production costs, and a draining labor pool. Fortunately, they don't have to go it alone. The Utah's Own program, sponsored by the Utah Department of Agriculture and Food, is building a network of growers to strengthen the Utah agricultural community.

Since the Utah's Own program was launched in 2002, member companies have enjoyed access to statewide marketing tools, participation in the Utah Food Council, the opportunity to apply for grants, and a direct link to consumers who want to buy Utah products, along with many other benefits. These benefits help our Utah growers address and overcome industry problems while also giving them an edge over national competitors.

By joining the Utah's Own program, growers can mark their products with the well-recognized Utah's Own logo that consumers have come to equate with the best of local products. When consumers purchase these Utah products, money and resources are channeled back into the state economy, which then supports growers by protecting acreage, increasing sustainable practices, while decreasing shipping costs and environmental impact.

A broad coalition of members of the Utah agriculture and food industry created the Utah's Own program, and it continues to seek feedback from Utah growers. Give us your feedback and join the Utah's Own program on our website: www.utahsown.org, or by contacting Richard Sparks (rsparks@utah.gov) or Stephanie Wilson (steph.j.wilson@gmail.com).

Bye Bye Birdie – Bird Management Strategies For Fruit Crops

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Tree fruits and small fruits are a good food source for birds, especially in dry years when other food sources may be in short supply (Could one of those years be 2007?). Damage to commercial fruit crops by birds during these years may be a serious problem. Some studies estimate up to 30% of blueberry crops may be lost under such conditions.

Three types of bird damage may occur in small fruit plantings – whole berry removal, fruit knocked off bushes by foraging birds, or punctures/pecking

damage. Whole berries may be stripped from bushes or canes or holes pecked in attached fruit in the case of brambles and blueberries. Larger fruits are most often slashed or partially consumed such as cherries, strawberries, apples, plums etc. However, most birds prefer a fruit size of 1/2-inch or less in diameter so that they can swallow the fruit whole. Smaller birds may puncture fruit, leaving them open to infection by fruit rots. Punctured fruit are difficult to detect during harvest and sorting. Fruit

developing post-harvest fruit rots from pecking injuries jeopardize pack quality.

On many farms bird damage is minimal. Growers may choose to ignore the problem or consider small losses incurred as part of the costs of small fruit production. Other growers may experience substantial losses with large portions of the crop being consumed or damaged. If you have experienced serious bird damage in the past, there is definitely cause for continued concern. If bird damage in your plantings has been minimal, you may only need to address bird management in years when damage is likely to increase significantly.

How to decide if bird management is warranted? A study done in New Zealand suggests a simple pretreatment cost-benefit analysis of the bird control technique(s) under consideration should be used to make bird management decisions. In this instance, the bird control technique under review was repellents. Cost effectiveness was calculated based on the cost and effectiveness of each repellent, the value of the crop, and the loss to birds if the crop was not protected (Table 1). Total cost was calculated based on cost of raw materials + labor to make an application x the number of applications needed.

Table 1. Maximum total cost per acre allowable for a bird repellent treatment to be cost-effective on a fruit crop yielding \$10,000/acre¹.

(Source: Spurr and Coleman, 2005 with some revision by the author)

Loss to Birds	Effectiveness of treatment (i.e. reduction in loss to birds)			
	25%	50%	75%	100%
5%	<\$125	<250	<\$375	<\$500
10%	<\$250	<\$500	<\$750	<\$1,000
20%	<\$500	<\$1,000	<\$1,500	<\$2,000
30%	<\$750	<\$1,500	<\$2,250	<\$3,000

¹For fruit crops of differing values, simply multiply the values in the table by the value of the fruit crop divided by \$10,000 i.e. for fruit crops valuing \$25,000/acre, multiply the corresponding table value by 2.5. For a fruit crop valuing \$5,000/acre multiply the corresponding value by 0.5.

So, for example, if your fruit crop is worth \$10,000/acre, the expected loss to birds without treatment is 20%, and the bird repellent under consideration is 50% effective, then the repellent should cost less than \$1,000/acre to be cost effective. The same sort of simple cost benefit analysis would also be applicable to other bird management techniques. In the case of netting or other durable equipment such as distress callers or canons, however, the duration of the technique (i.e. life of the netting) would need to be factored in as well.

In the event a bird problem develops, how to determine who is the culprit? Fire up those binoculars and do a little investigative birding. Early morning and evenings before dusk are times when birds are most active. Refer to table one for the most probable miscreants (bold type). While these may be the most frequent/numerous visitors to your fruit plantings, other birds may visit as well.

Whatever the tactics employed, decisions on bird management need to be pro-active. Discouraging bird feeding becomes difficult, if not impossible, once a feeding pattern has been established and birds recognize your planting as a food source.

Is a somewhat peaceful co-existence possible? Yes, if you take a long-term approach to bird management and have your annual tactics in place and employed well before fruit begins to ripen. Use several tactics simultaneously, and vary the types and locations of tactics frequently for best results.

Remember to keep good records from year to year on amounts of bird damage occurring, control tactics used, and their success (or lack thereof), along with environmental conditions of years when bird damage increased. Be vigilant in observation and scouting, and always begin tactics before fruit begin to ripen and feeding habits become established.

What bird management tactics should you include in your arsenal? Everything but the kitchen sink! Birds, like other animals, become accustomed to various scare tactics over time. Unfortunately, no one single tactic is effective as a stand alone method of bird control, with the exception of bird netting. Tactics to consider include the following: cultural practices, exclusion, sensory deterrents, scare devices, and protection/development of predator habitat.

Cultural management begins with site selection. The site where your planting is located may be a critical factor in bird problems later. Plantings located closer to urban environments where robins and starlings are more abundant may have greater damage. Isolated plantings may receive more damage. Smaller plantings tend to exhibit more damage than larger plantings. So much fruit is available in larger plantings that damage on any one site is generally low. Locate new plantings away from convenient cover or perch sites such as woods, hedgerows, power lines, and brushy fields. Control grass and weeds in and around plantings to limit numbers of seed-eating birds. Bird damage to small fruit is often greatest on early ripening varieties, as they mature when other fruits may not be available. Netting on these varieties may be cost effective.

Various methods of exclusion may be used, including row covers, netting, and other types of physical barriers. These barriers simply prevent birds from reaching fruit.

Netting continues to be the most complete and effective way to reduce bird damage in small fruit plantings. In some cases, netting is placed directly over plants or bushes. In other instances, a framework is constructed over the planting and netting is suspended on the frame. That said, it is relatively expensive compared to other methods and probably the most labor intensive. However, it is also the most durable. Netting materials, with proper care, may last 3 to 10 years.

Several commercial small fruit growers in the northeast use netting on frames, supported by wire. The netting support structure is 6 to 10 feet above the ground and allows for routine agricultural activities to be carried on under the netting, such as spraying, mowing, and fruit harvest. Netting is removed and stored each season to prolong netting life.

Nylon, polyethylene, cotton, plastic-coated wire and other netting materials are available. Select netting with a ¾" mesh to exclude small birds. Support posts that are pounded rather than augured give stronger support. Augered posts should be set in concrete for additional stability. Tops of poles are generally covered with some type of smooth covering (rubber inner tubes, plastic bottles etc.) to protect netting as it is applied and removed, and as it moves in the wind. Pounded anchor posts need to

be set outside netted areas to serve as additional support for outside posts.

Bird netting cost varies considerably with type, manufacturer, and quality (available from many sources, see list at end of article). The initial installation costs may be quite high but costs may be pro-rated over the 3 to 10 year life of the material. One estimate indicates material and labor to erect a 1 acre bird netting system 7-8 ft in height is approximately \$2,280 (Dellamano, 2006). Additional annual costs involved application, removal and winter storage of netting; these costs were estimated to be approx. \$619/acre for the same system.

Sensory deterrents are those which assault the senses. They may target a single sense, such as a repellent applied to fruit to discourage feeding or more than one sense such as motion activated lights/sprinklers, or owl models which emit predator calls followed by bird distress calls.

Bird repellents are often portrayed as an effective, "clean, green" method of bird management. There are currently 2 bird repellents labeled for use in NY State. They are the methyl anthranilate-based products Bird Shield and Rejex-It Crop Guardian. Research here and in other states (Michigan, Oregon, Washington, Florida) indicates these products have both positive and negative aspects.

The active ingredient methyl anthranilate is similar to the chemical responsible for the major flavor component of Concord grapes. It is manufactured in large quantities by food processors and is considered safe for human consumption by the FDA. However, it is a volatile compound and has a short residual on exposed fruit giving good repellency for approx. 3 days, then gradually losing effectiveness. In addition, a large amount of product needs to be consumed in one bite in order for it to be most effective. Application technologies for small fruit such as air blast sprayers are designed to apply small amounts of product uniformly over larger areas, thus reducing product efficacy.

Applications of sucrose syrups have been demonstrated to repel birds from blueberry plantings. The exact method of repellency is not well documented, but it is thought birds such as European Starlings and American Robins are unable to digest the disaccharides in sugar. Most

birds are able to digest simple monosaccharide sugars found in fruits. Sugar solutions in New York were applied to blueberry plantings when fruit began to turn blue. In this trial 230 lbs of sugar was dissolved in 21 gallons of hot water, for a total of 40 gallons of sugar solution. Olympic Spreader Sticker was also added at 310 PPM. The treatment cost \$40-\$50/acre and was applied 4 times during the season for a total control cost of \$160. Bird damage was reduced 50% where sugar solution was applied versus untreated adjacent plots. The total expense was far less than losses to birds experienced in the non-treated plot. An increase in Japanese beetles and yellow jackets was observed, however, in year 2 in treated plots.

Sound may be used as bird repellent, causing fear, pain, disorientation, communication jamming, audiogenic seizures or internal thermal effects. The sounds most frequently used fall into 2 categories: distress calls, and noise makers (pyrotechnics).

Distress call repellents have been used successfully to drive birds from fields or roosts. However, these calls are species specific, so a grower must be able to identify the bird causing damage for them to be successful. Units are also available that incorporate predator calls as well as distress calls. Most units are programmable as to time between calls, species of bird, randomized calls, etc. Units are battery, solar, or electrically powered and cover 1 to 8 acres. They range in price from \$250 to \$3,500 depending on the size of the area to be protected and accessories needed. Some auditory units come packaged in the form of visual deterrents. One unit available is in called the "Screech Owl" (Birdbusters), and pivots on a bearing with the wind, providing both auditory and visual deterrent in one unit.

New York studies have shown distress call devices to be effective for 7-10 days in plantings with high bird pressure. Use of predator models in conjunction with distress call units gave further reduction in feeding. Best results were obtained when units were moved regularly and used in conjunction with visual scare devices. Distress calls have a tendency to have more long-term effects than noise makers.

Pyrotechnics, or noise makers, such as bangers, poppers, and sirens on provide short term control of birds. They may include Bird Bombs, Bird Whistlers, and Shell Crackers (Sutton Ag). However, these products are often as annoying to

neighbors and customers as they are to the birds! In fact, a group of concerned (annoyed) citizens in British Columbia has even developed a web site called, appropriately, Ban the Canon, located at: <http://bancannons.tripod.com/devices.html>. This web site provides information on all sorts of bird control alternatives to pyrotechnics in an effort to reduce noise pollution caused by propane canons and the like in their province.

The "Zon Gun" is a lightweight portable propane-fired cannon emits automatic thunderclaps that deter pest birds and other nuisance wildlife. The intervals between detonations can be adjusted from 2-30 minutes. The standard model is fully automatic, ground mounted, and rotates a full 360 degrees for wide coverage. Cost for this unit, plus timer and tripod is \$650.

Many types of visual scare devices are available from simple holographic tapes to large predator kites. Terror eyes are an inflatable visual scare device that confuses birds with lifelike reflective predator eyes and markings. They come in 3 colors (black, orange and yellow) and cost approximately \$5 - \$45 each.

Another visual scare device is flash tape, or holographic ribbon. These come in various length rolls, materials and colors and repel birds by producing an optical, audible discomfort zone.

Position the length of ribbon where nuisance birds will see and hear it. Make sure the length of ribbon can move freely with the wind. Approximate cost of this type of material ranges from \$4-\$88 a roll depending on roll length and material.

Other Devices

Other bird scare devices utilize various techniques such as lights, sprinklers, and motion. "Scarecrow" is one such device which uses an infrared sensor that detects birds when they are present, and releases an immediate shot of water to startle them and keep them away. Another device, "ScareWyndmill" uses motion to frighten birds, along with blades painted with special uv light reflecting paint. They have been found effective on small birds, and tested in blueberry plantings.

Encouraging Natural Predators

Owls and Hawks are natural predators of birds that may be a problem in small fruit plantings. One method of bird management to consider then is how

best to encourage these birds to live in the vicinity of fruit plantings. An easy way to encourage owls is to install nest boxes the size that owls would use. The Sharp-shinned Hawk is a regular visitor to bird feeders, where it eats birds, not seed. The great majority of this hawk's prey is small birds, especially various songbirds such as sparrows, wood-warblers and American Robins.

There are also companies who will visit your property and bring trained hawks or falcons with them to attack your bird situation. Usually hawk silhouettes or heli-kytes that simulate hawks in flight are flown simultaneously, and the problem birds will stay away for a good while thinking that the silhouettes are the real thing.

A Word About Wildlife Conservation and Protection

The following birds, for various reasons, may be

permanently removed from plantings: European Starling (introduced species not protected by state or federal law), Red-winged Blackbird (protected by State and Federal law--but a depredation order allows you to take these birds *when they are committing or about to commit damage to crops.*) and American Crow (protected by State and Federal law--but a depredation order allows you to take these birds *when they are committing or about to commit damage to crops.*)

All other species listed in Table 1 are protected by State and Federal law and would require special permits from the Federal government (US Fish and Wildlife Service) and the State (New York Department of Environmental Protection) to live trap and relocate or kill these birds to protect crops. Be sure to check with state and local authorities in your area regarding local bird control ordinances.

IRON CHLOROSIS

BY: Brent Black, USU Extension Fruit Specialist and
Grant Cardon, USU Extension Soils Specialist

Iron chlorosis is a symptom of iron deficiency common in Utah berry crops. Chlorosis is characterized by interveinal yellowing in mild forms, with more severe cases resulting in the curling and browning of leaf edges. Iron is abundant in the soil, but not available to the plant in Utah's alkaline (high pH) soils.

Several management practices can make iron deficiency more severe. First, applying too much nitrogen will stimulate excessive vegetative growth. Under some conditions, this excessive growth will cause the plants to out-run their ability to take up iron. Nitrogen requirements differ between young and old plantings and among soil types, but annual N requirements for an established raspberry planting are typically 70 to 100 lbs per acre. Excessive phosphorus will also exacerbate iron chlorosis.

Second, over irrigation early in the spring will induce iron deficiency, as cold waterlogged roots are not effective at iron uptake. Snow pack and spring rains will often saturate the soil profile in the spring, and starting your irrigation cycle too early will prolong this waterlogged situation. Allow

for the soil in the top foot to dry down adequately before beginning your irrigation. The use of equipment for monitoring soil moisture can be an effective method of determining when to begin irrigation. Just because the canal is full, doesn't mean it's time to start watering. For more information on raspberry irrigation see the USU fact sheet "Caneberry Irrigation" available online (extension.usu.edu/files/publications/publication/Horticulture_Fruit_2008-04pr.pdf).

Some completely unrelated conditions can mimic iron chlorosis in raspberry plantings and should be ruled out. We have seen cases where winter injury produced chlorosis symptoms on floricanes. In this case, some buds were winter killed, while surviving buds opened slowly and showed leaf yellowing similar to iron chlorosis. This is typically caused by injury to the vascular tissue that slows transport of nutrients to the developing laterals. Injury from the winter applied pre-emergent herbicide Princep can also cause leaf yellowing that may be confused with iron deficiency symptoms. Follow the label carefully when using this material.

Several management actions can prevent or alleviate chlorosis. In theory, one way to prevent chlorosis is to lower the soil pH. This can be accomplished with the addition of organic matter, elemental sulfur, and by using fertilizers that tend to lower soil pH such as ammonium sulfate. However, sulfur amendments take one or more growing seasons to fully react and lower soil pH and are not effective in the very alkaline soils (pH > 8) common in Utah. Another method is to select varieties that are less susceptible to chlorosis. If you have a site prone to chlorosis, you might experiment with a wide range of varieties to see which of these is less likely to run into problems. In general, varieties that originated in the northeastern U.S. may be less tolerant of our alkaline soils. For example, we have commonly seen chlorosis on 'Ruby' and 'Encore' raspberries, both varieties selected in New York.

To correct an existing chlorosis problem, consider applying a chelated iron fertilizer. Private orchard consultant Dr. Earl Seeley (ejsservices.net) recommends the use of Miller's Ferriplus (Miller Chemical) or Sequestrene 138 Fe (Becker Underwood) at a rate of 1 to 2 pounds per acre banded along the row and then watered into

the soil with at least an inch of irrigation water. Even more effective is to "shank in" the fertilizer to a depth of 2 to 3 inches. The best time for application is in September and May. If you currently have a problem, however, you don't have to wait until fall to begin to correct it. A mid-summer application, followed by a September application will go a long way to set up your plants for a better crop next year. For more information on iron chlorosis visit the USU website: utahpests.usu.edu/plantdiseases/html/non-pathogenic/iron.

