

# The Berry Basket

Newsletter for Missouri Small Fruit and Vegetable Growers

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## Berry Size and Taste Sells Blueberries

*by Ben Fuqua*

The months of June and July are becoming known as "blueberry time" in Missouri. The attractive, blue-colored fruit is very popular among consumers and can be used in a variety of ways. Blueberries can be eaten as fresh fruit or processed into jams, jellies, pies, cakes, muffins or other delicious treats. Blueberries are high in fiber, iron, vitamins A and C, low in calories and fit nicely into the healthy diets of today's consumers. Since blueberries are grown on bushes with no thorns, they are easy to pick. Fresh blueberries will keep 10 to 14 days when properly refrigerated. They are easy to freeze, so blueberries are a fruit to be enjoyed all year long.

Most blueberries in Missouri are sold as U-Pick, from growers' roadside stands or local farmers' markets. While berry characteristics such as color, size, texture, stem scar (affecting shelf life), taste, firmness and overall appearance all tend to influence the customer's decision when purchasing blueberries, berry size and taste appear to be the two major factors. Since both berry size and taste are affected by cultivar (variety) selection and specific management practices, growers should consider these factors when planning market strategies.

## From the Editors

*by Marilyn Odneal*

The proverbial "Dog Days" of summer are upon us! Lately, in Mountain Grove, it has been a very wet and rainy dog. It's a good time to sit in the shade for awhile and reflect on the mysteries of the growing season. Was there anything you learned this year and would like to share with other growers? Was there anything you would have liked to have had known this year but didn't? Perhaps you tried something new and exciting, or rediscovered something old and practical. In any case, we encourage you to submit articles that you would like to share with other Missouri growers, or let us know if there are any features you would be particularly interested in seeing or suggestions you would like to make. Please direct any suggestions to: Marilyn Odneal, SMSU Research Campus, 9740 Red Spring Road, Mountain Grove, MO 65711, phone: 417-926-4105, fax: 417-926-6646, e-mail: mbo774t@mail.smsu.edu.

*(The following information is taken from results of a taste test conducted at SMSU over a period of 5 years in which the participants were asked to rate several berry characteristics from a number of blueberry cultivars.)*

**Berry Size:** Berry size is probably the first thing that gets the customers' attention. Most participants on the test panel indicated a preference for the larger berries. Berry size varies greatly from one cultivar to another, due to genetic differences of the plants. Cultivars that have consistently produced large-sized berries in research plots at Springfield or Mountain Grove include: Collins and Duke (early maturing), Blueray, Berkeley and Bluecrop (mid-season), and Coville and Lateblue (late maturing). For all cultivars, berry size is greatest during the first 2 or 3 weeks of harvest and decreases rather rapidly in subsequent weeks. Some newer cultivars, Duke, Cape Fear, and Blue Ridge (southern highbush) and Northblue (half-high hybrid blueberry) have produced large-sized berries in recent research tests at Mountain Grove.

Berry size can also be greatly influenced by the extent or degree of pruning. Blueberry plants usually set an excessive number of fruit buds and need to be pruned each year. Pruning to balance the number of new and old canes and open up the center of the blueberry bush also reduced the number of fruit buds, resulting in larger berries. Most blueberry plants seem to produce a certain amount of fruit (obviously dependent on adequate water, sunlight, nutrients, etc.), and produce either a huge number of small berries or a lesser number of large berries. The total pounds produced will be approximately the same in both situations. Since most consumers indicated a preference for the larger berries, regular (annual) pruning of plants is necessary.

Jersey is one exception to the size rule. Jersey produces a very small berry compared to other cultivars grown in Missouri, but has an excellent flavor, which makes it an excellent choice for jams, muffins, cakes, etc.

**Taste:** Taste is mostly a matter of personal preference and therefore somewhat difficult to

measure quantitatively. Some people prefer a sweet berry, while others prefer a tart berry. Although most people can detect slight differences in the taste of berries, they generally rated the taste of all cultivars as being acceptable. For example, Jersey and Bluetta are very sweet and usually rated very high by the participants on the taste panel. Bluecrop, Berkeley, Blueray, and Collins were also acceptable by the majority of the people and rated as an excellent tasting berry. Coville and Lateblue, both late maturing (July/early August) cultivars, have a slightly more tart taste, yet they were also rated high by many in the taste test. These people commented that they enjoyed the tart taste or that the others were "too sweet"!

Taste is greatly influenced by the sugar content of the berry. While there are obvious differences (4 to 5%) in the % sugar between cultivars, the real key to high sugar content is allowing the berry to properly ripen. There is a detectable difference in sugar content between a "ripe" and "unripe" berry. Green berries and berries with red "butts" have much lower sugar content than a fully "bush-ripened" blueberry. Sugar content (sweetness) as high as 15-16% have been measured in ripe blueberries (compared to 6-7% in green berries) grown in southwest Missouri. Since blueberries increase in sugar content (and size) over a period of 7 to 10 days after the fruit initially turns blue, it is important that blueberries remain on the bush to fully ripen before harvesting. Even berries from the Coville and Lateblue cultivars taste better when fully ripe.

**Conclusion:** The demand for high quality blueberries continues to increase each year. Consumers base their selection of blueberries on a number of factors, but berry size and taste seem to be the two major "selling" points. Cultivar selection affects both berry size and berry taste and should be considered when starting a new planting or renovating an old one. Proper pruning and allowing berries to fully ripen are simply management techniques that will help growers produce greater yields of large-sized, high quality berries.

## Missouri Small Fruit Growers' Association Update

*by Floyd Livingston*

Greetings! By this time of year, most of us should be to the point where we can catch our breath. For those of you who can't or are getting ready for the fall season, you have my sympathies.

Generally, I think '98 has been a good to average year for most of us. The strawberry crop was short but yield and quality seems to have been acceptable statewide. Blueberries and brambles seem to be doing well also.

I would like to take this opportunity to update everyone on the progress the Missouri Small Fruit Growers' Association is making. Virginia Whipple, who is our Secretary/Treasurer, has all of the various functions of her offices up and running. Virginia will send each member a membership certificate and roster in the future. We are working on a questionnaire to send to each member so we can get a better idea of who we are. We will send them out later and after you send them back to us we'll make the results known to you. It should be interesting and informative to see what each of us is doing.

Of major importance to strawberry growers, the Association has been working closely with the Missouri Department of Agriculture in trying to secure a section 18 clearance for the use of Goal herbicide on strawberries. I believe Goal is registered for strawberries in Canada so I'm very hopeful our efforts will bear fruit. There is no question whether Goal works on strawberries. The problem is getting it labeled so we can legally use it. This type of action can only be done through an organization like our association. I hope each of you realize this and appreciate what this group can accomplish. We haven't been able to work on as many issues as we had planned and I hope you will be patient with us. Remember this is the busy time of the year for us too.

Most importantly we all need to realize that the bulk of the work we will be able to accomplish

will be done in the next few months. It's only about six months until our next meeting and as busy as it seems if we are ever going to have any slack time to prepare it is coming up. We need your help. We need ideas on what subjects the association should address. We are going to try to publish our own newsletter this fall or winter. We need your input as to what you want in it. If anyone would be willing to publish it or help with it, please let us know. I want everyone to know that as time allows, we will be getting better organized. As officers and Directors we can not, nor should we be expected to, do it all. We have to have your help. As things come together, we will be contacting members about helping. Please contribute when and where you can with your time and talents.

Whether you're a member or not, please contact me or any other officer with concerns, ideas, suggestions, etc. you may have. Your input will be greatly appreciated. My number is 573-686-1605 and the address is Route 3, Box 727, Poplar Bluff, Missouri 63901. We look forward to hearing from and working with you.

## Blueberry Council News

*by Bob Hershey*

This El Nino year for blueberry growers should be called El Weirdo year. Several growers had almost total freeze-out this year. Others, like us, had freeze damage only to certain varieties.

Then we had August heat in June. Most growers reported earlier picking . . . the extensive heat was hard on early blueberries and pickers alike. One grower I visited had late berries (Elliotts) that ripened two weeks early from the heat, then split from all the July rains.

Then there were the cicadas! Several farms suffered some plant and fruit damage. These cicadas also made good bird food. According to one USDA biologist, song birds had an almost record hatch this spring with the cicadas and other insects in bountiful supply, the survival rate was exceptional.

Another risk factor! More birds, too much rain washing off the Re-Jex It, equals a big bird

battle. By the time the blueberries were ripe, the cicadas were gone, and the birds (mostly robins) found the bemes. When the juvenile robins come in, they were like teenage kids in appetite and attitude. All they wanted to do was fill their bellies!!

In June, we had a visit from the Food and Drug Administration. An inspector got our farm location from the Commodity Guide Booklet. They collected 20 pounds of fruit from the rows we had pickers in. An analysis was made checking for chemical residue. We were totally clean.

Folks, these inspectors can show up on your fann at anytime. Personally, I welcome them. If you sell food or food products, you are liable for the safety of that product. An inspection like this is why we as growers need to keep records, and follow label directions on anything we spray. If you are careless or disregard labels, you can be shut down and out of business.

Important dates for Blueberry Council members to remember or stick on the refrigerator door are:

**September 26, 1998.** The fall meeting of the Blueberry Council is set for Saturday, September 26 at the Mountain Grove Research Campus at 1230 (no lunch served but plenty of restaurants in the area). We urge every board member and grower to attend. RSVP to the Blueberry Council Secretary, Ronnie Hershey, by September 15 at (573) 547-4502 (day) or (573) 547-4448 (evening).

**November 6-7, 1998.** Small Farm Trade Show, Columbia, MO.

**December 13, 14, 15.** The Governor's Agri-Conference, Tan-Tar-A, Osage Beach, MO. (If you haven't already signed up to make sauce or help serve at the Sunday evening event and wish to do so, please give Ronnie a call. This is the place to showcase Missouri Blueberries to other commodity groups, legislators, farm organizations, and the media.)

**February 15, 16, 17.** Missouri Small Fruit Conference, Springfield, MO.

Any grower who has had over 10% crop loss to birds needs to contact me with that information. The USDA Animal Damage Control people need a report on bird damage in Missouri. We just need a short report on your bird damage. I will compile this information and forward it to the proper authorities. This is one way we can alert the USDA to our need so they will continue research on bird control. Send information to: Bob Hershey, 2607 PCR 616, Perryville, MO 63775, (573) 547-4448 (phone) or (573) 547-4502 (FAX).

Maury Bedford, biologist with the USDA Animal Control office at Columbia and a great resource person for blueberry growers, has accepted a position with the U.S. Fish and Wildlife Service. He will be the Assistant Refuge Director at the Natchez, Mississippi Wildlife Refuge. We wish him good luck in his new position, but will miss him greatly.

Welcome to new Missouri Blueberry Council Members:

**George and Ann Marie Rausch**

Rausch's Blueberries  
Monett, MO

**Clarence and Jean Klappmeyer**

Klappmeyer Farm  
Willow Springs, MO

**Leon and Ruth Tillett**

Berry Ridge Farm  
Pickering, MO

**Tom and Susan Flood**

Prairies Winds Farm,  
Centralia, MO

**Dan and Denise May**

The Organic Way  
Milo, MO

**Len and Kathy Matson**

Heaven Scent Farm  
Stockton, MO

## The Squash Vine Borer, a Major Pest for the '98 Season

by Gaylord Moore

Sudden wilting of all or part of a vine of cucumber, muskmelon, pumpkin, squash or watermelon can spell trouble. Wilt diseases such as bacterial wilt are suspect, but do not rule out the squash vine borer. This year the borer has been quite active and has caused major problems for market growers and back yard gardeners. You can tell borers are at work by the moist, sawdust-like debris (frass) piled outside their holes. If you cut open the stem of the wilted vine lengthwise, you will find the frass and often one or more caterpillars. It only takes two or three larvae to be lethal to the plant.

You may assist in the control of squash vine borers with good sanitation practices. Fall clean up and complete removal of known infected plants is suggested. Gardeners have also reported good results by injecting the infected vine with *Bacillus thuringiensis* (BT). You can use a disposable syringe for this process. Insert the syringe right into the center of the stem about 1 1/2 inches above the soil line. This is approximately where the borers will feed first after hatching. Inject the plants again in a week to ten days. This practice must be done before the borer has done major damage to the plant. The injection method may be good for the backyard gardener with few plants, but this practice is not practical for the commercial producer.

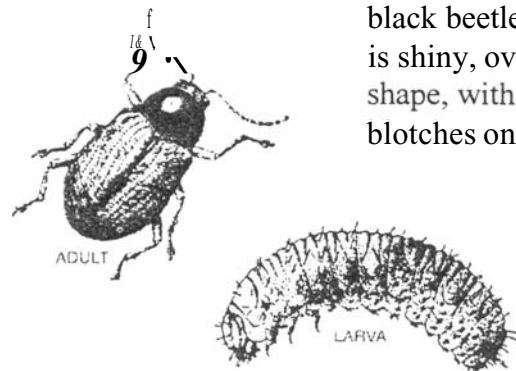
Along with good sanitation practices, chemical applications are suggested. Where borers have been a problem, a spray program aimed directly to borer control may be necessary. Insecticides such as thiodan, sevin, or malathion may be sprayed as the plants are beginning to vine. Repeated applications a week to ten days apart may be necessary. Be certain to check chemical labels for particular crops.

## Strawberry Rootworm

by Patrick Byers

Recently several reports have reached the State Fruit Experiment Station describing insect damage to strawberry leaves, particularly after renovation. The culprit was identified as the Strawberry rootworm, *Paria fragariae*. While growers report that this insect is not a problem every year, annual monitoring of this pest is important in detecting population buildups that can lead to serious damage in a strawberry planting.

The adult strawberry rootworm is a brown to black beetle that is shiny, oval in shape, with 4 blotches on the



shell-like wing covers. The adult beetles are 1/8 inch long. The larvae are grubs that are 1/8 inch long, white, with three pairs of legs. Adults overwinter in mulch and soil crevices, and are first noticed in May and June. Adults feed mainly at night and hide in debris during the day. Females lay eggs on older leaves near the soil surface, and the hatching larvae burrow into the ground to feed on strawberry roots from late spring to early summer. New adults begin emerging in midsummer, and feed on strawberry foliage through early fall.

Both the larva and the adult of the strawberry rootworm can injure strawberries. The adult beetles feed on the foliage, riddling leaves with small holes. The first sign of injury is feeding by overwintering adults in May, but damage at this time is usually not enough to cause alarm. The first generation of new adults emerges in late July and August, and feeding by larger numbers of beetles at this time can cause reduced growth

or plant death. The root feeding by larvae can also result in plant injury or death. In addition, root feeding opens entry sites for soil diseases such as *Rhizoctonia* and *Pythium*.

Strawberry growers should learn to recognize and scout for the strawberry rootworm. Scouting is best done at night with a flashlight. No threshold is established for this insect, but the literature suggests that a population of 10 to 20 beetles per square foot is considered high. A good reference for learning more about the strawberry rootworm (and other small fruit diseases and pests) is the *Midwest Small Fruit Pest Management Handbook*. Check with the SMSU Department of Fruit Science for ordering information.

Chemical control measures for strawberry rootworm are targeted for the adults. If damage is noted in May or June, an application of a registered insecticide will reduce the number of egg-laying females. Postharvest insecticide applications will help control the newly emerging adults in July and August. At present no insecticides are labeled for strawberry rootworm in Missouri. Applications of insecticides for control of other pests, such as leafroller, may give control of strawberry rootworm as well. Evening applications are most effective.

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