



## New Primocane-fruiting Blackberries Released

The University of Arkansas Division of Agriculture has recently released the world's first commercial blackberries that will produce both spring and fall crops.

Prime-Jim™ and Prime-Jan™ are the first primocane-fruiting (PF) commercial blackberry cultivars, the first in the Prime-Ark Primocane Fruiting Blackberry Series, and the 12th and 13th blackberry cultivars released from the University of Arkansas. These are being released for home-garden production and very limited commercial trial.

The floricanes of these varieties produce berries in early June. Then, unlike other blackberries, the primocanes on Prime-Jim and Prime-Jan flower and bear fruit in the mid- to late-summer and fall after the new cane has matured. The primocanes produce fruit beginning in mid-July and continuing until frost.

"Primocane fruiting opens all kinds of opportunities for creative growers," said John R. Clark, fruit breeder for the Arkansas Agricultural Experiment Station. "It allows blackberries to be grown in colder climates where the canes can't survive over winter. You can just mow them down in the winter and let the primocanes grow and produce berries the following year."

In more moderate climates, the plants produce two crops a year, extending the growing season. Producers can also schedule crops by keeping the canes cut down until they're ready to let them grow and begin fruiting.

Prime-Jim and Prime-Jan are named for Dr. James N. Moore, who founded the U of A fruit breeding program, and his wife, Janita. Dr. Moore directed the fruit breeding program for 33 years and began the work that led to the develop-



*Primocane-fruiting blackberries, developed at the University of Arkansas Division of Agriculture, offer two crops a year. These spring berries have ripened even as the plants bloom for the mid- to late-summer crop. Photo courtesy Arkansas Div. of Ag.*

ment of primocane-fruiting blackberries.

They are thorny varieties with floricanes averaging about 5 grams. The primocane berries are a little smaller in Arkansas. Like other thorny varieties, these blackberries do not store well for shipping and are most suitable for home gardens and on-farm sales.

The primocane berries are better suited for moderate climates and produce more consistent results in northern Arkansas than other parts of the state. "The hot summer temperatures in Arkansas can interfere with fruit-set," said Clark. "These first two primocane-fruiting blackberries give us a good starting point from which to develop varieties with better adaptation to Arkansas. We're continuing to breed these for better heat tolerance as well as for thornless plants."

Quite by accident, he discovered the primocane berries flourish in states with more moderate climates. In test

plots in Oregon, the University of Arkansas berries grew as big as 10 grams. "I couldn't believe the size of the berries they were growing on our plants in Oregon," Clark said.

Prime-Jim and Prime-Jan are available now to licensed propagators and will be available to nurseries in the fall.

### Notes on Characteristics

Data are from plants observed at Clarksville, Arkansas unless otherwise indicated.

**Bloom Dates:** Floricane (FC) 10% bloom date averages 21-24 April for both. Primocane (PC) bloom *first* bloom date averages 16-17 June for both.

IN Aurora, Oregon: Trial PC *first* bloom begins mid to late July for both. In Geneva, N.Y.: *first* PC bloom 25 July for both.

**Ripening Date:** FC crop average *first*

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# Mark Your Calendar!

The date of our 2005 conference is confirmed: NABGA will join the North American Strawberry Growers Association (NASGA) to meet in Nashville, Tennessee for the North American Berry Conference on February 16-19, 2005. We are pleased to be working with NASGA on this event – particularly since many people are members of both organizations – and look forward to the energy that the combined event will generate. Staff of both organizations are hard at work ironing out arrangements and responsibilities to make the conference run smoothly and successfully for everyone.

Here's the overall schedule: The conference will start with an opening reception on Wednesday evening, February 16. Thursday morning will focus on strawberry topics. Thursday afternoon, February 17, will have sessions of interest to both bramble and strawberry folks. Throughout Friday, February 18, topics of specific interest

to bramble growers will run concurrently with topics of interest to just strawberry growers and topics of interest to both groups. On Thursday evening, as in years past, NABGA will host a product-tasting event as a fundraiser for our Research Foundation. NABGA's annual membership meeting will be held during lunch on Friday. A trade show will run both Thursday and Friday and Saturday, February 19, will feature a tour of area farms. More information on the program will be in future newsletters and the registration brochure will be sent out toward the end of this year.

You'll be able to register for the whole conference, for just the Thursday-Friday portion that focuses on brambles, or even for a single day. A banquet on Thursday evening and the farm tour are optional, a la carte events. So....if you want to come for concentrated bramble topics, save just February 17-18 on your calendar; or come

for the whole event  
February 16-19!

## You Can Help

**Taste of the Berry Fields:** If you are interested in donating berry products from your farm (jams, jellies, wines, juices, etc.) for the tasting or in helping coordinate this event, please contact the NABGA office.

**Program:** Committees will be working on putting together the program for the conference in the upcoming months. If you have suggestions for sessions or speakers, or if you'd like to serve on a NABGA program committee, please contact the NABGA office soon!

**Exhibitors:** If your company would like to exhibit, or if you would like to suggest companies that we should be sure to invite to the Conference as exhibitors, please also contact the NABGA office.

### New Contact Info for NABGA

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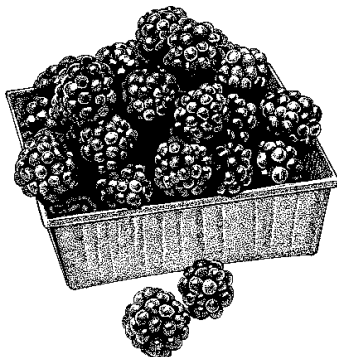
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## MEMBER PROFILE

### Sand Hill Berries

Sand Hill Berries, located in western Pennsylvania, is operated by Richard and Susan Lynn, Susan's sister, Amy Schilling, and Amy's husband, Robbie Schilling. When they bought the farm in 1986, it was a dairy farm that had laid idle for seven years. Now, it's grown to be one of the region's leading berry farms. Their small-fruit harvest season runs from mid-May into October, but the farm is a year-round business with many value-added products and an on-farm retail store and café. When asked about her family's farm, the first words out of Susan Lynn's mouth are, "We have a multi-faceted operation." As she describes Sand Hill Berries, she certainly proves the point.

Sand Hill Berries began with five acres of red raspberries and two acres of black raspberries. The farm currently has 31 acres in small fruits: red, black, and golden raspberries, blackberries, strawberries, currants, gooseberries, blueberries, and kiwiberries—plus apples and a few stone fruit. Sixteen of those acres are in raspberries, with four more coming on.

All the original raspberry plantings have been replaced with more recent



*Sand Hill Berries has both a store and a cafe at the farm.*

cultivars. "Our problem has been finding a late berry between summer and fall," says Susan. "Autumn Bliss comes on in early August and fruits over a long period, but is a little soft. Encore's time frame is excellent, but has had a lot of winter kill in the past three years in our area. We are trying Jaclyn to see if it is earlier and firmer than Autumn Bliss."

Berry harvest is accomplished by migrant laborers plus family and local teenagers and some mechanical harvesting. "The one thing we don't have is pick-your-own," says Susan. "We have the migrant labor, and the plants need to

be picked every day and our customer base is 30 minutes to an hour away. Liability is also a big issue."

Their primary product is pre-picked, pre-cooled raspberries, available at the farm store and farm markets, and during the peak season, at local and regional supermarkets.

Berries are packed in open half-pint pulp containers, covered on request. Current retail price is \$5.00/lb for black raspberries, \$4.25/lb. for all red raspberries, and \$3.50/lb for blackberries. Anything that does not get sold by the end of the day is either frozen for sale as "jam berries," packed in round plastic deli quarts, or used in their own processing. "We do a lot of processing right away," says Susan, "though sometimes we freeze for later." About 15 percent of fresh fruit goes to supermarkets and other wholesale buyers.

The farm's products include fruit pies, cakes, cheesecake, and cookies; fresh or frozen raspberry topping; syrups, raspberry cordial, vinaigrette, and various preserves. "We make over 20 products," says Susan. "All the preserves are in small, homemade batches of 5-8 jars. We do no private label; we make it all ourselves. One of our main jam-makers is my sister-in-law."

The farm sells fresh fruit and products in many venues. Besides sales at the farm, the farm is represented at five area farmers' markets a week. Sand Hills also sets up booths at half a

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*Pickers at Sand Hill Berries. The farm uses migrant and local labor and does no pick-your-own.*



## Sand Hill Berries

*Continued from previous page*

dozen festivals over the season, selling pie, cheesecake, cobblers, cookies, and ice cream, winding up the season with a fall festival at their own farm, featuring free sundaes to thank their customers.

They take orders for both fresh and value-added products and sell some of their products mail order through their web site. "We also do a lot of Christmas gift baskets and boxes," says Susan. "It is a great thing to tide us over the winter." A lot of these are in orders of 10-25 boxes, often for small corporate clients.

The Farm Store is open year-round and offers a variety of provisions including their own pantry goods, baked goods and more. Their outdoor "Cabin Café", open June through October, features ice cream and their homemade pies. It is a favorite destination for "ladies groups" who can arrange a package that includes a tour, lunch, and "the berry talk". The farm's history — the barn cornerstone is carved 1779—



*The Café at Sand Hill Berries is open June through October.*

and many French & Indian War connections are also of interest to visitors. An informal collection of farmyard animals— meat goats, sheep, horses, a llama, dogs, cats, and chickens add to the farm atmosphere as well. And for a few dollars, visitors can pick a bouquet of flowers to take home.

Visit Sand Hill Berries next time you are in the area or visit them now on the web at [www.sandhillberries.com](http://www.sandhillberries.com).\*

*The Member Profile will be a regular feature of the Bramble; please feel free to suggest farms to feature (including your own).*

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## RESEARCH REPORT

### Screening red raspberry cultivars for resistance to *Phytophthora* root rot

By Dr. Courtney Weber, Assistant Professor, and Jeremy Pattison, Ph.D. Candidate, Dept. of Horticultural Sciences, Cornell University

The main objective of this study was to determine the level of resistance to *Phytophthora* root rot of red raspberry cultivars and advanced selections that are commercially available or available for testing in North America and for which resistance levels have not been reported. The long-term objective in the Cornell University breeding program is to use this information to produce new raspberry cultivars with improved resistance to *Phytophthora* root rot.

*Phytophthora fragariae* var. *rubi* is the most prevalent pathogenic species on red raspberry and is found in nearly all temperate production regions of the world causing serious yield and plantation losses in the absence of control. An integrated management approach is recommended for controlling the disease, which employs cultural methods to ameliorate poorly drained soils, use of registered fungicides, and growing resistant cultivars. Growing resistant cultivars is the most effective means for avoiding economic losses from this disease, especially in regions with moderate to high rainfall and/or heavy, poorly drained soils.

Several cultivars possess high levels of resistance including 'Latham', 'Asker', 'Autumn Bliss', and 'Newburgh', although inferior horticultural traits or poor fruit quality relegate many of these to a minority of the planted acreage. Conversely, many commercially popular cultivars possess insufficient resistance and succumb to disease over time. 'Autumn Bliss', released in 1984 from the UK, is the most recent cultivar described possessing resistance equivalent to that of 'Latham', which has been considered a standard for *Phytophthora* root rot resistance for decades. Many newer

cultivars are currently available to growers, but studies describing the relative resistance to *Phytophthora* root rot among these cultivars are limited. Therefore, the objective of this study was to screen newly released cultivars and test selections for resistance to *Phytophthora* root rot using a growth chamber hydroponic assay developed at Cornell University that has been shown to produce results consistent with greenhouse and field studies.

Tissue cultured plugs of red raspberry cultivars (Table 1) were obtained from several nurseries and evaluated for resistance based on four characteristics: 1) plant disease index (Table 2); 2) root regeneration index (0 = crown and root tissue dead, 1= no to few new root production with healthy crown and older root tissue, 2= moderate new root production, 3= vigorous new root production); 3) stem lesion size (cm); and 4) incidence of petiole lesions. 'Latham', 'Boyne', and 'Killarney' were included in the study as resistant standards and 'Titan' as the susceptible standard.

Root rot was evident on all genotypes within 7 days following inoculation. Shoot symptoms such as, foliar chlorosis and wilting, were expressed

on 'Titan' approximately 10-15 days post inoculation. Resistant check cultivars, 'Latham' and 'Boyne', displayed initial necrosis of young feeder roots followed by healthy new root production. 'Killarney' showed a reduced ability to regenerate new root tissue, however, it maintained a symptom free stem, crown and older root tissue. As the screen progressed, new root tissue of the resistant cultivars remained healthy while continuing to be submerged within the infested nutrient solution. These results were consistent with previous experiments that have used both seedlings and other cultivars derived from tissue culture.

Cultivars possessing resistance equivalent to 'Latham' were 'Anne', 'Prelude', 'Nova', 'Boyne', 'Caroline', and NY258. Ranking of these cultivars varied little based on the different criteria measuring resistance (Table 3). Susceptible cultivars included 'Dinkum', 'Cowichan', BC89-2-89, 'Autumn Byrd', 'Encore', 'Lauren', 'Polana', and NY283. Based on results from this study, cut-off values for resistance were identified for the different criteria used to evaluate the red raspberry genotypes. Resistant cultivars

*Continued on next page*

**Table 1. Cultivars and advanced selections tested in hydroponic culture for *Phytophthora* root rot resistance using 2 isolates of *Phytophthora fragariae* var. *rubi*.**

Cultivar Name	Original Source	Fruiting Type
Anne	Maryland	Primocane
Autumn Byrd	United Kingdom	Primocane
BC89-289	British Columbia, Canada	Primocane
Boyne	Manitoba, Canada	Florican
Caroline	Maryland	Primocane
Cowichan	British Columbia, Canada	Primocane
Dinkum	Australia	Primocane
Encore	New York	Florican
Josephine	Maryland	Primocane
Killarney	Manitoba, Canada	Florican
Latham	Minnesota	Florican
Lauren	Maryland	Florican
Nova	Nova Scotia, Canada	Florican
NY 258	New York	Florican
NY283	New York	Florican
Polana	Poland	Primocane
Prelude	New York	Primocane/Florican
Titan	New York	Florican

## Research Report

*Continued from previous page*

had values =3 for the plant disease index, a root regeneration score of = 1, an absence of stem lesions, and less than 50% incidence of petiole lesions.

Although no results are published for most of the cultivars used in this study, 'Nova' has been described as a susceptible genotype in nursery catalogs. However, in this study 'Nova' possessed resistance equivalent to the resistant standards as well as other cultivars including 'Prelude' and 'Caroline', which have been observed to possess field resistance to *Phytophthora* root rot in variety trials at Geneva, N.Y. It is possible that other species of *Phytophthora* or other disease organisms are able to colonize and cause similar disease symptoms on 'Nova' resulting in this apparent contradiction.

As a general recommendation to growers and breeders, 'Prelude' and 'Caroline' have high levels of root rot resistance and acceptable horticultural traits for the red raspberry industry. 'Anne' similarly showed high levels of resistance, however, under field conditions at Geneva, N.Y., plant stands tended to be thin and unproductive possibly due to poor winter hardiness and low production of root suckers. 'Josephine', a sibling to 'Anne', showed similar levels of resistance although one plant displayed a stem lesion, which in the other cultivars was indicative of susceptibility. Based on all the scored criteria, 'Josephine' is classified as possessing moderate to high levels of resistance. This cultivar is untested in Geneva, N.Y. so field observations on fruit quality and stand characteristics are unknown.

Based on field observations and the controlled testing, raspberry populations have been produced in the Cornell University breeding program that should yield individuals with superior root rot resistance. Resistance cultivars from this study that have been used for breeding include 'Caroline', 'Prelude', 'Nova', 'Killarney', and 'Boyne'. Individuals that combine this resistance with superior fruit qualities and growth

**Table 2. Plant disease index for assessing susceptibility of red raspberry genotypes following inoculation with *Phytophthora fragariae* var. *rubi*.**

Score	Symptoms
0	No root rot, no shoot symptoms
1	Slight root rot, no shoot symptoms
2	Slight root rot, slight shoot symptoms
3	Moderate root rot, moderate shoot symptoms
4	Severe root rot and shoot symptoms with some living crown tissue
5	Death of the perennial crown

**Table 3. Response of red raspberry cultivars with respect to the different criteria used to evaluate the relative susceptibility to *Phytophthora fragariae* var. *rubi*.**

Cultivar	Plant disease (1-4)	Root regeneration (1-4)	Stem lesions (cm)	Petiole lesions (%)
Prelude	1.0	2.8	0	15
Anne	1.5	2.8	0	13
Latham	1.6	2.4	0	20
Nova	1.8	2.1	0	33
Josephine	2.0	2.0	0.75	25
Boyne	2.3	2.0	0	19
Caroline	2.3	2.0	0	19
NY258	2.3	1.5	0	23
Killarney	2.6	1.4	0	20
Dinkum	4.3	0.75	9.6	64
Cowichan	4.3	0.25	6.0	55
BC89-2-89	4.3	0.25	3.8	58
Autumn Byrd	4.3	0	3.5	67
Encore	4.4	0.5	6.0	59
Titan	4.4	0	3.9	78
Lauren	4.6	0	4.6	79
Polana	4.6	0.25	17.0	79
NY283	4.8	0	8.0	83

characteristics will be selected for further testing.

The authors would like to thank the North American Bramble Growers Association for generously providing the funding for this study. The information gained can be used by growers to choose the best cultivars for their operations and by raspberry breeders for developing cultivars with improved *Phytophthora* root rot resistance.✻

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Each research project funded by the NABG Research Foundation submits a progress report to the Foundation at the end of the year. This report was received in December 2003 for a project funded in February of that year. Reports on the other projects will be printed in the *Bramble* over the course of the year.

# Raspberry Nutrient Management

By William G. Lord UNH Cooperative Extension

Work by Darrow as early as 1930 established a positive relationship between cane and plant vigor and yield. Cane size (diameter and length) and leaf weight are excellent measures of the productive capacity of a raspberry plant. Most research suggests that it is the physical nature of a soil (that it is well drained and friable) that most affects raspberry productivity. Cane growth, and hence yield, is most affected by root growth, and root growth is most affected by soil drainage. Additionally, soils rich in organic matter are correlated with good plant vigor and yield.

Raspberries grow well over a relatively wide soil pH range, but general recommendations suggest a pH from 5.5 to 6.5 as acceptable. As soil pH nears 7.0, availability of essential metal such as zinc and iron becomes limiting and leaf chlorosis is common. 6.0 is the generally recommended minimum target.

A proper pre-plant soil preparation regime is an essential first step to managing raspberry cane nutrients and vigor. Selecting that well-drained sandy loam, adjusting pH to appropriate levels, and incorporating cover crops are key parts of the process. Of course, a soil test is essential. Once the planting is established, take the soil for testing from within plant rows rather than aisles. Use cover crops to correct soil nutrient deficiencies before planting.

Nitrogen is the one nutrient that will generally be applied on an annual basis. How much to apply is based on plant growth and yield, but generally up to 30 pounds of actual nitrogen per acre will be applied in the planting year and mature plantings will require up to 50 to 60 pounds per acre to insure adequate cane growth.

Fall fruiting raspberries may need up to 75 pounds to maintain vigor. Over application of nitrogen does carry some risk. Excessively vigorous plants will not harden well in fall, increasing the

risk of winter injury. In addition, plants will have fewer berries per cane if they are growing too vigorously. There are potential pest management implications as well – plants higher in nitrogen seem to support much higher populations of 2-spotted spider mites.

Nitrogen is applied in early spring – perhaps April into early May in Durham. Later application may lead to increased winter injury risk. For fall fruiting types, this risk of winter injury is not important, but late applications may delay harvest in the fall. Phosphorous is rarely needed when raspberries are planted into land that has been used for vegetable production assuming soil pH is between 6 and 6.5 and soil organic matter levels are relatively high.

Phosphorous applications of up to 50 lb P2O5 per acre may be recommended if soil levels are low and/or soil pH is above 7.0. Raspberries will rarely show a response to annual phosphorous applications. Excessive phosphorous levels may suppress uptake of essential nutrients including zinc.

Potassium (potash) is the other macro nutrient commonly applied to raspberries. There is conflicting data on whether potassium chloride (muriate of potash 0-0-60) poses a risk of root injury from the chloride ion for raspberry. In general, on sandy soils, the use of potassium sulfate (0-0-50) or sulfate of potash magnesia (0-0-22) is recommended. How much potassium to apply should be based on soil test, or better yet, tissue analysis. If levels are low, up to 90 lb K2O per acre are applied. If levels are high, none would be recommended.

Minor elements that may be limiting in some soils include boron, iron, and zinc. The easiest way to manage

these is by maintaining the appropriate soil pH. As the soil pH level rises, availability of these elements is greatly reduced – deficiency is likely if pH is much above 6.6. Applications of boron may be warranted in extreme cases – be sure to apply only based on tissue analysis. Zinc and iron deficiency should always be managed by maintaining the appropriate soil pH.

What should I buy for fertilizers? The use of a blended fertilizer such as 15-15-15 is rarely a good choice since for most plantings, excessive phosphorous will be applied. This is not only wasteful and expensive, it is not sound environmentally. Ammonium nitrate (32.5-0-0) is the most common nitrogen source used although calcium nitrate (15.5-0-0) and nitrate of soda (16-0-0) are widely used as well and offer immediate nitrogen availability for the crop. When K is needed, sulfate of potash (0-0-50) or sulfate of potash-magnesia (0-0-22 plus 11 Mg) are both good choices. If phosphorous is needed, triple super phosphate (0-45-0) or bone meal (2-24-0) are both readily available. Tissue analysis should be an at least every 3rd year addition to your regular soil testing program.\*

*Source: 2003 New England Vegetable & Berry Conference Proceedings. Reprinted from Berry Notes (May 17, 2004, Vol. 16, No 17), edited by Sonia Schloeman, UMass Extension*

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## Primocane-fruiting Blackberries

*Continued from front page*

ripe 8-12 June for Prime-Jan, 3-10 June for Prime-Jim (average same as Arapaho for Prime-Jim, 3 days later than Arapaho for Prime-Jan).

PC crop *first* ripe 17-18 July for both. Plants continue to fruit until frost, although much poorer in this trait at Hope (south Arkansas) and much better in Fayetteville (north Arkansas); see later comments on fruiting.

In Aurora, Oregon: PC crop *first* ripe 1 Sept and continues to flower and fruit heavily until frost. In Geneva, NY: PC crop first ripe date early Sept.

**Fruit Yield:** FC yields variable from more than, similar to, and less than that of all florican-fruiting cultivars depending on year; thus FC crop potential is very substantial. Yields 5,000–12,000 lb/acre for Prime-Jan and 5,000–13,000 lb/acre for Prime-Jim, depending on year and location.

PC yield varies greatly by location; poor yields (200–500 lb/acre) at Hope; higher at Clarksville with 2,000–3,000 lb/acre; Prime-Jan higher yielding on PCs in most trials compared to Prime-Jim.

In Aurora, Oregon: PC yield of 1,500–18,000 lb/acre for Prime-Jim; 3,800–16,000 lb/acre for Prime-Jan; yield varies depending on plant age and year; all harvests were terminated with flowers and fruit on plants that were not included in these yields so yields could exceed these if allowed to fruit longer or plants protected from cold temperatures (using high tunnels).

**Fruit Size:** FC average for Prime-Jan of 5.1 g and Prime-Jim 4.9 (range average for both of 4–6 g across years).

PC size varies by location and year in Arkansas; 3–5 g average for year at Hope and Clarksville; in Fayetteville in 2003 early August, Prime-Jan had berries up to 15 g and Prime-Jim up to 8.5 g.

At Aurora, Oregon: PC size 8–10 g for Prime-Jan, 10 g for Prime-Jim.

**Fruit Quality:** Fruit flavor ratings comparable on both (average 7.2 on a

10-point scale, slightly lower than Arapaho); soluble solids average 9.6% for Prime-Jan, 7.9% for Prime-Jim for FC fruit.

Post-harvest evaluations of FC fruit indicated quality much like other thorny cultivars and not as good storage potential as the thornless cultivars. *Neither Prime-Jan nor Prime-Jim are recommended for shipping.*

PC fruit quality is often poor when ripening with temperatures over 90° F (32° C); double fruits seen on high-heat development berries also. Five to 8 successive days of 85° F (30° C) and above appear to hamper fruit set and subsequent quality.

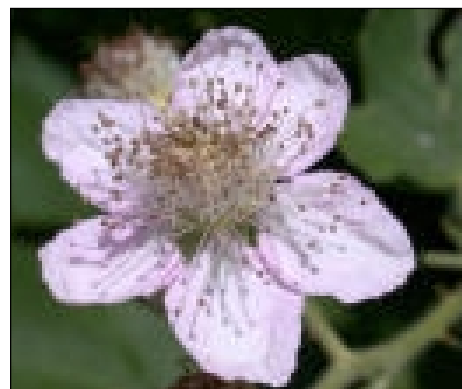
Seed weight (dry) 3.2 mg for Prime-Jan, 2.1 mg for Prime-Jim (compared to 3.9 g for Ouachita, 2.9 g for Arapaho).

**Plant/Cane Characteristics:** Both cultivars are thorny. Canes are erect and both cultivars can be grown in a hedgerow with tipping of canes (tipping recommendations not made at this time); Prime-Jim somewhat more erect than Prime-Jan.

Plant health is good for both cultivars; no foliar diseases seen; Prime-Jim is generally more vigorous than Prime-Jan.

FC mid-winter hardiness good to at least 10°F (–12°C), the lowest winter low exposed to in Clarksville for both; spring freeze of 8°F (13°C) on 3 March 2002 damaged buds and canes of FCs, with Prime-Jan damaged much more severely than Prime-Jim, therefore Prime-Jim may be hardier.

**Pest Resistance:** No orange rust observed on any plants. Mostly resistant to



anthracnose with fruit infections very rare except under high rainfall conditions. Double blossom/rosette observed on FC of both at Poplarville, Miss; PC crop should not be affected by double blossom/rosette, however.

**Root Cutting Sprouting:** Root cutting sprouting good, 80–100% and similar to other thorny cultivars.

**Chilling Requirement:** Chilling requirement for FC appears to be very low for both (possibly 100-300 hours below 45°F but not fully verified); PC no chilling requirement.

**Cane Management:** In Arkansas studies, PC crop was not affected by allowing FC crop to develop, but this effect may differ in other locations; therefore no detrimental effects have been seen from allowing crops on both cane types in the same growing season.

**Miscellaneous:** Parentage of Prime-Jan is Ark.1836 x Arapaho and Prime-Jim is Arapaho x Ark. 830. A single application of liquid lime sulfur was the only fungicide applied to plants in any trials. Original plants selected in September, 1997.

**Plant Availability:** Licensed nurseries will be allowed first access to tissue-cultured, virus-tested nursery stock in spring/early summer from Sakuma Brothers Farms and Cedar Valley Nursery. It is anticipated that initial sales of limited quantities of plants to the general public will be possible in summer, 2004. ❁

*Information for this article came from a University of Arkansas news release by Fred Miller, on the web at <http://www.uark.edu/depts/agripub/Publications/Agnews/agnews04>. The notes on variety characteristics were supplied by Dr. John Clark and are authored by John R. Clark, James N. Moore and Jose Lopez-Medina.*

More information about Arkansas blackberry varieties, including a list of licensed propagators, may be found on the web at:  
[www.aragriculture.org/horticulture/fruits\\_nuts/Blackberries/default.asp](http://www.aragriculture.org/horticulture/fruits_nuts/Blackberries/default.asp)



## Raspberry Weed Management

By Courtney Weber, Cornell University

A combined approach using chemical controls, cultural practices, and selective hand weeding can be used to effectively manage weeds in raspberry. Herbicides provide good overall control of most weeds. The key to successful chemical control is a vigorous, healthy stand of canes to crowd out competing weeds within rows. Between row control can be managed using a cover crop with herbicide banding to limit spreading, mulches, cultivation, or broad-spectrum herbicide application.

Chemical control is most effective in combination with the establishment of a vigorous stand of canes. In the establishment year, care must be taken to eliminate perennial weeds such as Canadian thistle and field bindweed with a broad-spectrum herbicide such as glyphosate (RoundUp) before planting because these weeds can spread from root pieces moved during cultivation. Once established in a planting, they are very difficult to control.

After planting, a preemergent herbicide such as napropamide (Devrinol) should be applied to eliminate germinating weed seeds. Be aware that tissue culture plugs and young canes can show increased sensitivity to many herbicides until they are well established and reduced rates may be needed. Shallow cultivation is also recommended in the establishment year to eliminate young weeds while allowing the new canes to develop. Deep cultivation is not recommended as it can damage the root systems and turn up new weed seed that would not be controlled by the preemergent herbicide. Turf can be seeded between rows late in the summer to crowd out weeds and can be managed successfully by banding with a grass herbicide along the rows as the planting matures. Mulches within the rows as well as in row centers can be used to keep weeds down but care should be taken to maintain soil fertility. Also, in less than

*Continued on back page*

## BOOK REVIEW

### *A New Berry Book, Ready for Picking*

*The Berry Bible*, by Janie Hibler.

Published 2004 by Morrow Cookbooks. 352 pages, hardcover. Lists for \$29.95, but substantial discounts available online. ISBN: 0060085487.

Award-winning cookbook author Janie Hibler is from Portland, Oregon. Hibler, who has worked closely with the Oregon Raspberry and Blackberry Commission to promote Oregon berries, tells in an article in *Berry Commissions News*

(Spring 2004) about writing the book: "Picking and eating wild berries were one of the joys of my childhood. But it wasn't until I moved to Oregon many years later that I discovered the extent of commercially raised berries in the Pacific Northwest." She began writing the book in 1991, traveling "to Alaska, Washington, Main, Massachusetts, California, Minnesota, and Europe to do research...the more I learned, the more I realized what a huge subject this was, making it necessary to include an encyclopedic listing of the major berries."

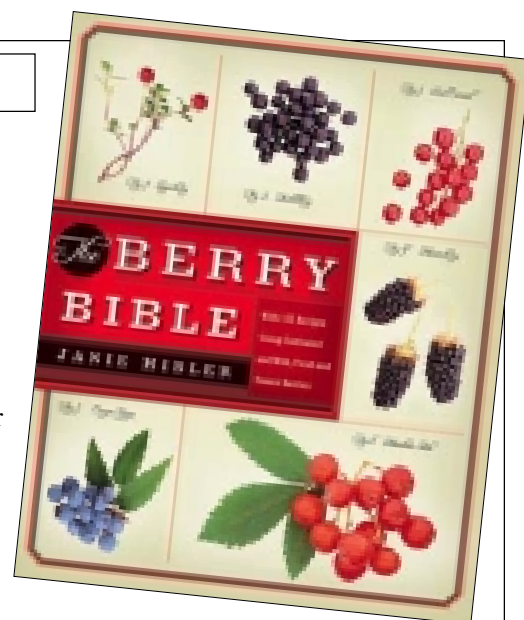
*The Berry Bible's* encyclopedia of 41 berries includes not just the major berries like strawberries, raspberries, blackberries, and blueberries and their variants, but also many little known ones, stretching to even include sumac and chokecherries, sometimes used like berries. The listings include nomenclature, history, habitat, major cultivars, and advice on picking, buying, storing, and cooking. There are 68 full color photos to help you identify the berries.

One section covers the "Berry Basics." Explains Hibler, "This chapter is an accumulation of knowledge that I gained throughout the last two years of intensely working with berries in my kitchen. I list tips on berry measurements, freezing, making purees, drying berries, and even how to get rid of berry stains."

Two-thirds of *The Berry Bible* is a collection of 175 berry recipes from soup to dessert, along with fascinating tidbits of berry lore. You'll be inspired to breakfast with Morning Glory Muffins with Blackberries or Brioche French Toast with Sautéed Berries. How about Mango-Raspberry Soup or Chilled Blackberry—Lime Soup? Even if you never have time to cook, you can share the excellent recipes with your customers! Most recipes are quite elegant, but then there's "Grandma's Raspberry Sandwiches: ...Apply a thin spread of cream cheese to the bread, add a handful of fresh picked raspberries and press the sandwich together for a lunch that will make you laugh." The book also includes information on making berry preserves, jams, pickles, syrups, and toppings as well as a list of websites for ordering berries, berry products, and finding berry information.

*The Berry Bible* is an excellent resource for your own bookshelf as well as an item that you may want to carry in your retail store for customers who are serious about their berries. The book is available from bookstores and on-line booksellers and bulk discounts are no doubt available as well.

Catch author Janie Hibler discussing this book on the CBS Early Morning Show on July 13th. Note that you'll recognize several names associated with NABGA in the book's acknowledgements!



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## Weed Management

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optimally drained soils or when growing root rot susceptible varieties, mulches can retain excess moisture and exacerbate root rot problems. Bare ground can also be maintained between rows with shallow cultivation, mowing, and/or broad-spectrum herbicides, but erosion can be a problem. However, special care must be taken to avoid disturbing the raspberry roots with the cultivator, to avoid weed seed development through regular mowing, and to avoid spray drift onto the raspberries when maintaining alleyways.

In established plantings, much of the chemical control is done in the fall or in the spring before bud break. By late spring, chemical control is limited to sethoxydim (Poast) for grass control.

Be aware that Poast has a 45 days-to-harvest period in raspberry and by late spring may not be suitable for early season varieties that can fruit in June such as Prelude, Killarney, and Reveille. Spot treatments of glyphosate with a wick applicator can be used to treat problem weeds making sure to avoid contact with the raspberries. This herbicide will translocate and kill not only the cane touched but also ones connected by the roots and can be spread not only by the applicator but by treated weeds blowing into the canes while still wet. A well-thought out herbicide program combined with timely mowing and selective hand weeding is an effective integrated approach to raspberry weed control and can be used to successfully manage weed pests for maximum yields and profits.✿

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