



THE BRAMBLE

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WINTER 2019-2020

THE NEWSLETTER OF THE NORTH AMERICAN RASPBERRY & BLACKBERRY ASSOCIATION, INC.

An Important Survey for Blackberry Growers and Other Blackberry Industry Stakeholders

U.S. blackberry growers and related industry professionals (nurseries, supplies, shippers, marketers, industry associations etc.) are invited to participate in a short, 10-minute survey to learn more about the current status and needs of the U.S. blackberry industry. The data from this survey will help determine priorities for future research and breeding efforts.

Participants who complete the survey before February 1, 2020 can choose to participate in a random drawing of three Amazon gift cards (one valued at \$50 and two at \$25) that will be held at the end of the survey.

Find the survey here: https://uaex.co1.qualtrics.com/jfe/form/SV_6IG17QzdNt99qVT. If you would rather not type all those letters, go to the NARBA website and click on the article about it at the bottom of the home page.

This survey is funded by a USDA-NIFA Specialty Crops Research Initiative (SCRI) planning project that seeks to

- 1) assess national blackberry production, identify challenges, and predict future trends and

- 2) engage stakeholders from diverse production regions to identify priorities for breeding, research, and extension.

A report of survey results has been scheduled for the NARBA conference program. This survey will inform a meeting of project leaders and invited stakeholders that will be held at the close of our conference on March 6-7.

Project leader Margaret Worthington requests *YOUR* help in getting the word out about the survey. Share that link! And if you'd like printed surveys to give out to people or to take to a meeting between now and February 1, please contact her at mlworthi@uark.edu or 479-575-2122. Both English and Spanish versions of this survey are available on paper. ❁



Registration Is Now Open

for our North American Raspberry & Blackberry Conference, March 3-6, 2020 in St. Louis!

Find detailed information and a registration form on pages 13-15 of this newsletter. Visit the conference page on our website to access online registration, make online hotel reservations, and find additional details about the conference.

Outbreak Investigation of Hepatitis A Potentially Linked to Fresh Blackberries

The information below is from an FDA Alert, December 10, 2019. The berries were sold between Sept 9-30, and the source of the berries has not been identified. The fresh berries have been out of the stores for a while; the only new risk is to consumers who may have frozen berries for future use. However, more patients may be identified because it can take 50 days or more after exposure for hepatitis symptoms to develop. This is not an event that is receiving wide news coverage, and NARBA, the Oregon Raspberry & Blackberry Commission, and others continue to monitor it. This incident is a reminder, however, of how important food safety practices are, that berries, because they are often eaten raw and difficult to wash, carry more risk than some other kinds of produce, and that everyone in the industry is vulnerable when incidents involving caneberries occur.

"The U.S. Food and Drug Administration (FDA), along with the Centers for Disease Control and Prevention (CDC), and state and local partners, are investigating a multi-state outbreak of hepatitis A illnesses in Indiana, Michigan, Minnesota, Missouri, Nebraska, and Wisconsin potentially linked to fresh, conventional (non-organic) blackberries from the grocery stores Fresh Thyme Farmers Market and Woodman's Market.

On December 10, 2019, CDC updated their case counts to 18 illnesses, with the most recent illness onset date on November 15, 2019.

"Based on the epidemiological information collected in the investigation thus far, ill patients reported consuming fresh, conventional blackberries bought in six states including Indiana, Michigan, Minnesota, Missouri, Nebraska, and Wisconsin. Case patients reported buying them from either Fresh Thyme Farmers Market or Woodman's Market.

Currently, traceback information shows that the berries from Fresh Thyme Farmers Market came from a distribution center that ships fresh berries to Fresh Thyme Farmers Market stores in 11 states: IA, IL, IN, KY, MI, MO, MN, NE, OH, PA, and WI. As this investigation continues, the FDA will work with our federal and state partners to obtain additional information, including for Woodman's Market, during the traceback investigation and will update this advisory as more information becomes available."

The FDA is urging consumers who purchased the fresh blackberries and then froze those berries for later consumption not to eat these berries. They should be thrown away. Find the full FDA alert from this page: www.fda.gov/food/recalls-outbreaks-emergencies/outbreaks-foodborne-illness ❁

A breakout session titled "Bacteria, Viruses, Parasites: Key takeaways from past outbreaks to reduce food safety risks in caneberries" will be held at our conference on March 6.



The **BRAMBLE** is a quarterly publication of the North American Raspberry & Blackberry Association (NARBA), and is a benefit of membership in the association. For membership information, a sample copy, reprint permission, and advertising rates, contact

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EVENTS

* *NARBA events or NARBA involvement*

January 5-7, 2020 – Kentucky Fruit & Vegetable Conference, in Lexington, KY. Several sessions focus on small fruits including raspberries and blackberries. For more information, visit <https://kyhortcouncil.org/2020kyfruitandvegconf/>.

* **January 9-11, 2020 – Southeast Regional Fruit & Vegetable Conference**, Savannah, GA. A full track of caneberry sessions January 9-10 is coordinated by NARBA. A special “Fundamentals of Blackberry Production Workshop is being offered on the morning of January 9. Learn more and register at <https://seregionalconference.org>.

January 29-30, 2020 – Northwestern Vegetable & Berry Farmers Conference, Clackamas, Oregon. Find more information here: <https://nwhortsoc.com/>

* **March 3-6, 2020: North American Raspberry & Blackberry Conference**, Chase Park Plaza Hotel, St. Louis, Mis-

Briefly Speaking...

Greetings from St. Louis! As we prepare for the NARBA 2020 conference I become more and more excited to play host to berry growers from all over North America. The conference committee has put together a great program, and the tour will be both educational and entertaining.

The tour will be stopping at North Bay Produce to see their state-of-the art importing and redistribution center. It is hard to believe how many pounds of berries pass through this facility each year. The Danforth Plant and Science Center is a cutting-edge research facility that few people get to see. Debby had to push them pretty hard to get them to open their doors to such a large group. Of course, my family is honored to open our farm to NARBA. We will be able to see our ten-acre swing-arm trellis system and our retail and entertainment facilities. And a trip to St Louis would not be complete without a stop at the world’s largest brewery, Anheuser Busch. We are guaranteed to learn much and have plenty of fun.

As farmers, we are always aware of the change of seasons and weather, but I always am surprised when the end of the year approaches. 2019 has been a year of ups and down, fortunately more ups than downs. Weather continues to challenge our farming practices. As I talk with other growers around the country, I hear the same frustration. It appears none of us know what “normal” means anymore. Here, we are getting two to three 100-year rain events a year, false springs, late frosts, severe fall cold snaps, drought, and so on. How do we care for our crops when we don’t know what to anticipate from Mother Nature?

Climate change will be one of the key topics of our conference in March. I am looking forward to listening to the scientists’ perspectives on weather patterns and how that may impact agriculture in the years to come. More importantly, I look forward to talking with other growers about their experiences and results. I believe this is the most valuable aspect of our annual conference: learning from each other and developing a network of friends and growers from all over the continent.

So, “Meet Me in St Louis” this March. We will be staying at the historic Chase Park Plaza hotel, located across the street from Forest Park. Forest Park is one of the nation’s largest public parks at over 1200 acres. It was the site of the 1904 World’s Fair and is where the St Louis Zoo, St Louis Art Museum and Missouri History Museum are all located. Most of these attractions in the park are free admission. The Central West End neighborhood where the hotel is located is also full of great restaurants and shops. Just a short Uber ride away is the Delmar Loop, which is another great food and shopping district with an awesome live music scene. And, of course, we have the Arch and Jefferson National Expansion Museum on the riverfront.

I look forward to seeing all of you in St Louis in March, meeting new friends, and sharing my hometown with you all.

*Chris Eckert
 Eckert Farms, Belleville, IL
 NARBA Executive Council Region 6 Representative*



souri. Well, yes! See pages 13-15 of this newsletter or visit the conference page on our website.

Visit www.raspberryblackberry.com for our most up-to-date list of events. To have events of interest to our members or the public listed, contact the NARBA office.



Join our “NARBA Connect” members-only Facebook group!

NARBA NEWS

NABG Research Foundation Priorities Updated

The NARBA Executive Council and NABGRF Research Committee have completed a process of reviewing the Priorities in the Request for Proposals. This year, several from this rather extensive list of priorities listed have been identified as high priority. In the area of Pest Management Strategies, these are:

- Evaluation of new pesticides (insecticides, fungicides and herbicides, including biological pesticides) for blackberry and raspberry production

- Management of spotted wing drosophila (SWD)
 - Non-chemical strategies for pest control
- In the area of Production Efficiency and Profitability, the high priority topics are:
- Pruning and training systems to improve production
 - Management systems that reduce labor inputs
 - Management of blackberry red drupelet reversion

See the full list at www.raspberryblackberry.com/research-foundation/request-for-proposals/. All caneberry proposals will be considered, including topics not on this list. **The deadline for submissions is January 15, 2020.** ✨

It's time to renew your NARBA membership for 2020!

It's easy:

- Use the conference registration form on page 15 – even if you are not going to be able to attend.
- Renew online at www.raspberryblackberry.com/2547-2/
- Simply call the NARBA office at 919-542-4037 to renew by phone.

Your prompt renewal saves NARBA both time and expense. Thank you!

Seeking Nominations

Distinguished Service Award: Each year NARBA gives one (or sometimes two) awards to recognize outstanding service to the caneberry industry. Recipients can be growers, research and extension, companies, or others who have made a difference. We often try to give the award to someone in the general region where the conference is being held. You can find the list of past award recipients at www.raspberryblackberry.com/about-narba. If you would like to nominate a deserving individual or company for this award, please contact an Executive Council member or the NARBA office.

Executive Council: Elections for four seats in NARBA's Executive Council (its Board of Directors) will be held at our annual meeting on March 5 at the conference in St. Louis. The open seats will be:

- Region 1 (Canada)
- Region 7 (West)
- At-Large

See the list of current EC members on the back page of the newsletter to see exactly what states each region includes. The At-Large seat that will be open is currently held by Richard Barnes.

The EC sets policies and directions for NARBA and provides oversight to its activities and finances. EC members have 4-5 meetings by phone and one face-to-face meeting at the conference each year. If you are interested in nominating someone to any of these seats – including volunteering yourself – please contact any current member of the EC or the NARBA office.



Deck the Halls with Blackberries and Raspberries

✨ Make a gift of membership

Membership is a thoughtful gift with year-long benefits in information and networking for any grower, extension agent, colleague, or student working with or interested in caneberries. NARBA offers gift memberships for only \$35 each (an introductory membership is usually \$50). NARBA will send out a gift card on your behalf or provide you with cards that you can give or send to your recipients. Use the online Gift Membership form at www.raspberryblackberry.com/giftmemb/ or simply contact the NARBA office by phone or email.

✨ Make a gift of information

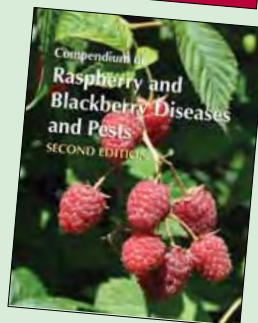
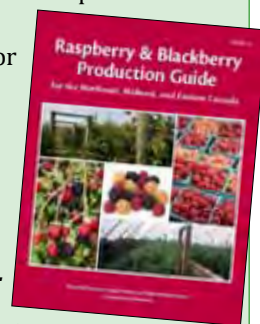
We have a few copies of some very useful books for sale, with special member prices that are lower than prices you will find anywhere else. Contact NARBA to order.

Compendium of Raspberry & Blackberry Diseases and Pests. Just ONE copy available, left from a bulk order we did a couple of years ago. \$175 (includes media mail shipping); it's \$189 from other sources.

Raspberry & Blackberry Production Guide for the Northeast Midwest and Eastern Canada. Four copies available. NARBA has provided copies of this book to many people over the years; folks in other regions find it useful, too. \$35 to members (includes media mail shipping).

✨ Give to support research

As you make your year-end giving plans, consider including the North American Bramble Growers Research Foundation among your charitable gifts. You will be helping to grow success and sustainability in caneberries and to bring more healthful, delicious raspberries and blackberries to consumers! 100% of your donation goes to research, and all donations are tax deductible. Send a check to NABGRF (197 Spring Creek Rd., Pittsboro, NC 27312) or donate online at www.raspberryblackberry.com/research-foundation/





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Winter Caneberry Chores

This list was developed by Dr. Gina Fernandez, Small Fruit Specialist at NC State University and is also reviewed by Dr. Marvin Pritts at Cornell. Chores and timing may be somewhat different in your area or for your cropping system. For recommendations for the Pacific Northwest, we encourage you to subscribe to the email "Small Fruit Update" www.nwberrystation.org/SFUsignup.html

Plant growth and development

- Plant is "dormant" and accumulating chilling hours.
- Some differentiation may be occurring in the flower buds.
- Monitor chilling accumulation in your area, fall and winter accumulation of chilling can result in budbreak of low chilling cultivars during "January" thaws.

Pruning and trellising

- Pruning should occur in late winter or early spring. Ice storms can do tremendous damage to plants and trellis systems. If you produce blackberries in areas where ice storms are common, pruning can take place early winter to help avoid severe damage. Wait until early spring to prune floricanes raspberries so winter injured wood can be removed.
- Make trellis repairs after plants have defoliated but before pruning and training

Primocane fruiting raspberries

- Prune (mow) primocane fruiting types to the ground

Floricanes-fruiting raspberries

- Prune out the spent floricanes
- Tie canes to wires so they are spread out
- Cut any lateral branches back to 6"
- Thin canes to 6-8 / hill (3' spacing) or 3-4 canes per linear ft. of row

Erect blackberry types

- Prune out the spent floricanes
- Tie canes to wires in a fan shape
- Cut lateral branches back to 8-12"
- Thin canes to 6-8 canes/hill (4' spacing)

Trailing blackberry types

- Prune out spent floricanes
- Tie or weave canes to wire so that they do not overlap

- Prune side laterals to 12-18"
- Thin canes to 6-8/ hill (6-8' spacing)

Weed control

- Many summer weed problems can best be managed in the fall and winter using preemergent herbicides. Determine what weeds have been or could be a problem in your area. Check with local extension agent for cultural or chemical means to control these weeds.
- Establishing new blackberry or black raspberry plants into rows of black plastic or landscape cloth can reduce weed problems significantly. For red raspberries, straw mulch works best since new canes will emerge within the row, and must be able to push through the mulch. Some growers are having success with biodegradable mulch to suppress weeds the year of planting.

Insect and disease scouting

- Scout fields for insect and disease damage and remove those canes.
- If possible, remove by the roots any wild brambles that are within 600 ft. of your planting during the winter, or treat them with glyphosphate in autumn
- Apply liquid lime sulfur to dormant canes just prior to bud break for disease control

Planting

- Growers in warmer areas can plant in December. In northern areas, set dormant plants in spring when the soil thaws.
- Take soil tests to determine fertility needs one year before planting. Amend the soil in the fall prior to spring planting.
- Prepare your list of cultivars for next year's new plantings. NARBA's nursery list was in the Autumn newsletter; find it also at www.raspberrylblackberry.com/for-growers/. For a comprehensive small fruit nursery list, see <https://blogs.cornell.edu/berrynurseries/>.

Water management

- Make repairs to irrigation system (check pumps, lines, etc)
- Plants generally do not need supplemental water in winter unless they are being grown in a tunnel.

High tunnel management

- Make sure tunnels are ventilated to ensure that temperatures do not get too high on sunny days
- For three-season tunnels, remove

tunnel plastic to allow winter rains to flush nutrients that may have accumulated and to add moisture

Marketing and miscellaneous

- Order containers for next season
- Make contacts for selling fruit next season
- Plan on attending state/regional grower meetings this winter – and register now for the NARBA conference!

Oh, Deer!

The University of Arkansas has recently published a new 6-page brochure on "Electric Fence Designs for Deterring White-tailed Deer". Find it online here: www.uaex.edu/publications/FSA9111.pdf. There is also an accompanying video: <https://www.youtube.com/watch?v=GvIcPOshgic&feature=youtu.be> (or simply search YouTube for the brochure title).

New Naturipe Raspberry

Naturipe Farms recently introduced a new red raspberry variety named Pacific Centennial™. This jumbo raspberry was developed by NARBA member Pacific Berry Breeding (Ellen Thompson). The Pacific Berry Breeding program was established by Naturipe Berry Growers in 2003 and is now part of Hortifrut, another grower/owner of Naturipe Farms.

The Last Harvest: A New Documentary Film

The Last Harvest was produced by Driscoll's in partnership with studio Farm League. The documentary offers an opportunity to hear the hopes, hardships and a sense of life purpose in harvesting berries from three independent family growers. The documentary explores the issues contributing to agriculture's labour shortage and proposes possible solutions to overcoming these challenges. It's been shown in numerous film festivals and has garnered quite a few awards.

In the film, Driscoll's CEO and Chairman Miles Reiter sheds some light on one of agriculture's largest problems, which the company says is largely unknown to the average consumer.

Visit the website www.thelastharvestfilm.com for upcoming film festival screenings and facts and figures around the topic of labor. You can also view the film trailer at the site.



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How Does Releasing a New Blackberry Come About?

By John R Clark, University of Arkansas.

Over the years in teaching plant breeding, I included a section on how to decide to release a variety. I don't think that this was taught in any classes I had, but when I got this responsibility as a university breeder and had released a few varieties, I thought I had enough stories and experiences to share that might help future plant breeders. In this section, I taught that all breeders will make mistakes, so they better expect that. The biggest mistake would be to release nothing, which is just ahead of releasing too many, as mistakes go. There is a fine line to manage in making release decisions.

I just released the newest Arkansas blackberry named Ponca [see page 9]. How did this decision get made? At least for me, no single factor solidifies a decision. I assembled all the data collected, gathered all my notes from years of looking at the selection, and even dug up my notes from May 31, 2012 when I selected



John Clark at Clarksville Fruit Research Station in June 2017.

the original plant. It was a desktop full of material! Of course, I had a pretty good idea that this one was exciting after eating it for a few years, but a few other aspects had to be examined to make a confident and informed decision.

I have to be excited about the flavor potential of a new variety. (Note these carefully chosen words; I did not say "always tastes perfect.") My view is a little different than 20 years ago when yield and berry size often outranked outstanding flavor in the release criteria. These days, I try to envision how much fun it will be eat the variety, and how many smiles might come to consumers. Ponca may be the first variety I have released where I would make sure all the berries were picked from the plots – often by me – so that none went to waste! Even on the longest days or weeks of the blackberry season, I always found the time and stamina to clean

the plots of A-2538T (Ponca's selection designation) and tote the berries home. It is also a selection I've shared with various university colleagues or others, with the number written on the clamshell, and they would come back and repeat the number to me! Usually folks just say thanks and pay no attention to the selection number.

However, just being flavorful and sweet would not alone warrant further release consideration. I also keep grower profit smiles in mind. Their smiles come primarily from yield potential. I have been faced with an array of selections with excellent flavor and quality, but if yields are not comparable to existing commercial varieties, or at least close, the risk of grower failure is just too high. Therefore, yield potential has to be there to warrant release.

Following those two key criteria, the factors broaden to a wide assortment of variables such as berry shape and size, date of ripening, post-harvest storage potential, and how the potential new variety compares with current varieties. Other factors that receive consideration include test results in multiple locations (if any), winter hardiness, plant health, date of budbreak and bloom, and tendency for white drupelet development. If any of these is a consistent problem, then likely the release will not happen.

With A-2538T, when all information was put together, the data and experiences supported release. Another factor in release was if it had been through virus

continued on page 11



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Releasing a New Blackberry

Continued from page 7

testing and was ready for tissue culture and commercial propagation. Fortunately this had been completed. Then the story for justification was written, approved by a University committee, and off we go.

I have had a number of other releases, and some decisions have turned out really well, some not so much so.

Osage (A-2362T) was consistently among the best-tasting berries in the Arkansas program, but the data showed the berries to be a little smaller than Ouachita. I spent several years deciding if its berry size was acceptable. However, the flavor of the berry kept getting my attention, and since flavor has become more dominant in consumer acceptance, I decided to release it in 2012. It is still early in its life, but no one has complained to me about the berries being too small. I have been told it always tastes good and is a strong plant

that seems to need less nitrogen fertilizer than other varieties. These are comments I like to hear.

Prime-Ark® 45(APF-45) was unique in that it had to take a trip to California to express its true worth. I could not determine the primocane-fruiting potential of APF-45 in Arkansas due to the impact that intense summer heat has on primocane flowering. I knew it was a very nice berry based on floriculture fruit, and the fruit quality was a great advance over Prime-Jim® and Prime-Jan®, the world's first primocane-fruiting blackberries. Without testing in the moderate climate of Watsonville, CA, its potential would have never been recognized. That was a fortunate trip it made!

Natchez (A-2241T) was a spectacular-looking berry on the first day I saw it in 2001. On that day, I noted it "might be the largest thornless so far in the program" and noticed it was very attractive. I moved it along quickly in evaluations due not

only to its size but also its early ripening. While I had concerns with its early season tart flavor, I felt that the early ripening, large berries, good flavor potential as the season developed, and high yield potential warranted release in 2007. It has turned out to be successful, but I still get some comments on tartness, which do not surprise me. It also has limitations, particularly in the deep South, as far as quality and overcropping.

The **Ouachita** (A-1905T) release decision experience in 2003 stands out in my memory. Dr. Jim Moore, my predecessor, had placed it in an advanced trial in about 1996. It ripened between Arapaho and Navaho, and my inexperience at the time made me question if a variety that ripened between them was warranted for release. A concern was that A-1905T often had upward-curved floriculture leaves. I had learned over the years that this symptom often indicated powdery mildew infection

continued on page 11

'PONCA' Thornless, Floriculture-fruiting Blackberry

John R. Clark, University of Arkansas

Ponca is an exciting new blackberry from Arkansas. It is the sweetest berry from the program, and has the potential to put more smiles on the faces of blackberry consumers. This is one where I pick every last berry to bring home, letting none stay in the field!

Yield potential is high and plants demonstrate excellent health. The canes have unique architecture with reduced leaf internode length that provides potential advantages in cane tipping management. Ponca has demonstrated good secondary bud crop potential following cold injury. This cultivar ripens early, similar to Natchez, providing diversification in early season cultivar choice. Ponca is a commercial cultivar with good potential for shipping, and is an exceptional choice for local-market production and home gardens. Ponca is expected to perform well in areas where Caddo, Osage, Apache, Arapaho, Ouachita, Natchez, or Navaho are adapted, including all areas of the upper South, Southeast U.S., into the Midwest, the West and Pacific Northwest.

Type: Floriculture-fruiting, thornless, erect canes. Canes have shortened internodes providing for primocane tipping

management advantages.

Ripening: First harvest with Natchez, two to four days before Caddo and Osage and seven days before Ouachita. Ponca can produce a secondary bud crop that begins ripening about 14-20 days after the first harvest of primary crop berries.

Berry: 6.8 g on average. Overall averages slightly larger than Osage and near that of Ouachita. Firmness rated higher than Caddo and Osage, and firmness maintained in rainy conditions.

Yield: Comparable yield potential to Caddo, Osage and Ouachita, averaging just over 20,000 lb/acre in research plantings.

Flavor: Flavor is an outstanding attribute, and Ponca is the sweetest cultivar from the Arkansas program. Soluble solids has exceeded 13% in some harvests and consistently exceeds 10%. Sweet flavor has been retained in rainy conditions also and has been consistent from harvest to harvest. Berries have reduced acidity, consistently below 1% titratable acidity. Ponca has very attractive aromatic components which round out its sweet flavor.

Postharvest: Storage has been comparable to Caddo, Ouachita and Osage for overall storage potential. Red drupelet



Ponca berries and primocane tip.

reversion is low and similar to Osage and less than Natchez. Leakage in storage was noted to be higher than other cultivars in some years, particularly when held more than seven days. Excellent sweet flavor is retained in storage.

Plants: Ponca plants have exhibited very good health with consistently healthy floriculture leaves contributing to its sweet flavor. It has shown to be disease free, having exhibited no orange rust nor anthracnose and very limited cane/leaf rust in all research trials. Winter hardiness has been comparable to Ouachita, and has shown very limited winter injury to a low of 1°F. Chilling requirement is unknown, but is anticipated to be approximately 300 hours. ❄️



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These sprayers were designed with unique distribution heads for berries. The narrow width allows for operating in the tight row spacings. The hoop house model has a cannon which sprays the "pole row". Both distribution heads have 6 double nozzles for spraying two half rows. Distribution heads produce fog sized droplets that achieve total plant coverage.

FEATURES:

- Cat. 1, 3-pt. hitch, PTO 540 R.P.M.
- High performance, precision balanced all steel centrifugal fan
- Special molded polyethylene fan housing
- Translucent heavy walled polyethylene tank with lid, sump and strainer basket
- Built-in overrunning clutch to protect the tractor and sprayer drive train
- Compact, rounded tank design permits traveling through vegetation without damaging it
- Simple, efficient "Dial-A-Rate", 15 position metering disc
- Agitation by liquid sparging tube & air from fan
- Low pressure spraying system - 15 to 40 PSI spraying pressure means less maintenance for pumps and nozzles
- Capable of application rates of 20 to 200 gallons per acre, depending on row width
- Reachable controls from tractor seat, allows operator to switch liquid from off to right, left, or both sides spraying
- Built-in 6 gallon fresh water safety tank
- Broad range of Venturi distribution heads that produce 50 micron droplets and are specially designed to match a variety of foliage profiles

DISTRIBUTION HEADS:

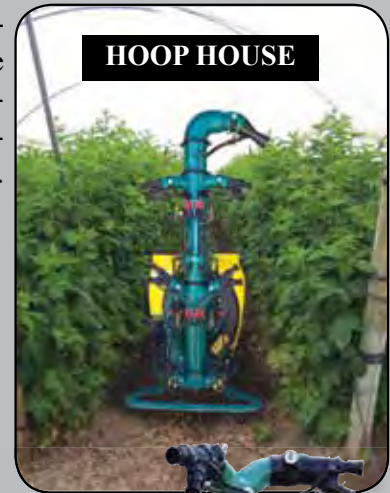
Open Field Berries - Order 12 nozzle distribution head no. T6M2D.

Hoop House Berries - Order 12 nozzle distribution head no. T.6M+1C, which includes upper cannon assembly, shutter valve extension and 12 nozzle plugs.

SPECIFICATIONS (Sprayer Only):

Model No:	Gallons	Volume of Air	Width	H.P. Req'd	Weight
P42N1-300-G	75 Gallons	2350	38"	18 H.P.	400#
P45N1-300-G	75 Gallons	3180	38"	32 H.P.	410#

Also can be used on 100 gallon sprayers



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Releasing a New Blackberry

Continued from page 7

on plants in the rose family (apples, strawberries, and blackberries), but I never saw powdery mildew growing on the leaves. The curled leaves did not seem to affect performance, so after two advanced-testing cycles (six years or so) I went on and released it. Amazingly, it has been our most important Arkansas variety to date! A decision not to release could have easily been justified. We will never know what a mistake that would have been, however; most plant breeder missed opportunities are likely never seen – they just get thrown out with the trash.

Apache (A-1798T) was my first thornless blackberry release decision, in 1999. When all the data for this selection was gathered, it looked mighty good. I remember reviewing the data with Dr. Moore (he was retired by then); we thought, "Wow, this one looks too good to be true!" A-1798T had berries about twice as large as Navaho, yield up to three times that of Arapaho, was late ripening to extend the season, had great quality berries, and had near-perfect plant health. I was so

proud of this one, and thought this was the game changer. Well, many of you know that Apache had a major shortcoming, the tendency to develop berries with white drupelets. It still puzzles me how this slipped by me. I suspect that one reason is that it is a very late variety for the Arkansas program, and as blackberry season ends, peach season is well underway; my time would shift heavily from blackberries to peach evaluations in late June. I have an idea I simply did not examine fruit for the entire season to the same extent as for earlier-ripening varieties, and did not notice the frequency of white drupelets. White drupelets tend to develop commonly after rain, and in Arkansas the ripening period for this variety is usually much drier than for earlier varieties; the occurrence of white drupe potential possibly was not seen due to this. Plus, white drupelets were not that common back then, so watching for this issue was not a high priority. You can bet your bottom dollar I have been watching for this problem very closely for the last 20 years, and I make sure to examine advanced selections until all fruiting is completed. While Apache turned out to be popular particu-

larly for local markets and home gardens, it taught me a substantial lesson.

Navaho (A-1172T) was released by Dr. Moore in 1989. It was the first thornless selection from the Arkansas program and took 25 years to develop (the program began in 1964). Dr. Moore and I were very excited about A-1172T, and we anticipated it was going to be a breakthrough. About the time the release was to be approved, he got a phone call from a test site near Bald Knob, AR, that A-1172T had shown symptoms of orange rust. A general practice in the program was to discard any selection with orange rust susceptibility. I did not know what he would decide, but he went ahead with the release. That was an instance where even though the variety had a shortcoming, it made sense to release it. Looking back now, 30 years later, that was the right decision because Navaho has been a great success, provided quality berries to consumers, and made growers a good mess of money.

I am excited about Ponca, in fact as excited as I have ever been about a blackberry variety. What will we be saying about it in 30 years? ✨



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NORTH AMERICAN RASPBERRY & BLACKBERRY CONFERENCE

Chase Park Plaza Hotel, St. Louis, Missouri

March 3 – 6, 2020

MARCH 3: WORKSHOP

1:00 – 5:00 pm. Fundamentals of Caneberry Production Workshop. A short course for novice growers, potential growers, and anyone who needs a refresher on the basics of raspberry and blackberry production. Topics will include variety selection, economics of production, basic crop management and basic pest management. The focus of the workshop will be somewhat regional (lower Midwest), however those from other regions should also find it of value. Participants will receive a USB-drive of resources. *Led by Amanda McWhirt, University of Arkansas, and Patrick Byers, University of Missouri. Limited registration.*

MARCH 3: OPENING RECEPTION

7:00 pm at the Chase Park Plaza Hotel. *Registrants are welcome to bring non-registered family members to the reception.* The reception will include a talk on “The History of St. Louis Agriculture”. Speaker Valerie Mertz is manager of the The Fulton School farm program and secretary of St. Louis County Farm Bureau. She first created her presentation to celebrate the 100th anniversary of St. Louis County.

MARCH 4: TOUR

8:30 am – 5:30 pm. This full-day tour by chartered bus visits four stops:

North Bay Produce, a major distributor of caneberries and other berries. We tour their large, modern distribution facility.

Eckert Family Farms in Belleville, Illinois, a seventh-generation farm raising tree fruit, blackberries, strawberries and more, with an awesome country store.

Danforth Plant Science Center, an independent research institute founded in 1998. Its major research areas are basic plant science discovery and technology development; food security, crop improvement, and sustainability; and next-generation/sustainable bioenergy.

Anheuser Busch Brewery, a true St. Lou-

is institution! A tour of the brewery from grain to glass, plus Clydesdale horses. What better way to end the day?

Tour registration is limited and on a first-come basis. If we have more registrants than the Danforth Center can accommodate, a stop at the world-renowned Missouri Botanical Garden will be offered as a choice for registrants.

MARCH 5 & 6: EDUCATIONAL SESSIONS, TRADE SHOW, AND POSTER DISPLAY

See the detailed schedule on the following page. Some sessions and speakers are not listed and still being confirmed.

The NARBA annual meeting will be held during lunch on March 5 and is open to all.

Poster submissions are welcome – including informal posters prepared by growers. See the conference home page.

THE LOCAL AREA

For more information on these and other attractions, visit the conference home page.

The Arch: This wonderful and iconic landmark is a marvel of design and engineering and a celebration of the growth of America. It is a National Park, the world’s tallest arch, and the tallest man-made monument in the Western Hemisphere. The Arch offers great views over the city – you can ride to the top inside it – and an excellent museum. It is located on St. Louis’s riverfront, a short light-rail ride from our host hotel. We will likely organize small group excursions to the Arch before and/or after the conference, but you can also go on your own.

Forest Park: Right across the street from our hotel, this is one of the largest urban parks in the U.S., 450 acres larger than Central Park in New York. It is also home to the Saint Louis Art Museum, the Missouri History Museum, the Saint Louis Science Center, and the Saint Louis Zoo. The park was the site of 1904 Worlds Fair.

For more information visit www.raspberryblackberry.com

Ballpark Village: This fun complex of sports bars, with huge TV screens and memorabilia for the Cardinals (and other teams) is near the Arch at Busch Stadium, home of the St. Louis Cardinals. The St. Louis Blues, 2019 Stanley Cup Champions, will have away games March 3 and 6; you can catch the excitement here and at other locations.

ACCOMMODATIONS

Our host hotel is the **Chase Park Plaza Hotel** (Royal Sonesta). Our special conference rate is \$125/night plus tax. Additional nights on either side of the conference may be added at the same rate. Parking is available for a discounted rate of \$5/day in the hotel’s attached garage. There is complimentary wireless internet in sleeping rooms, meeting rooms, and public areas. The hotel has several restaurants, a fitness center, and its own five-screen movie theater.

This historic and elegant hotel has been recently renovated throughout. It is in the vibrant Central West End neighborhood, which has many restaurants and small shops. Forest Park is across the street.

To make reservations: Call 413-821-3581 and mention “Raspberry & Blackberry Conference” or access the link for online reservations from the conference web page. **The cut-off date for reservations is February 7, 2020.**

TRAVEL

St. Louis Lambert International Airport (SLA) is 11 miles away. Airlines include American, Delta, Southwest, United, Alaska, and Air Canada. For information about light rail, shuttle services (the hotel does not offer this), and taxi fares, visit the conference page on our website.

For those arriving by car, the hotel address is 212 North Kingshighway, St. Louis, MO 63108.

Tuesday March 3		
2:00–7:00 pm REGISTRATION		
1:00–5:00 pm WORKSHOP Fundamentals of Caneberry Production	3-6 pm NARBA Executive Council Meeting	
7:00 pm OPENING RECEPTION The History of St. Louis Agriculture		
Wednesday March 4		
8:30 am–5:00 pm TOUR		
Thursday March 5 <i>Schedule subject to change</i>		
7:30–9:00 am REGISTRATION Continental breakfast in exhibit area, visit with exhibitors		
9:00–10:45 GENERAL SESSION ♦ Changing Climate Conditions: Impacts for Caneberry Production – <i>Doug Kluck, National Oceanic Atmospheric Administration (NOAA) and Dennis Today, USDA Midwest Climate Hub</i> ♦ Caneberry Market Update & Outlook – <i>Roland Fumasi, Rabobank Research</i>		
11:00–12:15 BREAKOUTS		
Cultivars & Breeding ♦ Cultivar Updates: Three breeders' comments ♦ The USDA Germplasm System & Rubus Resources	Plant Management ♦ Management of Blackberry Primocane Vigor with Plant Growth Regulators ♦ Irrigation & Soil Water Monitoring In Blackberry & Raspberry ♦ Trellis and training systems for northern states and for primocane-fruited blackberries	Farm and Family ♦ Building Resilience and Sustainability to Face the Challenges of Climate Change <i>Grower panel/roundtable discussion</i>
12:15–2:00 LUNCH and NARBA ANNUAL MEETING		
2:00–5:00 BREAKOUTS		
Pest and Disease ♦ From Pre-Plant to Re-Plant: How to Manage Parasitic Nematodes in Raspberry ♦ A Decade In: What We've Learned about SWD ♦ Optimizing a food-grade attractant to arrest SWD dispersal ♦ The Status of Broad Mite Management ♦ Making Pest Management Decisions ♦ Pests in a Changing Climate: What to expect when the weather is unexpected ♦ Residue Decline Curves and MRLs for Caneberry Fungicides, Insecticides, and Miticides	Plant Management ♦ A Two-Year Survey of Leaf Nutrients in Single and Double Cropping Blackberries ♦ Best Fertilizer Practices for Blackberries and Raspberries: How to assess and plan ♦ Growing Brambles in High Tunnels ♦ Digging into Soil Health ♦ Caneberry Disease Management	Farm and Family ♦ Farmer Health: Coping with the stresses of farming ♦ Solving the Complexities of Farm Succession: <i>Panel and roundtable discussion</i> ♦ Finding Online Resources: the NARBA website and more
Friday, March 6 <i>Schedule subject to change</i>		
7:30–8:30 am Registration/continental breakfast	NARBA Executive Council Meeting	
8:30–10:00 GENERAL SESSION ♦ Our Blackberry Industry Survey: What it tells us – <i>Margaret Worthington, University of Arkansas</i> ♦ Sehr Schöne Beeren! Caneberry Production in Germany and Switzerland: a report from the 2019 IHSA Rubus Symposium Tour – <i>Lisa DeVetter, Washington State University</i>		
10:15–12:00 BREAKOUTS		
Fruit and Flavor ♦ Bacteria, Viruses, Parasites: Key takeaways from past outbreaks to reduce food safety risks in caneberries ♦ The Progression of Flavor Development in Fruit ♦ New Guidance for Inspection of Blackberries: Red drupelet disorder	New Products and Technology ♦ Emergence of New Technologies: Progress and challenge in SWD management ♦ Using Drone Technology ♦ PhylloLux Technology: A new non-chemical crop protection strategy ♦ New Products from Our Exhibitors	Farm and Family ♦ Making the Jump to Selling Wholesale ♦ What Really Works: Best ideas for direct to consumer sales

Conference Presenters

(Confirmed as of early December; list is incomplete)

Olivia Banks, USDA Standards Division

David Bryla, USDA-ARS (Oregon)

Hannah Burrack, North Carolina State University

Jill Bushakra, USDA Clonal Germplasm Repository

Patrick Byers, University of Missouri

John Clark, University of Arkansas

Joe DeFrancesco, Oregon State University

Lisa DeVetter, Washington State University

Chris Eckert, Eckert Family Farms

Gina Fernandez, North Carolina State University

Chad Finn, USDA-ARS (Oregon)

Connie Fisk, Produce Safety Alliance

Roland Fumasi, Rabobank Research

Connie Haden, Haden & Colbert

Donn Johnson, University of Arkansas

Doug Kluck, National Oceanic Atmospheric Administration

Fred Koenigshof, K & K Farms

Laura McDermott, Cornell University

Amanda McWhirt, University of Arkansas

Bernadine Strik, Oregon State University

Gabriella Tait, Oregon State University

Fumi Takeda, USDA-ARS (West Virginia)

Dennis Today, USDA Midwest Climate Hub

Courtney Weber, Cornell University

Margaret, Worthington, University of Arkansas

Find full lists of sponsors and Exhibitors at the Conference web page



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NORTH AMERICAN RASPBERRY & BLACKBERRY CONFERENCE

St. Louis, Missouri – March 3-6, 2020

REGISTRATION FORM

For online registration visit
www.raspberrylblackberry.com/conference-registration/

Name (primary registrant)* _____

Farm/Company/Institution* _____

Additional farm/company members on this registration* _____

Mailing address _____

City* _____ State/Province* _____ Zip/Postal code _____ Country _____

Phone#1 _____ cell hm wk Phone#2 _____ cell hm wk

Email _____ Website _____

* This information will be used on nametags. Please indicate if company/city/state differs from primary registrant's for any registrant.

	Members	Others	# persons	\$ amount
REGISTRATION FEES (fees are per person)				
WORKSHOP March 3	\$50	\$75		
TOUR March 4	\$75	\$85		
CONFERENCE March 5 & 6	\$145	\$185		
Conference March 5 only	\$95	\$110		
Conference March 6 only	\$60	\$85		
STUDENTS (age 15 up) March 5 & 6	\$120	\$135		
NARBA MEMBERSHIP DUES (see Notes at right)				
<input type="checkbox"/> Grower <input type="checkbox"/> New member \$50 <input type="checkbox"/> Renewing \$85 OR <input type="checkbox"/> Industry \$150 (suppliers, processors, marketers, etc) OR <input type="checkbox"/> Research, extension, student \$40				
Grower acreage charge _____ acres planted in caneberries x \$5.00 Maximum charge is \$100				
DONATION to North American Bramble Growers Research Foundation				
LATE REGISTRATION for registrations received after Feb. 24				
\$15/person late registration				
TOTAL DUE				

REGISTRATION NOTES

Opening Reception on March 3 is open to all attendees who can come and does not need to be registered for. You may bring non-registering spouses or other family members to this reception. Please let us know in advance that they will attend.

Workshop and Tour registrations are limited and on a first-registered basis.

NARBA DUES: You may join NARBA with your registration to receive the member rates. Membership is per family, farm, or company (at one address). 25% of your dues is passed on directly to the NABG Research Foundation.

Children under 5 are free. Reduced fees for children 5-14 (not shown). Contact NARBA.

Donations support research. Donors will be recognized at the conference.

Refunds: Full refund minus a \$25 processing fee for refunds requested by Feb. 21. After Feb. 21, partial refunds may be available on request.

Walk-in registrations will be accepted but meals are not guaranteed.

ADDITIONAL QUERIES

Special dietary/accessibility needs? Other comments or questions? Please tell us!

PAYMENT **Check** (make out to "NARBA" – U.S. Funds only) Check # _____

Credit/debit card (Visa/Mastercard/American Express/Discover)

Card # _____

Expiration date _____



SEND REGISTRATIONS TO:

NARBA, 197 Spring Creek Rd., Pittsboro, NC 27312 USA

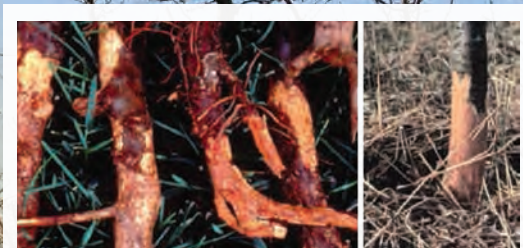
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Meadow vole.

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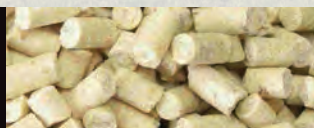


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- Vole girdling disrupts the flow of nutrients and water, reducing tree vigor.
- Vole feeding kills trees and smaller plantings, cause foliage and production loss, and the onset of root disease by exposing vulnerable tissue and creating air pockets.
- Trees experiencing root damage from vole feeding exhibit stunting and foliage reduction, resulting in production losses.

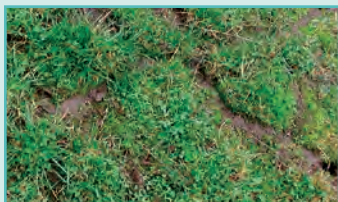
- Grower profit losses for a single injured tree over its useful life range from \$750 for Gala to \$6,400 for Honeycrisp.¹
- Voles kill or weaken trees and the damage is felt over the tree's productive life; treatment costs become inconsequential.²
- It typically takes two rodenticide applications per season to bring the population under control.²
- In a study³ on McIntosh orchards in New York, vole population reduced fruit yield by 65.5% and increased undersized fruit up to 57.5% – reducing income by \$2,745 per acre.



Pine vole.



Vole root feeding in orchards.



Vole runway damage to turf.

¹ Tim Smith, Extension Washington State University in American Fruit Grower October 2014.

² Dr. Mike Parker, Ext. Horticulture Specialist & Assoc. Prof. at North Carolina State Univ. IBID.

³ Effects of Differential Pine Vole Populations on Growth and Yield of McIntosh Apple Trees, Proc. Eastern Wildlife Damage Control Conference, 1987. Richmond, M.E., C.G. Forshey, L.A. Mahoffy and P.N. Miller.

8066-9
(8/23/19)

Is this your first time using Rozol Vole Bait? (y/n) _____

Have you used other vole control products (list)? _____

What were the results with these products? What were the results with Rozol? _____

How and when do you monitor for vole pressure? _____

What months do you border broadcast Rozol? _____

Do you use T-pipe bait stations to bait and monitor? (y/n) _____

How many applications do you make (Check all that apply):
 Twice in Fall Winter/Spring Once in Fall Only WA St. growers: Do you apply aerially? (Y/N) _____

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PHONE: _____ EMAIL: _____

PARTICIPANT SIGNATURE* _____

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PRECAUTIONARY STATEMENTS

Hazard to Humans and Domestic Animals

CAUTION:

Harmful if swallowed, absorbed through the skin, or if inhaled. Avoid contact with eyes, skin or clothing. Avoid breathing dust. Keep away from children, domestic animals and pets. All handlers (including applicators) must wear long-sleeved shirt, long pants, shoes, socks, and waterproof gloves. Any person who retrieves carcasses or unused bait following application of this product must wear waterproof gloves.

USER SAFETY REQUIREMENTS: Follow manufacturer's instructions for cleaning/maintaining washables. If no such instructions for washables, use detergent and hot water. Remove clothing immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash hands thoroughly after applying bait and before eating, drinking, chewing gum, using tobacco or using the toilet and change into clean clothing.

FIRST AID

Have this label with you when obtaining treatment advice.

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin or clothing: Take off contaminated clothing. Rinse skin with plenty of cool water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Treatment for Pet Poisoning: If animal eats bait, call veterinarian at once.

Note to Physician or Veterinarian: Contains chlorophacinone, an anticoagulant. For humans or dogs that have ingested this product, or have obvious poisoning symptoms (bleeding) or prolonged prothrombin times, give Vitamin K1 by intramuscular or oral administration. Check prothrombin time every 3 days until values return to normal.

ENVIRONMENTAL HAZARDS: This product is extremely toxic to fish and wildlife. Dogs and predatory and scavenging mammals and birds might be poisoned if they feed upon animals that have eaten the bait. Do not apply where raptors are actively feeding on voles. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water by cleaning of equipment or disposal of wastes.

ENDANGERED SPECIES CONSIDERATIONS:

NOTICE: It is a Federal offense to use any pesticide in a manner that results in the death of an endangered species. Use of this product may pose a hazard to endangered or threatened species. Before applying this product, applicators must obtain information regarding the occurrence of endangered species and use limitations for this product. You may call EPA's "Endangered Species Hotline" at 844-447-3813 to obtain an "Interim Measures" pamphlet for your county. You may also consult your local agricultural extension office or state pesticide lead agency to determine if there are any requirements for use of this product.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Pesticide Storage: Store in original container in a cool, dry place inaccessible to children and pets.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Handling: This is a nonrefillable container. Do not reuse or refill this container. Completely empty container, then dispose of empty container in trash or at an approved waste disposal facility.

WARRANTY: To the extent consistent with applicable law, seller makes no warranty, expressed or implied, concerning the use of this product other than indicated on the label. Buyer assumes all risk of use and/or handling of this material when such use and/or handling is contrary to label instructions.

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Active ingredient: chlorophacinone 0.005%
Inert Ingredients 99.995%
Total 100.000%

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DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. **READ THIS LABEL** and follow all use directions and precautions. Only use for sites, pests, and application methods specified on this label.

VOLE CONTROL IN FRUIT TREE ORCHARDS (BEARING AND NONBEARING):

USE RESTRICTIONS: For control only of voles in some fruit (apple, pear) and stone fruit (peach, cherry, apricot, plum, prune, and nectarine) tree orchards. Apply after fall harvest (including drops), before new spring growth, and during which three consecutive days of rain-free and snow-free weather are expected. Do not apply within 50 feet of any body of surface water or where raptors are actively feeding on voles. Do not apply over bare ground or crops not specified above. Do not allow animals to graze in treated areas. Do not use hay cut after application for feed or bedding. To avoid exposing nontarget organisms, follow the instructions in the "Pesticide disposal" section to ensure proper clean-up of any bait for reuse or disposal. Apply only by **hand spot baiting** and **ground broadcasting**. Do not apply aerially. In Colorado, Florida, New York and Vermont, only apply by "**Hand Spot Baiting**."

APPLICATION DIRECTIONS: Before application, examine orchard floor to locate trails and runway systems to be treated. **Hand spot baiting:** Place 1-1/2 ounces of bait (6 tablespoons) in each active hole, trail or runway, (do not exceed 10 lbs per acre). Cover each placement with grass or shingle to avoid exposing nontarget organisms, or place bait in a tamper resistant bait station.

Ground broadcast baiting: Using a commercial spreader, uniformly apply 10 lbs per acre. If populations are high, make a second application 1 - 2 months after the first.

In states east of the Mississippi River, infestations of pine vole (*Microtus pinetorum*) may require higher application rates of 20 lbs per acre. The maximum application rate is 40 lbs per acre per year for Pine voles, and 20 lbs per acre per year for other voles.

VOLE CONTROL IN NURSERIES, TREE AND FORESTRY PLANTATIONS, CHRISTMAS TREE FARMS, AND BORDER AREAS/BUFFER STRIPS ADJACENT TO CROPS:

USE RESTRICTIONS: For control of only voles in commercial nurseries, tree and forestry plantations, Christmas tree farms, and border areas and buffer strips adjacent to crops (within 100 feet of the edge of the cropland). This product must not be applied directly to food or feed crops except as specified above. Do not apply within 50 feet of any body of surface water or where raptors are actively feeding on voles. Do not allow animals to graze in treated areas. Do not use hay cut after application for feed or bedding. To avoid exposing nontarget organisms, follow the instructions in the "Pesticide disposal" section to insure proper clean-up of any bait for reuse or disposal. Apply only by **hand spot baiting** and **ground broadcasting**. Do not apply aerially. In Colorado, New York and Vermont, only apply by "**Hand Spot Baiting**." In Florida, only use this product where Pine voles are known to occur and only apply by "**Hand Spot Baiting**."

APPLICATION DIRECTIONS: Before application, locate vole trails, runway systems and harborage areas to be treated. **Hand spot baiting:** Place 1-1/2 ounces, (6 tablespoons,) of bait in each active hole, trail or runway, (do not exceed 10 lbs per acre). Cover each placement with grass or shingle to avoid exposing nontarget organisms, or place bait in a tamper resistant bait station.

Ground broadcast baiting: Using a commercial spreader, uniformly apply 10 lbs per acre. If populations are high, make a second application 1 - 2 months after the first. In states east of the Mississippi River, infestations of pine vole (*Microtus pinetorum*) may require higher application rates of 20 lbs per acre. The maximum application rate is 40 lbs per acre per year for Pine voles, and 20 lbs per acre per year for other voles.

VOLE CONTROL IN LAWNS, GOLF COURSES, PARKS, OTHER ORNAMENTAL TURF AREAS, ORNAMENTAL FLOWER AND SHRUB GARDENS: Hand Spot Bait only: Do not apply by aerial or ground broadcast. For control of only voles (*Microtus spp.*) in lawns, golf courses, parks, other ornamental turf areas, ornamental flower and shrub gardens. Place 1/2 to 1 ounce (2 to 4 tablespoons) of bait in each active hole, trail or runway in areas where voles have been observed or are known to range. If non-target animals/birds are present, place bait in tamper-resistant bait stations. Also apply under tarps used to provide winter protection for turf areas. Apply only one bait spot per trail or runway. If additional vole control is needed, a second application may be made 1 to 2 months after the first application. The maximum application rate is 10 lbs per acre per application, and 20 pounds per acre per year. Do not apply to golf courses or turf grass areas in the state of California. (011717)

SAFETY DATA SHEET

Section 1: Identification

Product identifier: Rozol® Vole Bait
Other identifier(s): EPA Registration Number 7173-242
Uses or restrictions: Rodenticide with chlorphacinonone Restricted Use Pesticide
Manufacturer: Liphatech, Inc.
3600 W. Elm Street, Milwaukee, WI 53209
Emergency phone: 800-351-1476 Monday - Friday 8:00 am - 4:30 pm
(US Central time zone)
After hours phone: Human or Animal emergencies: RMPDC at 866-514-9168
Spill emergencies: CHEMTREC at 800-424-9300

Section 2: Hazard Identification

Hazard class: Specific Target Organ Toxicity (Single exposure), Category 2;
Specific Target Organ Toxicity (Repeated exposure), Category 2
Warning: May cause damage to blood and reduce the clotting ability of blood if swallowed, inhaled or absorbed through skin. Do not breathe dust. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. If exposed or if you feel unwell, call a poison control center or doctor. Dispose of container and contents according to instructions on product label. Store locked up.



Section 3: Composition / Information on Ingredients

Hazardous ingredients:
Chlorophacinone (CAS registry no. 3691-35-8)..... 0.005%

Section 4: First Aid Measures

Emergency overview: This material may reduce the clotting ability of the blood and cause bleeding. Symptoms of toxicity include lethargy, loss of appetite, reduced clotting ability of blood, and bleeding. Have the product label with you when obtaining treatment advice.
If swallowed: Call a poison control center or doctor. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor.
If inhaled: Move person to fresh air. If person is not breathing, call an ambulance, then give artificial respiration and call poison control or doctor.
If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor.
If on skin or clothing: Take off contaminated clothing. Rinse skin with plenty of cool water for 15-20 minutes. Call a poison control center or doctor.
Note to Physician or Veterinarian: Contains anticoagulant ingredient. For humans or animals ingesting bait and/or showing obvious poisoning symptoms (bleeding or prolonged prothrombin times), give Vitamin K₁ intramuscularly or orally. In severe cases, blood transfusions may be needed.

Section 5: Fire-fighting Measures

Extinguishing media: Use media suitable for the surrounding fire
Specific fire or explosion hazards: None known
Special cautions for firefighters: Wear self-contained breathing apparatus (full facepiece) & full protective clothing. Contain runoff to prevent pollution.

Section 6: Accidental Release Measures

Precautions, PPE and Procedures: Wearing PPE as specified in Section 8, isolate and contain spill. Limit access to spill area to necessary personnel. Do not allow spilled material to enter sewers, streams or other waters.
Methods and materials: Scoop up spilled material and place in a closed, labeled container for use according to label instructions or disposal.

Section 7: Handling and Storage

Precautions for safe handling: Read the entire product label before using this rodenticide. **Conditions for safe storage:** Store in original container in a cool, dry area out of reach of children, pets and domestic animals. Do not contaminate water, food or feed. Keep container tightly closed. Do not remove or destroy the product label.

Section 8: Exposure Controls / Personal Protection

Established exposure limits: Not applicable

Appropriate engineering controls: Special ventilation is not required for the normal handling and use of this product when following label instructions.
Individual protection measures: Wear long-sleeved shirt, long pants, shoes, socks and waterproof gloves when handling this product. Follow manufacturer's instructions for cleaning/maintaining PPE, or else wash with detergent and hot water. Keep and wash PPE separately from other laundry. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. Wash hands thoroughly after applying bait and before eating, drinking, chewing gum, using tobacco or using the toilet, and change into clean clothing.

Section 9: Physical and Chemical Properties

Appearance: Solid pellets, off-white color, raw grain odor. Odor threshold not determined.
Water solubility: Negligible **pH:** Not applicable
Relative density: 1.26 g/cc **Viscosity:** Not applicable
% Volatile (volume): Not applicable **Evaporation rate:** Not applicable
Vapor density: Not applicable **Vapor pressure:** Not applicable
Boiling point: Not determined **Freezing point:** Not applicable
Flash point (ASTM D92): >190 °C **Autoignition temp.:** Not determined
Flammability: Not a flammable solid **Decomposition temp.:** Not determined
Explosive limits - Lower limit: Not applicable; **Upper limit:** Not applicable
Partition coefficient (n-octanol/water): Not applicable

Section 10: Stability and Reactivity

Reactivity: Not reactive, not sensitive to shock or static discharge
Chemical stability: Stable **Hazardous reactions:** None
Incompatible materials: None **Conditions to avoid:** None
Hazardous decomposition products: Oxides of carbon

Section 11: Toxicological Information

Likely routes of exposure: Ingestion, skin absorption.
Symptoms of toxicity: Lethargy, loss of appetite, reduced clotting ability of blood, and bleeding.
Eye effects/eye irritation: Mild, transient irritant
Acute oral effects: LD₅₀ (oral-rat): >5000 mg/kg
Acute inhalation effects: LC₅₀ (rat, 4 hour): 186 mg/L (extrapolated)
Acute dermal effects: LD₅₀ (dermal-rabbit): >2000 mg/kg
Skin irritation: Non-irritating
Skin sensitization: Not a skin sensitizer
Carcinogenicity: No ingredient listed by NTP, IARC or OSHA

Section 12: Ecological Information

This product is extremely toxic to fish and wildlife. Do not apply this product directly to water, where surface water is present or to intertidal areas below the mean high water mark. Carefully follow label cautions and directions to reduce hazards to children, pets and non-target wildlife.

Section 13: Disposal Considerations

Disposal: Wastes resulting from the use of this product according to the label instructions must be disposed of as specified on the product label.
RCRA waste status: This product is not regulated as a hazardous waste under Federal law. State and local regulation may affect the disposal of this product. Consult your state or local environmental agency for disposal of waste generated other than by use according to label instructions.

Section 14: Transport Information

Transportation data (49 CFR): This product is not regulated as a hazardous material for all modes of transportation within the U.S.
Hazard Class, Packing Group and UN ID No.: Not applicable

Section 15: Regulatory Information

TSCA: All components of this product are listed on the TSCA inventory.
SARA section 313: Contains no reportable components.
CA Proposition 65: Contains no substances subject to Prop 65 requirements.
FIFRA: This product is registered as a pesticide with the U.S. Environmental Protection Agency. The label requirements under Federal pesticide law differ from the classification criteria and hazard information required by OSHA on this Safety Data Sheet. Read and follow all cautions, directions and use restrictions on the product label on the container.

Section 16: Other Information

Prepared by: K. Paavola **Date:** 13 August 2019
This Safety Data Sheet is believed to be accurate at time of publication. No warranty, expressed or implied, is made with regard to this information. This information may not be adequate for every application, and the user must determine the suitability of this information due to the manner or conditions of use or storage, or local regulation.

**NORTH AMERICAN RASPBERRY
& BLACKBERRY ASSOCIATION (NARBA)
197 SPRING CREEK RD.
PITTSBORO, NC 27312 USA**

*Working together to promote
the production and marketing
of raspberries and blackberries.*



WINTER, 2019-2020

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Vice President - Scott Norman, Naturipe Farms, 1611 Bunker Hill Way, Ste 250, Salinas, CA 93906, 831-229-4126, snorman@naturipefarms.com

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North American Bramble Growers Research Foundation

The NARBA Executive Council serve as the Trustees of the Foundation.

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*Best wishes
for the holiday
season!*

