



Photo credit: Christelle Guédot, UW-Madison

Volume 27

January 23-24, 2019

Holiday Inn Hotel and Convention Center

Stevens Point, WI

Sponsored by:



Mention of a trade name or a proprietary product does not constitute warranty of the product and does not imply approval of the material to the exclusion of similar products that may be equally suitable.

This publication was compiled and edited by:

Christelle Guédot  
Fruit Entomology and Extension Specialist  
Department of Entomology  
University of Wisconsin-Madison

The Proceedings of the 2019 Wisconsin Cranberry School (Volume 27) and the 2018 Annual Report of the Wisconsin State Cranberry Growers Association were published by:

Wisconsin State Cranberry Growers Association  
P.O. Box 365  
Wisconsin Rapids, WI 54494  
(715) 423-2070

For additional copies contact:  
Wisconsin State Cranberry Growers Association

Madison, Wisconsin  
February 2019

## Table of Contents

<b>Development of methods to measure fruit texture in cranberry</b>	
Matthew Phillips, Luis Diaz-Garcia, Edward Grygleski, Amaya Atucha and Juan Zalapa.....	1
<b>Effect of fungicide on pollen foraging by honey bees</b>	
Christelle Guédot, Ben Jaffe, and Abby Lois.....	2
<b>Red-headed flea beetle: basic biology, density feeding patterns, and spatial distribution</b>	
Ben Jaffe, Stephanie Rink, and Christelle Guédot.....	4
<b>Bumble bees and flowers in cranberry country: landscape suitability for bumble bees</b>	
Jeremy Hemberger and Claudio Gratton.....	7
<b>Cranberry false blossom: re-emergence of an old disease</b>	
Patricia McManus.....	11
<b>Cold hardiness in cranberry, what have we learned?</b>	
Camilo Villouta, Beth Ann Workmaster, and Amaya Atucha.....	14
<b>Fall nitrogen applications, effect on yield and fruit quality</b>	
Pedro Rojas, Jenny Bolivar-Medina, and Amaya Atucha.....	19
<b>Pheromone loading in cranberry insect lures and trapping data</b>	
Elissa Chasen, Christelle Guédot, and Shawn Steffan.....	23
<b>Cranberry pest management program – review of 2018 field trials</b>	
Jack Perry, Jed Colquhoun, Christelle Guédot, and Patricia McManus.....	27
<b>2019 cranberry school grower survey results</b>	
Christelle Guédot and Matt Lippert.....	32
<b>WI State Cranberry Growers Association 2018 Annual Report.....</b>	<b>41</b>

## **DEVELOPMENT OF METHODS TO MEASURE FRUIT TEXTURE IN CRANBERRY**

MATTHEW PHILLIPS, LUIS DIAZ-GARCIA, EDWARD GRYGLESKI, AMAYA ATUCHA and JUAN ZALAPA

*Department of Horticulture, University of Wisconsin-Madison, WI and USDA-ARS*

A major component of fruit quality is fruit texture. Traits like hardness, fracturability and elasticity can be measured to grade a fruit based on its mechanical properties. Fruit texture is of particular importance to the cranberry industry since only cranberries of a certain firmness can be processed into sweetened dried cranberries (SDCs). A texture analyzer is a machine that can exert pressure on a sample while collecting data on the changes in force experienced by the fruit over a time and distance. This data can be used to generate force-displacement curves from which texture traits for the given sample can be computed. Attaching different probes to the texture analyzer allows for different parts of the fruit to be targeted or different styles of test to be run which can measure different sets of traits. In this study, ten varieties of cranberries were analyzed using three different texture analysis tests to determine their firmness traits. A puncture test, double compression test, and Kramer shear cell allowed for the measurement of elasticity, hardness, cohesiveness, and toughness for both the flesh and skin of cranberry fruit. Based on the gathered data, a texture profile classification approach for cranberry cultivars will be developed. This information will be useful for selecting cranberries right for SDC production and in the future, will lead to the development of marker assisted breeding for texture in cranberries.



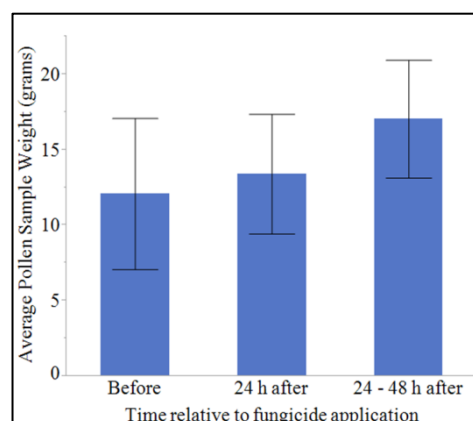
## EFFECT OF FUNGICIDE ON POLLEN FORAGING BY HONEY BEES

CHRISTELLE GUÉDOT, BENJAMIN D. JAFFE, and ABBY N. LOIS

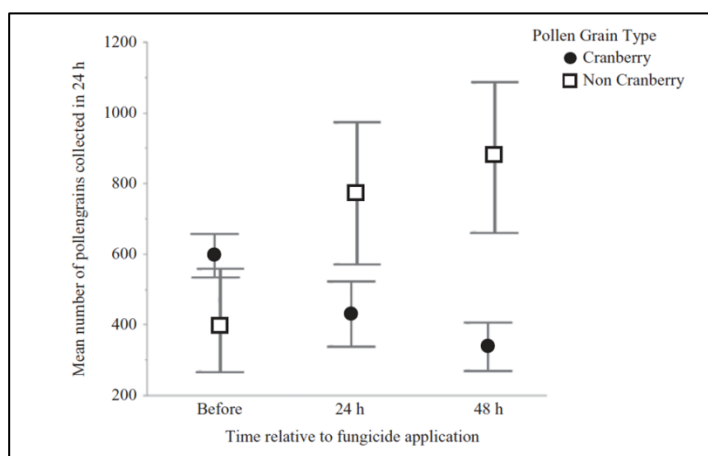
*Department of Entomology, University of Wisconsin-Madison, WI*

Honeybees play a major role in the pollination of cranberry by ensuring fruit set and increasing fruit yield. Fungicides are routinely applied during cranberry bloom to control diseases and pathogens (52% applied at least one fungicide during bloom in 2014) and may affect bees in unexpected and unexplored ways. This study addressed whether the fungicides most commonly applied during cranberry bloom in 2017, namely Abound, Indar, and Proline, may affect the foraging behavior of honey bees. The study was conducted on 17 cranberry marshes where growers applied either Proline (5 fl. oz./acre) or a combination of Abound (9-15 fl. oz./acre) plus Indar (8-12 fl. oz./acre). We placed commercial pollen traps on the entrance of one hive at each marsh and starting at 25% bloom, we collected pollen returned by honey bee pollen foragers for a period of 24 hrs. at a time. We collected pollen 24-48 hrs. prior to a fungicide application (control), the application was made, and we collected pollen after 24hrs and again after 48hrs post-application. The pollen collected was brought back to the lab, placed in a glycerin/water solution for each sample and mounted on a slide to count the number of cranberry vs. non cranberry pollen.

Our results show that there was no significant effect of the fungicide applications on the pollen sample weights, suggesting that honey bees collected the same amount of overall pollen before than after fungicide application (Fig. 1). When looking at cranberry pollen specifically, we found that the amount of cranberry pollen decreased and this decrease was maintained 48hrs post application. Conversely, the amount of non-cranberry pollen increased following a fungicide application (Fig. 2). However, the decrease in cranberry pollen following the application differed depending on the type of fungicide applied. There was no



**Fig 1.** Average pollen sample weight before and after a fungicide application.



**Fig 2.** Mean number of pollen grains collected following a fungicide application for cranberry vs. non-cranberry pollen.

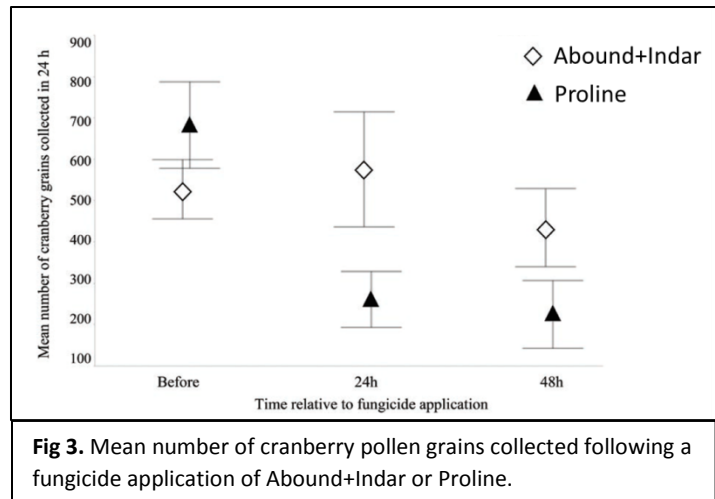
decrease in the number of cranberry pollen grains collected following an Abound+Indar application. However, there was a significant decrease in the number of cranberry pollen grains collected following a Proline application. This decrease was maintained even 48 hrs. post application (Fig. 3).

Fungicide applications were associated with a 43% decrease in the number of cranberry pollen grains returned to

honeybee hives 48 h after applications. The decrease in cranberry pollen after fungicide applications was associated with a significant increase in the number of non-cranberry pollen collected, although the overall amount of pollen was not affected, suggesting that honeybees may have shifted from foraging on cranberry pollen to non-cranberry pollen. Proline led to fewer cranberry pollen grains collected following its application and this decrease persisted after 48hrs at which point we stopped the experiment so the deterrence observed could potentially persist longer than 48hrs.

More research is needed to determine how long this deterrence actually lasts and to elucidate the reasons that cause it. It is possible that fungicide application rates, active ingredients, mode of action, synergistic effects of combining chemicals, and even availability of alternative floral resources are contributing factors. While Proline may be avoided during full bloom to prevent bees from foraging on non-cranberry flowers, trade-offs with rot management must be considered.

This project was funded by the Wisconsin DATCP and the Wisconsin Cranberry Board. Special thank you to all of our grower collaborators and beekeepers.

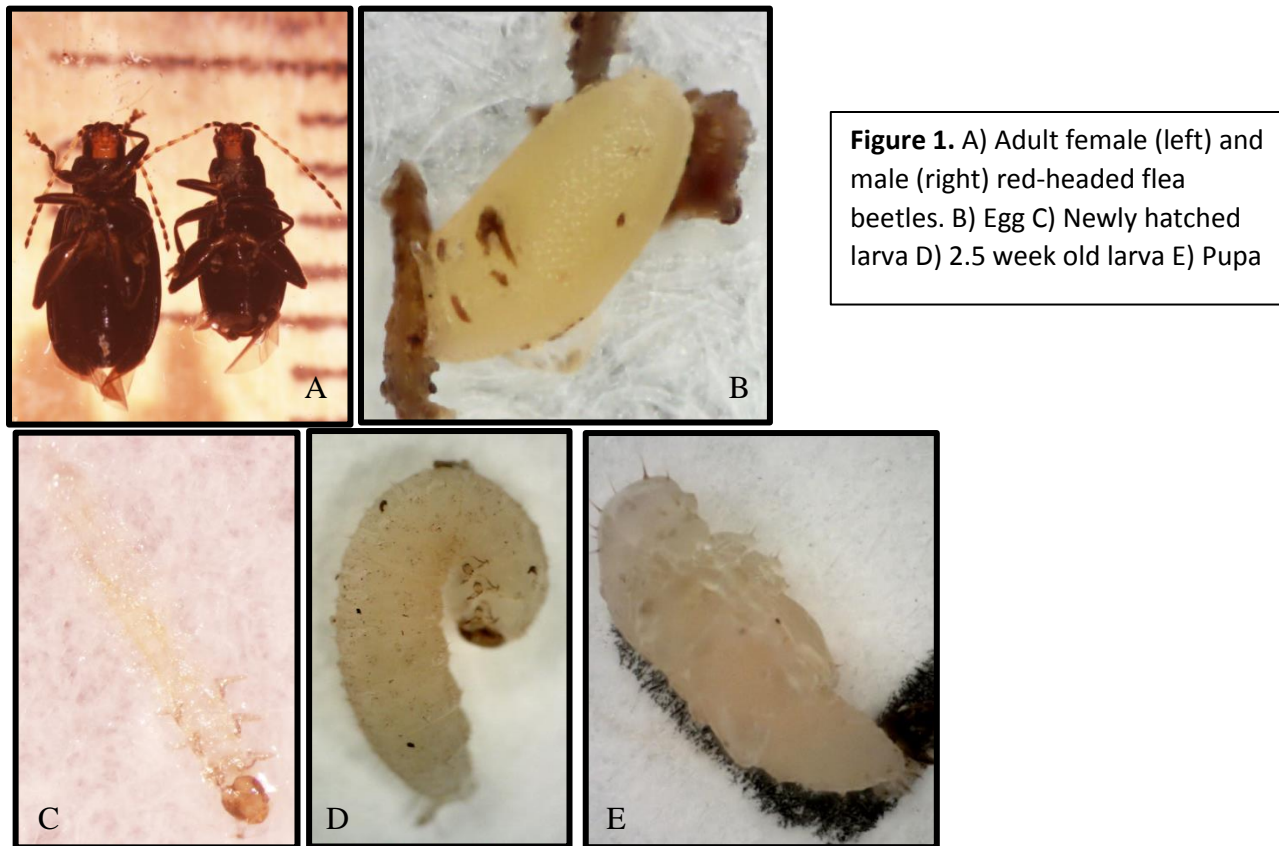


# RED-HEADED FLEA BEETLE: BASIC BIOLOGY, DENSITY FEEDING PATTERNS, AND SPATIAL DISTRIBUTION

BENJAMIN JAFFE, STEPHANIE RINK, and CHRISTELLE GUÉDOT

*Department of Entomology, University of Wisconsin-Madison, WI*

Red-Headed flea beetle (*Systema frontalis*) has become a pest of concern in cranberry marshes throughout Wisconsin. The goal of this project was to describe their life history, basic biology, and to get a better idea of how they might damage cranberry production. We have conducted several experiments to improve our understanding of this pest.



**Figure 1.** A) Adult female (left) and male (right) red-headed flea beetles. B) Egg C) Newly hatched larva D) 2.5 week old larva E) Pupa

## *Temperature and duration requirements for egg hatch*

We currently have two experiments ongoing to quantify the duration and time necessary to elicit egg hatch. In 2017, we were able to establish that *S. frontalis* eggs required at least 10 weeks at 10°C or below to hatch. However, these eggs were already 10 weeks old at the time of the experiment. We are redoing this experiment using eggs that are less than one week old, and measuring the percentage of eggs that hatch at various chilling periods (0, 5, 10, 15, 20 weeks) to confirm our results from the previous year. We are also looking at different temperatures (2.5, 5, 10, 20°C) for 15 weeks to determine any differences in the time and

amount of egg hatch. While this experiment is still ongoing, the preliminary results are confirming a much higher hatch rates when eggs are exposed to cold temperatures.

#### *Insect development*

We are currently measuring developmental times of different *S. frontalis* life stages. We successfully trapped adults in the field in 2018, and were able to establish egg laying in the laboratory. After a cold treatment for the eggs, we have successfully had the eggs hatch, the larvae feed on a host plant, and these larvae develop into pupae (Figure 1). We are currently standardizing the rearing conditions to quantify the specific duration spent in each life stage. We are testing various host plants (corn, clover, alfalfa, and broccoli) to determine the best and easiest host to rear larvae.

#### *Phenology and location in cranberry beds:*

Starting May 14<sup>th</sup> 2018, we collected 20 soil samples every two weeks through mid-September, and then again after harvest in November. Samples were collected at 1 m and 10 m from the dike and were split into two depths (0 – 6" and 6 – 12"). In general, we found 2.5 times more eggs at 10 m from the dikes than we found at 1 m. Eggs generally occurred in bunches within the beds, when we found one egg we often found several more. The first larvae were found on June 19<sup>th</sup> and we continued to find larvae into early August. The first adult we trapped in emergence cages were found on July 24<sup>th</sup> and continued through mid-September.

#### *Density dependent feeding damage:*

We conducted several feeding assays to determine density dependent damage and food preferences. In the laboratory, we set up cages containing three uprights with fruit and placed 1, 5, or 10 *S. frontalis* in each cage. After one week, we measured the % of leaves and fruit damaged, and the distance that most of the damage was located. On average, the 1 beetle per cage damaged 7% of the leaves, the 5 beetle cages damaged 32% of the leaves and the 10 beetles per cage damaged about 70%. This result suggests that leaf damage does not increase exponentially with *S. frontalis* density, but follows a more linear pattern. When provided access to fruit, *S. frontalis* will damage intact cranberries (Figure 2). This damage was associated with a significant decrease in berry weight relative to the control berries that remained intact. Overall, damage was higher in the top two inches of the upright; about 42% of leaves in this area were fed on versus 27% below two inches. This trend was consistent across feeding densities, However, at the lowest beetle density only 1% of the leaves below 2 inches were damaged. At the higher



beetle densities, beetles tended to feed on the lower parts of the upright as well. We conducted a similar feeding assay in the field, with similar results. Preliminary evidence from these feeding assays suggest that *S. frontalis* prefer leaves over fruit. This data is still being analyzed, and we expect to distribute the results late this spring.

This project was funded by the Wisconsin Cranberry Board and we would like to thank the grower collaborators that let us come do research on their marshes and for all the insights.

# BUMBLE BEES AND FLOWERS IN CRANBERRY COUNTRY: LANDSCAPE SUITABILITY FOR BUMBLE BEES

JEREMY HEMBERGER AND CLAUDIO GRATTON

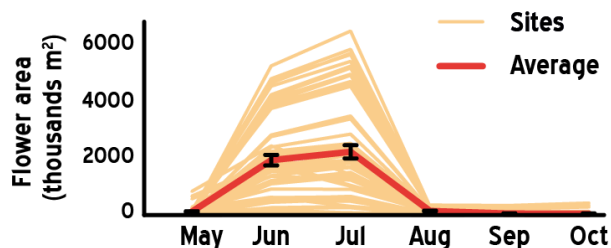
*Department of Entomology, University of Wisconsin-Madison, WI*

## Take home messages:

1. The number of flowers in lands surrounding cranberry marshes is hugely variable – cranberry is the most abundant flower type in all marshes.
2. Roadsides and field edges have the most diversity and abundance of flowers for any non-crop habitat type. This includes both native and invasive flowers.
3. Most marshes are in the bumble bee “danger zone” with respect to flower availability. Planting native, non-weedy wildflowers in supporting lands can greatly benefit wild bumble bee populations and subsequently pollination services.

## Project Summary:

Bumble bees are an important group of pollinators for the Wisconsin cranberry industry. Both managed and wild bumble bees contribute to yields as they are more efficient at pollinating cranberry flowers than managed honey bees. Despite their importance, wild bumble bees are in decline across the United States and especially so in the Midwest. Loss of habitat (more specifically the loss of flowers – the sole source of food for bumble bees) is thought to be the primary cause of bumble bee declines. However, there is currently little data describing **where**, **how many**, and **when** flowers are available at scales relevant to both bumble bees, and growers/land managers interested in bumble bee conservation.



**Figure 1:** Abundance of flowers (in area) for surveyed sites (orange lines) as well as the average for the region (red line) from May – October. Data from 2017/2018.

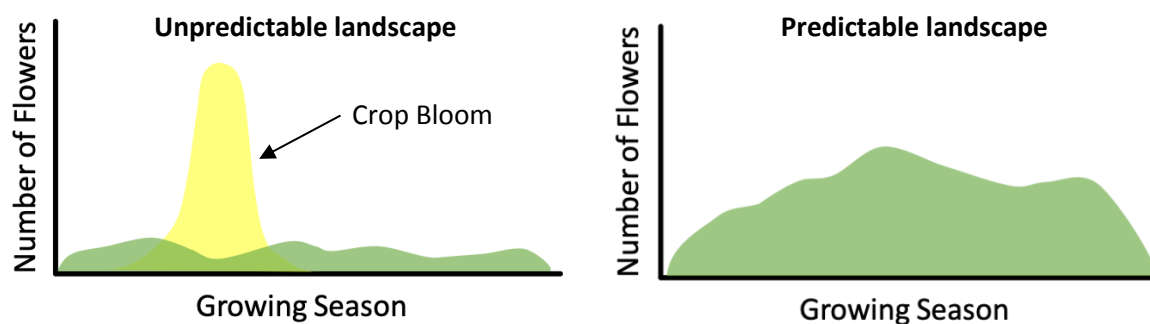
Historically, the use of land-use as a proxy of flower availability has been a standard method in wild bee research (e.g., using natural habitat to confer flower abundance). Our previous work has shown that the cover of natural habitat in cranberry country, woodland, is actually a poor predictor of flower abundance given the low availability of wildflowers within woodlands. While natural habitat does tend to correlate with wild bee diversity, it does not provide the resolution of information necessary to assess

which landscapes are likely to be the most suitable for wild bumble bees. Without information about flower availability, we cannot assess landscapes for their ability to support wild bumble bees, or the pollination services they provide to cranberry.

In order to determine landscape suitability of bumble bees, as well as identify lands in need of wildflower conservation, we have systematically surveyed the abundance and seasonality of flowers in the Central Sands region of Wisconsin. From May to September, we surveyed all pertinent land-cover types surrounding cranberry marshes for flowers at species resolution, enabling us to model flower availability across the region throughout the growing season (Figure 1).

Our surveys have revealed that flower abundance is largely driven by cranberry bloom. The massive peaks in flower area seen in Figure 1 are a result of bloom – which increases flower abundance in the region by nearly 400% relative to background levels of wildflowers. In non-crop areas, we find that road sides and field edges contain the greatest diversity of bumble bee attractive flowers - species belonging to the families Asteraceae (composites like sunflowers and thistle), Fabaceae (legumes like clovers and lupine), Lamiaceae (mints like bee balm and heal-all), Brassicaceae (mustards), and Rosaceae (wild rose, spiarea, brambles). The large tracts of woodland likely provide important early-season tree flowers for bumble bee queens, but bloom at times not covered by our surveys. Additionally, wetlands were not included in our surveys as access to/surveying them is logistically difficult. Altogether, we found 75+ species of flowers from 31 different plant families. Approximately 50% of the recorded flowers were native species.

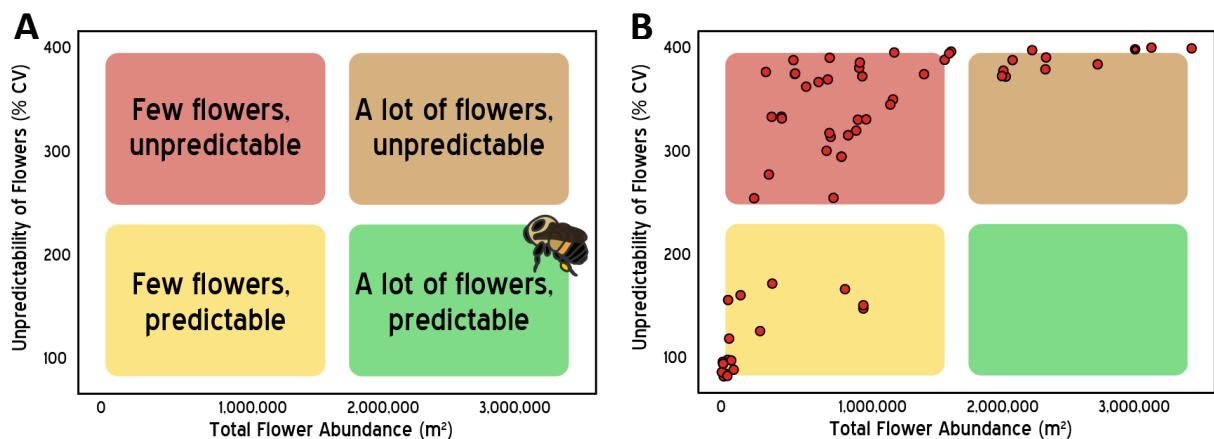
Two facets of the data we recorded are imperative to bumble bee suitability: the **amount of flowers**, and **how predictable** they are over the season (Figure 2). Because bumble bees are active throughout the growing season, they require access to flowers from May-September. While cranberry does provide a large pulse of flowers for foraging bumble bees, it only occurs for 1/6<sup>th</sup> of the growing season. If few flowers are available for the remainder of the season, bumble bees colonies can starve or be heavily weakened and fail to produce new queens that will establish colonies the following year.



**Figure 2:** Hypothetical projections of flower abundance in two different landscapes: one where a lot of flowers are only available for a short period of time, such as a crop bloom (unpredictable landscape) and the other where flowers are abundant consistently available (predictable landscape).



Our data allow us to calculate, for a given marsh, how many flowers they have, and how predictable they are over the course of the season. Relating these two numbers together in a graph gives us a picture of the relative areas of suitability for wild bumble bees (Figure 3a). When we analyze and plot real marshes, most fall into a what can be considered a “danger zone” for many species of wild bumble bees, while none fall into the ideal zone where there are many flowers available and highly predictable (Figure 3b).



**Figure 3:** Total flower availability as it relates to the predictability of flowers over time. **(A)** Points on this graph fall into four zones, where the green zone in the lower right quadrant is the ideal for wild bumble bees, and the red zone in the upper left is a “danger zone.” **(B)** The points on the figure represent actual cranberry marshes surveyed in 2017 and 2018.

To combat the lack of native wild flowers available to bumble bees outside of cranberry bloom, growers could leverage cost sharing programs such as the Cropland Reserve Program (CRP: <https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/>) which provides incentives for establishing habitat, or work with independent organizations that can help navigate bee conservation plantings such as the Conservation Blueprint group (<http://www.conservationblueprint.com/>).

While plantings on individual marshes will provide benefits to bees locally, it is important to note that bumble bee populations respond to scales larger than an individual farm. As such, partnering with neighboring properties to increase flower abundance is likely to have the greatest positive effect on wild bumble bee populations and the pollination services they provide. These effects also take several years to play out as bumble bee numbers increase. If you’d like more information about the many studies supporting this practice, please feel free to contact me.

Next, we are working on developing a portal for growers to access these data for their properties so that they can better plan for land management and pollination needs. We hope to have this online portal developed by early 2020 (see mock-ups below).



**Figure 4:** Grower portal mock-ups to access and assess their lands for flower availability. The portal will provide information on when, where, and what types of flowers are available, and provide modeled estimates of bumble bee suitability.

**Contact:**

Jeremy Hemberger

[hemberger@wisc.edu](mailto:hemberger@wisc.edu)

(608) 622-2698

# CRANBERRY FALSE BLOSSOM: RE-EMERGENCE OF AN OLD DISEASE

PATRICIA McMANUS

*Department of Plant Pathology, University of Wisconsin-Madison*

## What is cranberry false blossom?

- Cranberry false blossom is a disease showing one or more of the following symptoms (see photos):
  - flower petals are dark pink or streaked with red and borne on erect rather than arched pedicels; stamens and pistils are abnormal
  - berries either abort or are small and misshapen
  - leaves are small and are folded close to stems
  - uprights are closely spaced, creating a “witch’s broom”
  - vines extend above the canopy, have few or no berries, and turn red prematurely in the fall
  - terminal buds are enlarged and prone to winter injury
- Infected vines do not recover; once infected, they remain infected and do not bear fruit.

## What causes false blossom?

- False blossom is caused by a “phytoplasma,” a single-celled, bacterium-like organism that lacks a cell wall.
- The false blossom phytoplasma lives in the phloem (sugar-conducting tissues) of cranberry plants.
- The false blossom phytoplasma is an obligate pathogen, meaning it needs living tissue to survive and multiply. It will not persist in dead plants, soil, or water.
- The blunt-nosed leafhopper (*Limotettix vaccinii*; formerly *Scleroracus vaccinii* or *Euscelis striatulus*) is believed to be the only carrier of false blossom phytoplasma.

## How does false blossom spread?

- The blunt-nosed leafhopper picks up the pathogen while feeding on the phloem of infected plants and then spreads it when feeding on healthy plants.
- Symptoms develop within one month to one year after infection. However, scattered infected plants can go unnoticed and/or misdiagnosed for many years.
- False blossom does not spread in pollen, water, or via machinery.
- Experimentally the parasitic plant dodder has been used to transmit the pathogen from plant to plant, but the role of dodder in spreading the disease in the field is probably negligible.

## Where does false blossom occur?

- Cranberry false blossom was a prevalent and important disease throughout Wisconsin, New Jersey, and Massachusetts in the early 1900s through the 1940s. It was rarely seen in the second half of the 20<sup>th</sup> century.
- Symptoms were noticed in New Jersey in the late 1990s, and the false blossom phytoplasma was confirmed in the early 2000s.

- In 2017 and 2018, false blossom was observed at one location in Massachusetts.
- In 2018, false blossom was observed and the pathogen was confirmed at two locations in Wisconsin.
- False blossom has been observed on the large American cranberry (*Vaccinium macrocarpon*) and the small cranberry (*V. oxycoccos*). Experimentally the false blossom phytoplasma has been transferred to 28 species of plants representing 10 plant families (32 plant species were tested).

#### **Where did false blossom go in the middle 1900s and why is it re-emerging?**

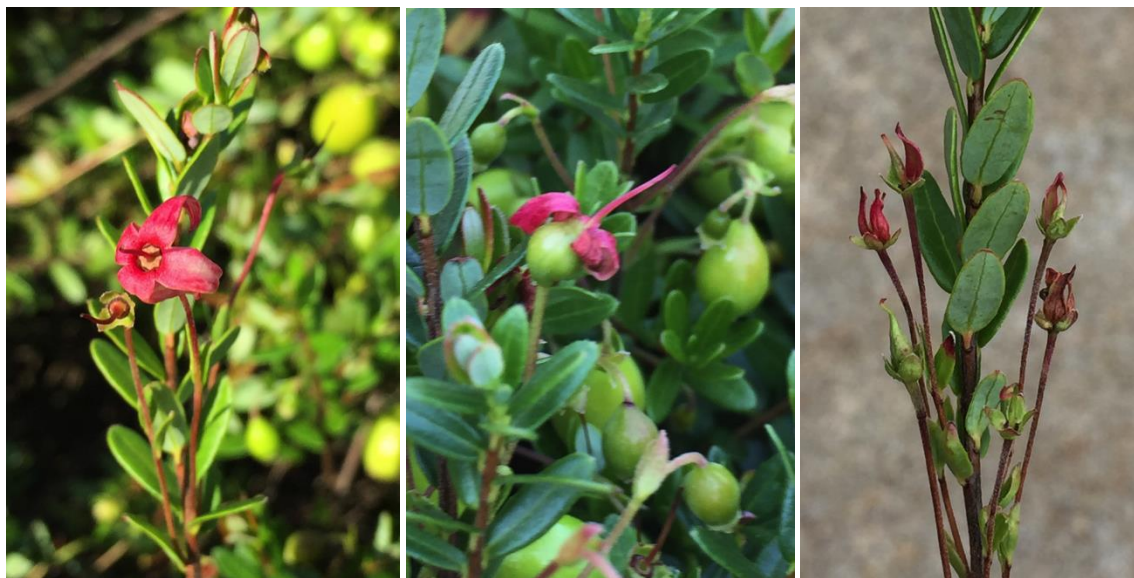
- Once the blunt-nosed leafhopper was identified as the vector, growers controlled the insect by late flooding, use of effective insecticides, and replanting with varieties that were less attractive to leafhoppers and/or less susceptible to the pathogen.
- False blossom has probably persisted at a very low level in cultivated and wild cranberry plants since the 1940s.
- One or more of the following may have contributed to the re-emergence of false blossom: reduced use of broad-spectrum insecticides; increase in leafhopper activity because of climate/environment changes; and introduction of the pathogen on planting stock.

#### **How is false blossom managed?**

- Introduction of false blossom can be prevented by planting pathogen-free nursery stock and vines.
- Once false blossom is introduced, its spread can be minimized by controlling the blunt-nosed leafhopper.
- Thresholds for the blunt-nosed leafhopper have not been determined.
- Vines should be removed from severely infected areas and replanted with pathogen-free vines.
- The blunt-nosed leafhopper prefers some varieties (Howes, Centennial) over others (Early Black, McFarlin). The attractiveness of modern varieties to the leafhopper and susceptibility to the disease have not been determined.

#### **How is false blossom diagnosed?**

- The UW-Madison Plant Disease Diagnostic Clinic ([pddc.wisc.edu](http://pddc.wisc.edu)) tests for the false blossom pathogen by running two types of polymerase chain reaction (PCR) and then sequencing the DNA that is amplified by PCR. The DNA sequence is then compared to sequences in a database that includes sequences for other phytoplasmas, including cranberry false blossom phytoplasma.
- The ability to detect the false blossom phytoplasma in different tissues at different times of the year has not been tested. However, the pathogen has been visualized by transmission electron microscopy in the phloem tissue of infected cranberry leaves collected in late November in New Jersey as well as during the growing season



False blossom can cause flowers to be misshapen and bright pink or streaked with red. Pistils and stamens are abnormal or absent. Berries are small and often misshapen. In some cases, flower parts are retained. Flowers are borne on erect rather than curved pedicels. Photos by Lindsay Wells-Hansen, Ocean Spray Cranberries.



False blossom can cause bunching of shoots to form a “witch’s broom (left). In early fall, infected vines turn red prematurely, extend above the canopy, and do not bear fruit (right). Photos by Lindsay Wells-Hansen, Ocean Spray Cranberries.



## COLD HARDINESS IN CRANBERRY, WHAT HAVE WE LEARNED?

CAMILO VILLOUTA, BETH ANN WORKMASTER, AND AMAYA ATUCHA

Department of Horticulture, University of Wisconsin-Madison

Cold temperature protection strategies available to growers in the fall and spring involve significant efforts of time and resources. A greater understanding of shifts in bud cold hardness during early spring, particularly when no visible changes in the buds' appearance can be correlated to gains or losses of cold hardness, will lead to more efficient decision-making in crop protection. Previous work on cranberry bud cold hardness (Workmaster and Palta, 2009) focused on establishing critical temperatures for frost protection from bud break to bloom. However, there is no information on changes in cold hardness in buds immediately after ice-off when buds are still tight.

To advance our understanding on shifts in bud cold hardness during the spring, we sampled uprights with tight terminal buds from ice-off to bud break from a marsh located in Nekoosa, WI. We subjected the sampled uprights to a controlled freezing test (CFT), which consisted of placing the uprights into plastic tubes in a programmable freezer and lowering the temperature from +39 to -40 °F over 18 hours, and removing subsets of uprights once the temperature inside the chamber reached 32, 21, 14, 3, -4, -15, -22, -32, and -40 °F. Two subsets of tubes were removed at these take out temperatures, and one set was visually evaluated for damage, while the other was placed in favorable conditions to promote growth (Figure 1).

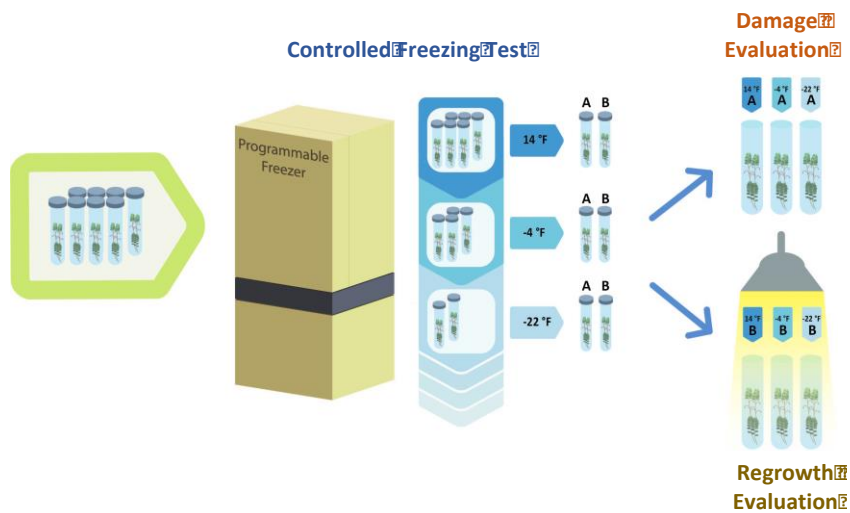


Figure 1. Illustration of sample preparation for controlled freezing test (CFT) and regrowth evaluation assays implemented during testing of bud cold hardness in Spring 2018.

Visual evaluation of bud damage was done by longitudinally dissecting buds using a razor blade. Then the main structures within the bud were evaluated based on the severity of the damage according to the proportion of browned area and water-soaked appearance by a discrete scale with four levels of damage, from 0 to 3, with 0 being no damage and 3 complete darkened area. (Figure 2).

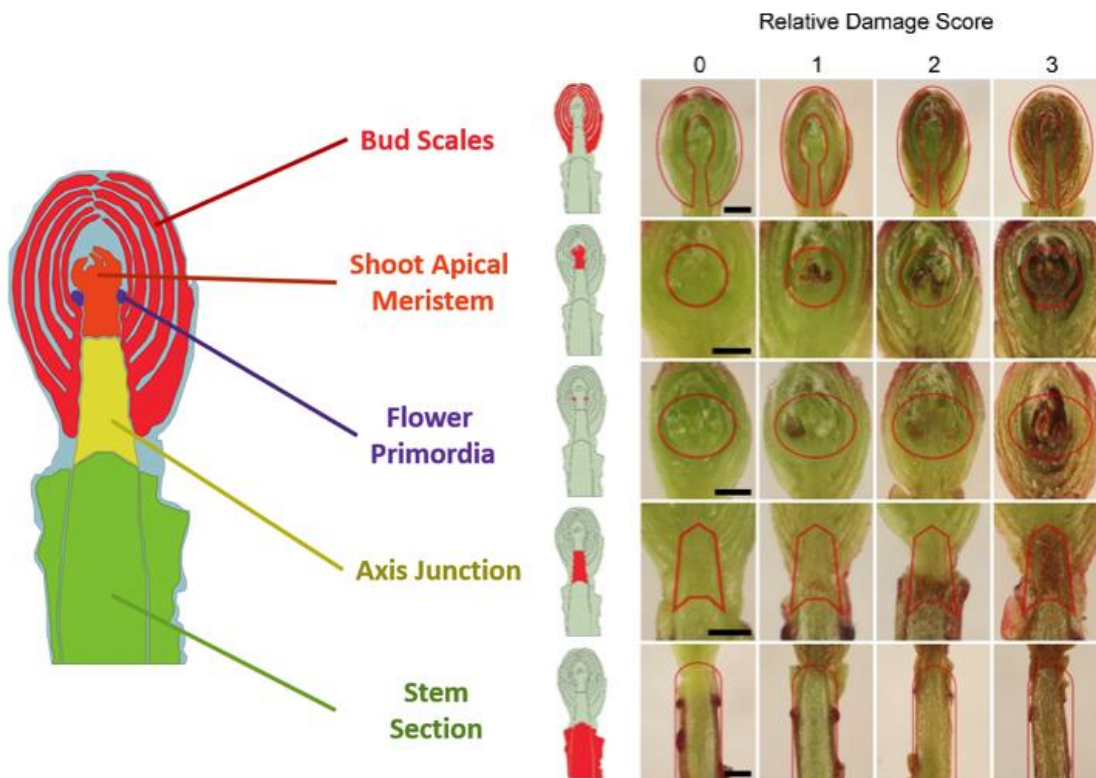


Figure 2. Illustration of a cranberry terminal bud longitudinal section showing the main structures within the bud (left). Examples of the scale used to evaluate freezing damage in different bud structures (right). Red lines delimit the evaluated area for each structure.

The second subset of tubes was placed in favorable growing conditions, and after six weeks we recorded the phenological stage reached, using a scale from 1 to 9, with 1 being tight bud and 9 bloom (Figure 3).

During the first four evaluation dates, March 19 to April 24, we observed that damage in buds increased once temperatures dropped below -5 °F (Figure 4-left side). However, there was a significant loss in cold hardiness by the following sampling date (May 1), with increasing damage to buds once temperatures dropped below 15 °F (Figure 4-left side). Similarly, the results of the regrowth study showed the same pattern as the CFT (Figure 4-right side). This evaluation method revealed that buds lost about 20 °F in hardiness in a week (April 24 to May 1), while minimal change in bud cold hardiness was observed in the previous six weeks.



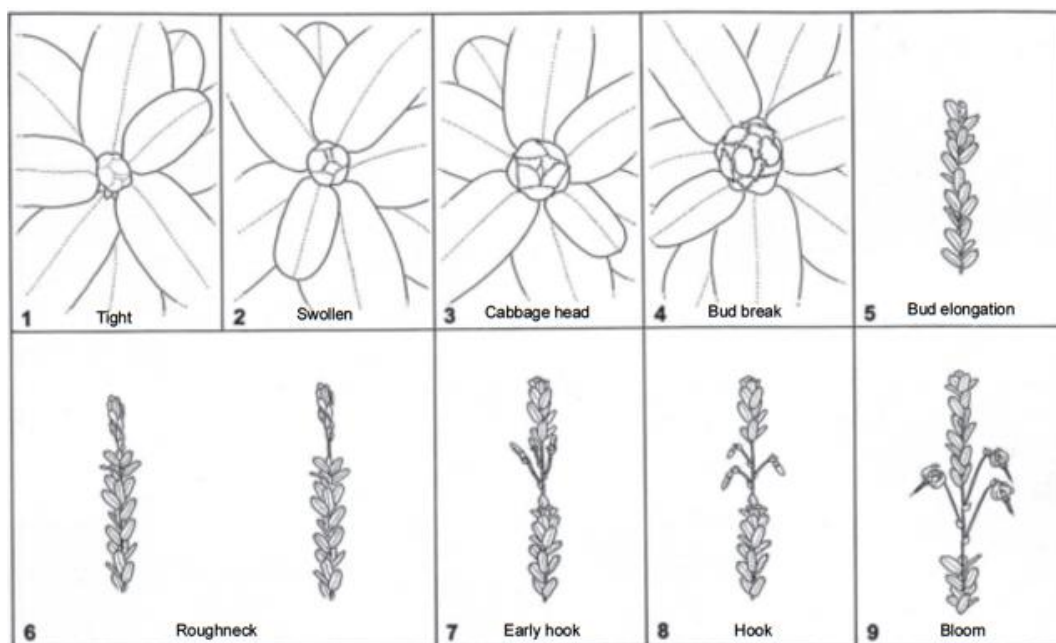


Figure 3. Developmental stages of cranberry terminal bud during spring (Workmaster and Palta, 2006).

We correlated the loss of cold hardiness during the week of April 24 to May 1 to the maximum and minimum daily ambient temperatures, and we noticed a significant shift in the minimum temperatures during that week, compared to the previous sampling dates (Figure 5). Although we do not have enough evidence yet to support this hypothesis, we believe that losses in bud cold hardiness before bud swell might be correlated to an increase in the daily minimum temperature, rather than an increase in the daily maximum temperature. Our research group will continue working on this project this coming spring, with the hope of providing growers with research-based recommendations on cold protection during early spring.

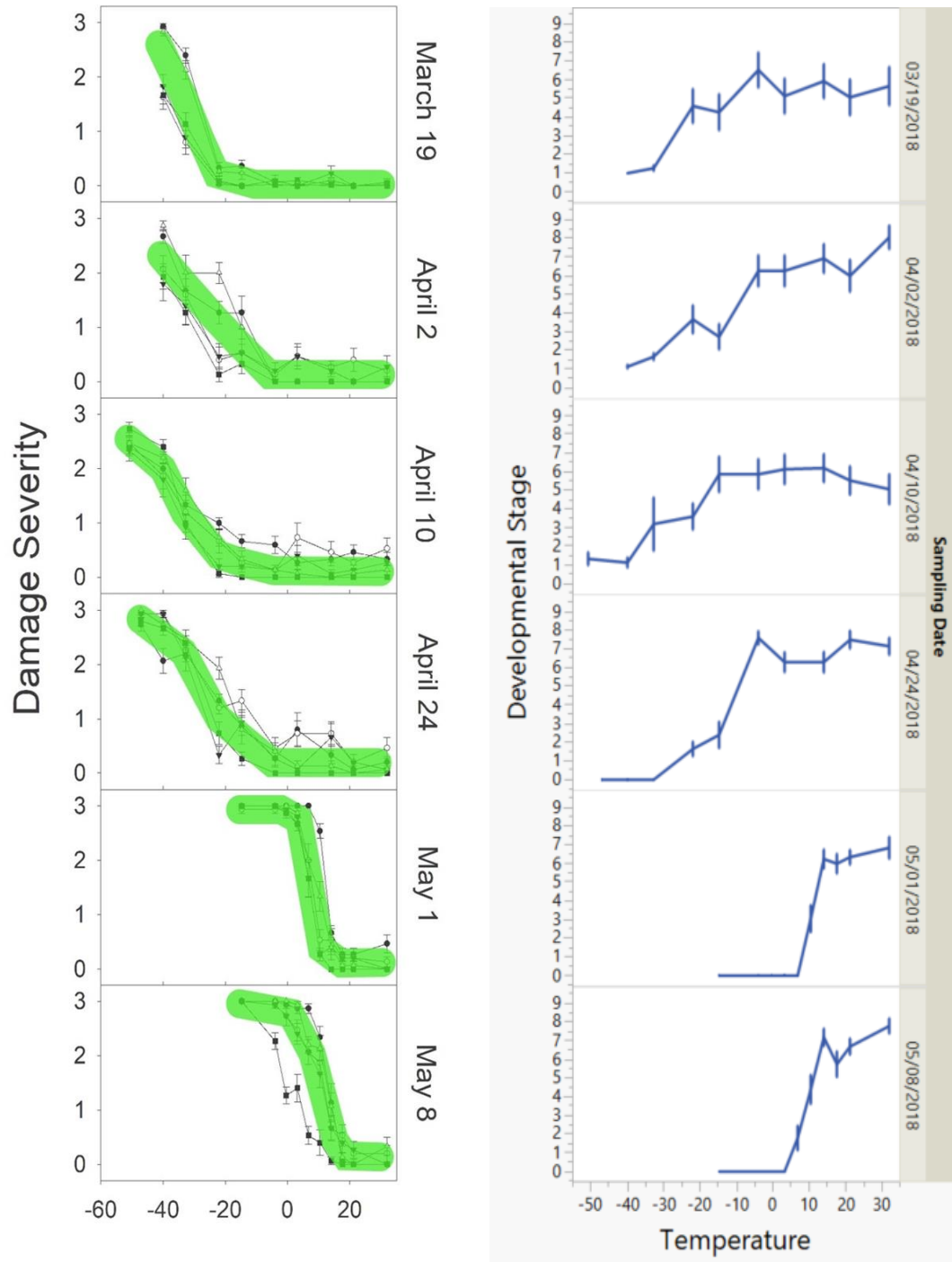


Figure 4. Damage evaluation on a scale of 0 to 3 (0 being no damage and 3 maximum damage) after the controlled freezing test (CFT) (left), and regrowth evaluation six weeks after the CFT, based on developmental stages of uprights from Figure 3 (right).

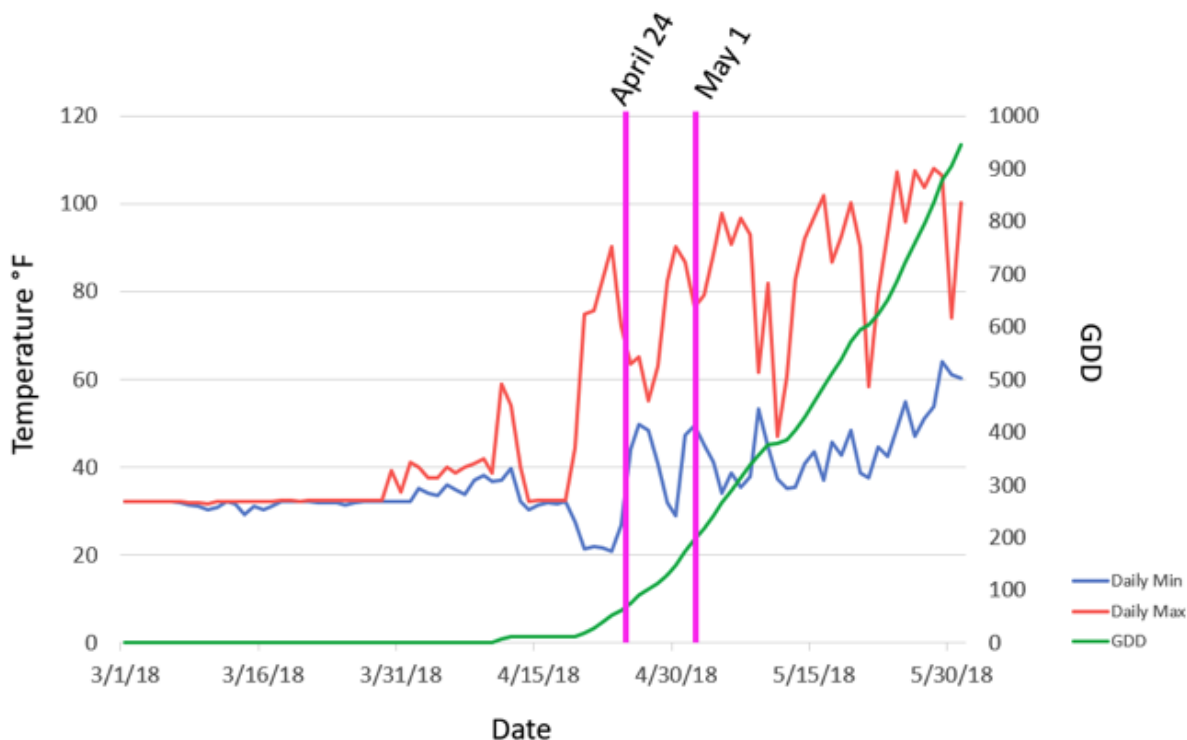


Figure 5. Average daily maximum and minimum temperatures at canopy height and growing degree day (GDD) accumulation (base 41 °F) in Nekoosa, WI from March 1 to May 30, 2018.

#### Literature cited

Workmaster, B.A.A. and J.P. Palta. 2006. Shifts in bud and leaf hardiness during spring growth and development of the cranberry upright: Regrowth potential as an indicator of hardiness. *J. Amer. Soc. Hort. Sci.* 131:327-337.

Workmaster, B.A. and J.P. Palta. 2009. Frost Hardiness of Cranberry Plant: A guide to manage the crop during critical periods in spring and fall. Department of Horticulture, UW-Madison.

## FALL NITROGEN APPLICATIONS, EFFECT ON YIELD AND FRUIT QUALITY

PEDRO ROJAS, JENNY BOLIVAR-MEDINA, AMAYA ATUCHA

Department of Horticulture, University of Wisconsin Madison

Nitrogen fertilization is perhaps the most influential management factor affecting yield and fruit size in cranberry production. However, there is no clear consensus among growers and researchers on the best fertilization practices for the new high yielding varieties. In addition, research from our lab has revealed that reproductive buds continue to develop through the winter period, and that significant root growth occurs during the fall. Based on these new research findings, we started a new project evaluating the effect of fall nitrogen fertilization on yield and fruit quality of cranberries.

During Fall 2017 we established a fertility study that consisted of three beds of 'HyRed', each one divided in to 8 plots corresponding to 2 replicates of the 4 treatments:

- 1) Control (no N fertilizer in the fall)
- 2) T1: 10% of the total N units in a year\* will be applied a week after harvest.
- 3) T2: 20% of the total N units in a year will be applied a week after harvest.
- 4) T3: 40% of the total N units in a year will be applied a week after harvest.

\* This refers to the total units of N a growers would apply during the growing season. We utilized ammonium sulfate (21-0-0) as the source of nitrogen for all treatments.

After the treatments were applied in the fall of 2017, the following growing season (2018) all plots received 100% of the N the grower had originally planned on providing. Table 1 summarizes the units of nitrogen applied in the fall and following summer for each treatment.

Table 1. Nitrogen fertilizer treatments applied during fall of 2017. Fall nitrogen applications units were based on the percentage of the total amount to be applied during the following growing season of 2018.

Treatment	Amount of fertilizer (N units) applied	
	Fall	Summer
Control	0 N Units (0%)	60 N Units
10%	6 N Units (10%)	60 N Units
20%	12 N Units (20%)	60 N Units
40%	24 N Units (40%)	60 N Units

## Results

The data presented below were collected during the 2018-growing season. Total yield, expressed as average barrels per acre, was comparable in all treatments and ranged between 500 to 550 barrels/acre (Figure 1). There were no differences among treatments for berry weight, fruit firmness, or fruit color and shape (Data not shown).

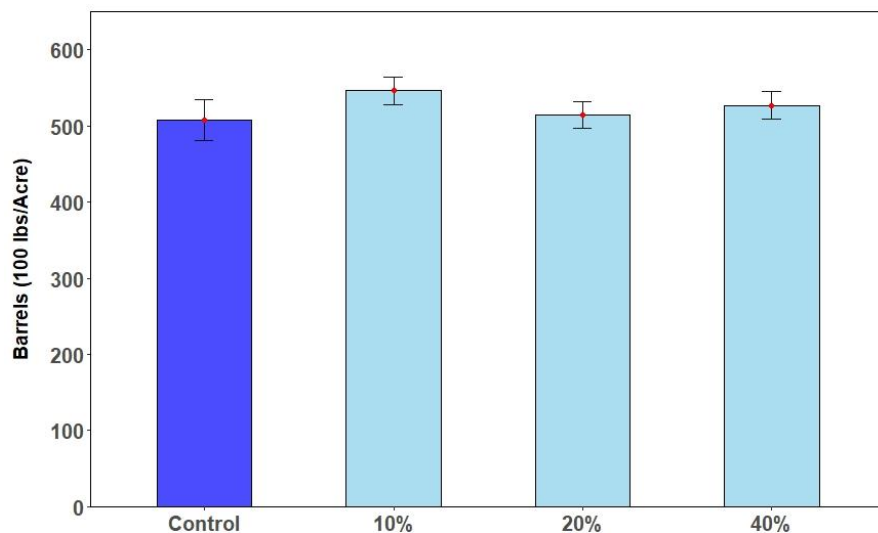


Figure 1. Effect of fall nitrogen treatments on fruit production (barrels/acre) during fall 2018. Error bars represent the standard error of the mean for each treatment.

In addition to yield components, we also evaluated the effect of the treatments on vines' vegetative growth by measuring dry weight of runners (Figure 2). All treatments produced more runners than the control, but only T4 was statistically different than the control.

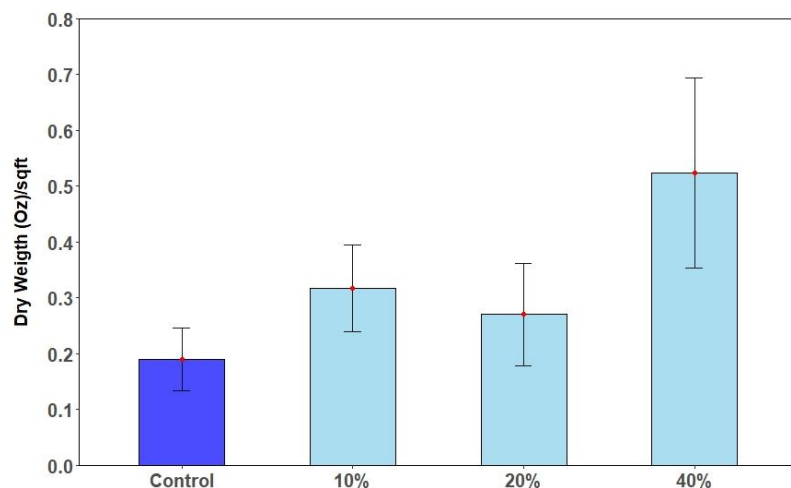


Figure 2. Effect of fall nitrogen treatments on runners' dry weight during fall 2018. Error bars represent the standard error of the mean for each treatment.

We also evaluated the effect of the treatments on the density of uprights and the percentages of fruiting and vegetative uprights. There were no differences among treatments in the density of uprights during Fall 2018 (Figure 3). However, T1 (10% of N in Fall) had a lower percentage of vegetative uprights and a higher percentage of fruiting upright than T3 (40% of N in Fall), although there were no differences with the control treatment (Figure 4).

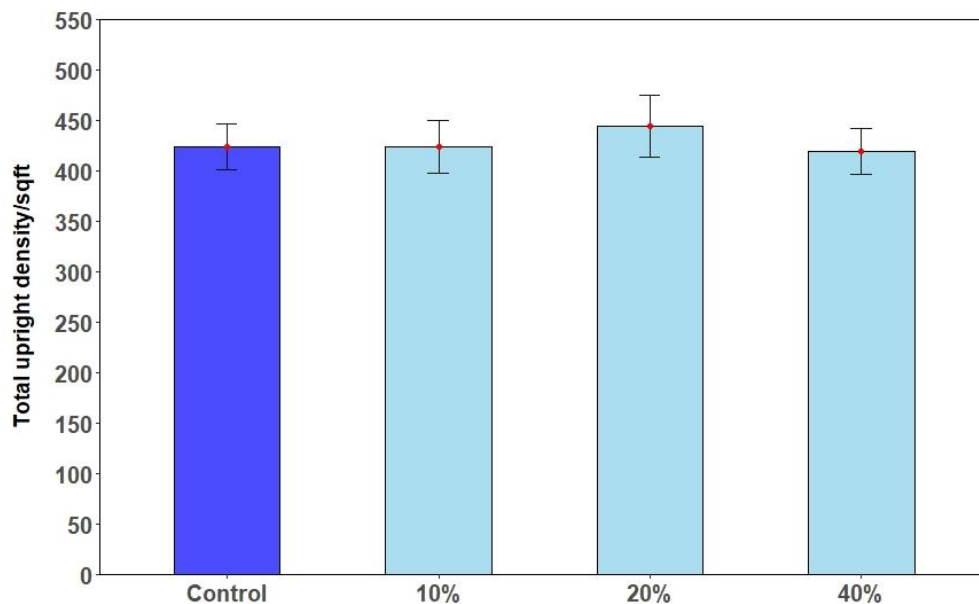


Figure 3. Effect of fall nitrogen treatments on upright density (uprights/ft<sup>2</sup>) during 2018. Error bars represent the standard error of the mean for each treatment.

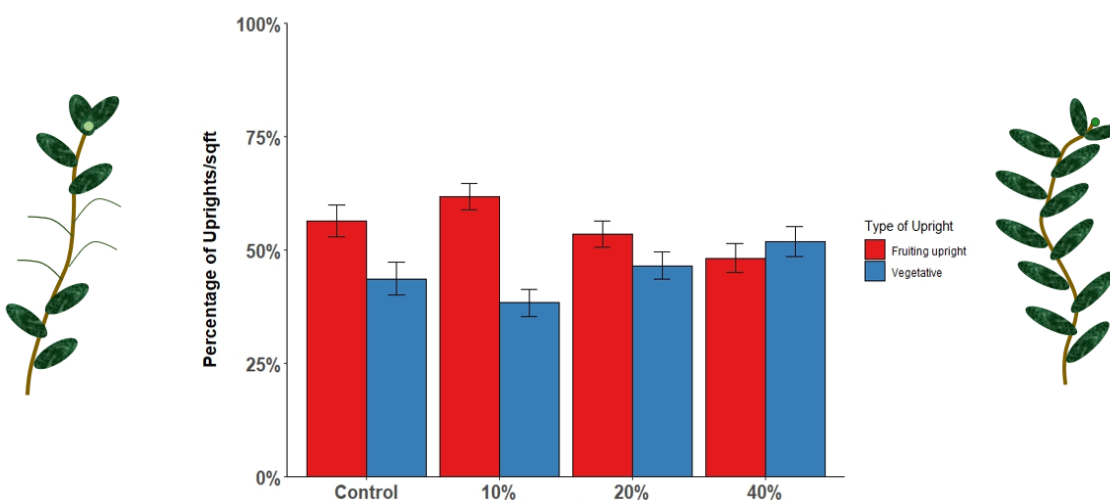


Figure 4. Effect of fall nitrogen treatments on the percentage of fruiting and vegetative uprights per square foot during fall 2018. Error bars represent the standard error of the mean for each treatment.

In summary, during the first season of this project there were no differences among nitrogen fall treatments in yield, berry size, color, firmness, shape, or upright density. Nitrogen fall applications increased the production of runners the following growing season. During the second year of the study, we will continue to evaluate the effect of the treatments on yield and vegetative growth, as well as their effect on carbohydrates and amino acids reserves.

This research project has been led by Dr. Jenny Bolivar, a post-doctoral researcher working in my program, with the help of Dr. Beth Workmaster, Pedro Rojas, and undergraduate students working in the Atucha lab. We thank the funding support from the Wisconsin Cranberry Board and Ocean Spray. Special thanks to Mike Villars and Dan Hauke from Gottschalk Cranberry, and to the Gottschalk family.



# **PHEROMONE LOADING IN CRANBERRY INSECT LURES AND TRAPPING DATA**

ELISSA CHASEN<sup>1,2</sup>, CHRISTELLE GUÉDOT<sup>2</sup>, SHAWN STEFFAN<sup>1,2</sup>

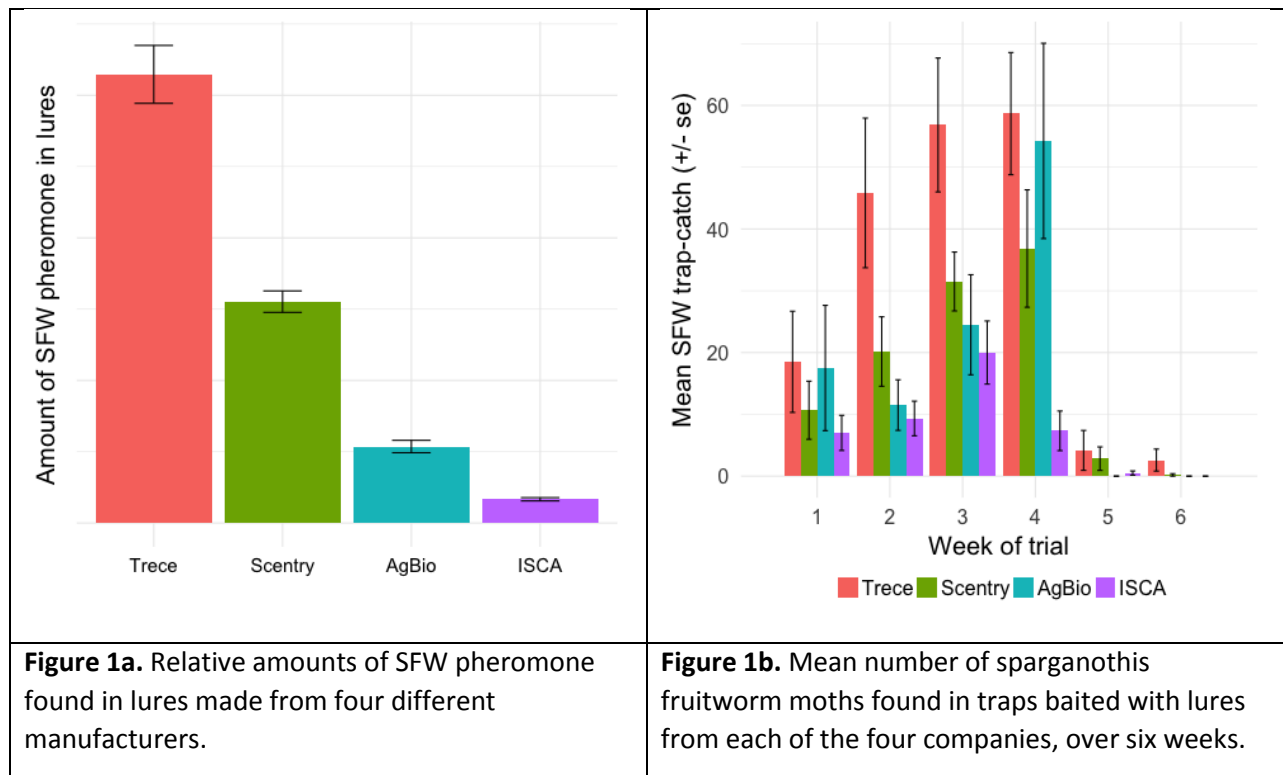
<sup>1</sup>USDA-ARS Vegetable Crops Research Unit

<sup>2</sup>Department of Entomology, University of Wisconsin-Madison

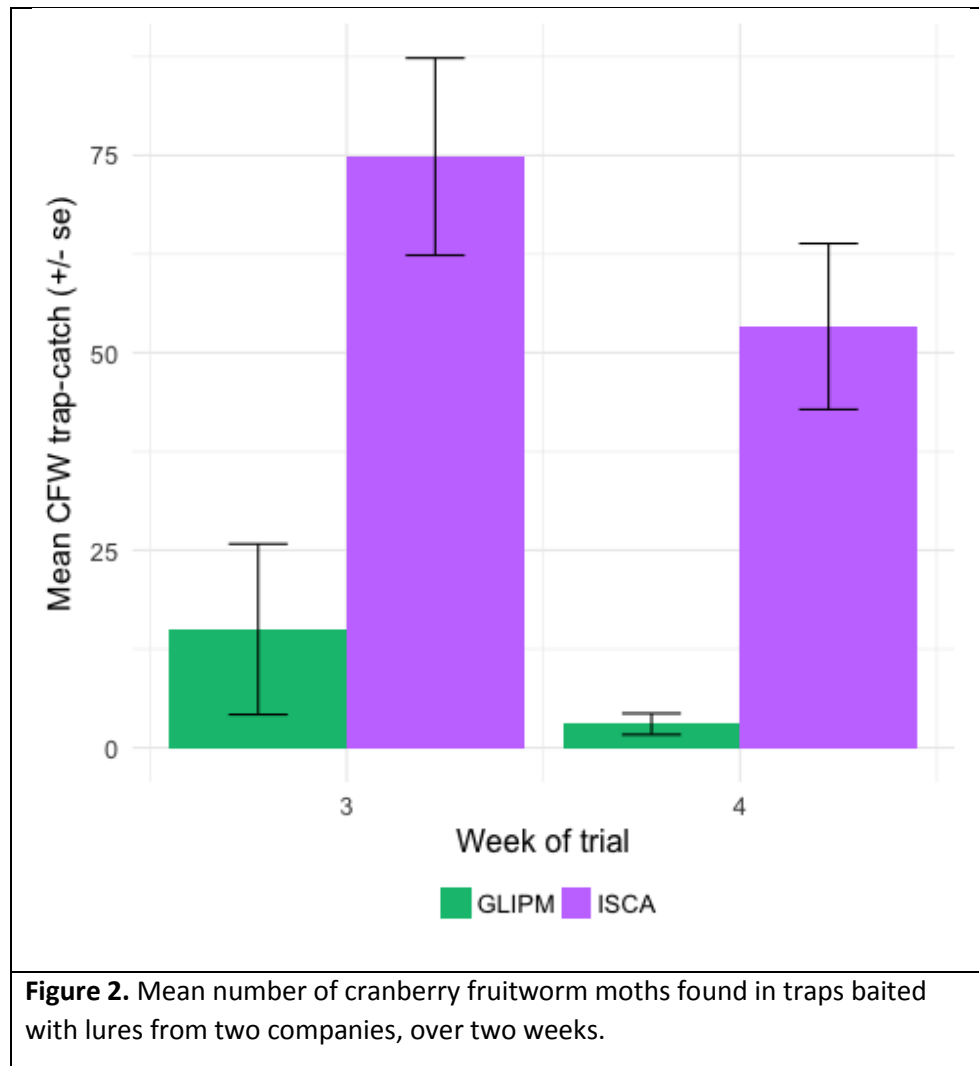
There has been repeated questioning in recent years of whether certain lures provide valid, reliable trap-counts. To provide some answers for the key moth pests being tracked by Wisconsin growers and consultants, we examined the pheromone loads within lures purchased from the four primary suppliers and compared it to trap catches in the field.

We examined lures for the sparganothis fruitworm (SFW), blackheaded fireworm (BHFw), and cranberry fruitworm (CFW). The lures included in our study were manufactured by ISCA Technologies, Scentry, and Trécé and AgBio.

**Sparganothis fruitworm lures:** The SFW lures have the most straightforward comparison between pheromone loading and trap-catches. While the necessary attractive component (E-11:14Ac) is present in each of the lures we examined, the amount varied significantly depending on the manufacturer (fig. 1a): Trécé lures had significantly more pheromone, followed by Scentry, AgBio and then ISCA. These differences translated readily to differences in trap catch data from the field (fig. 1b). Traps baited with Trécé lures caught significantly more SFW moths than ISCA lures. However, there are no clear trends that emerge between trap-catches from the other three companies.

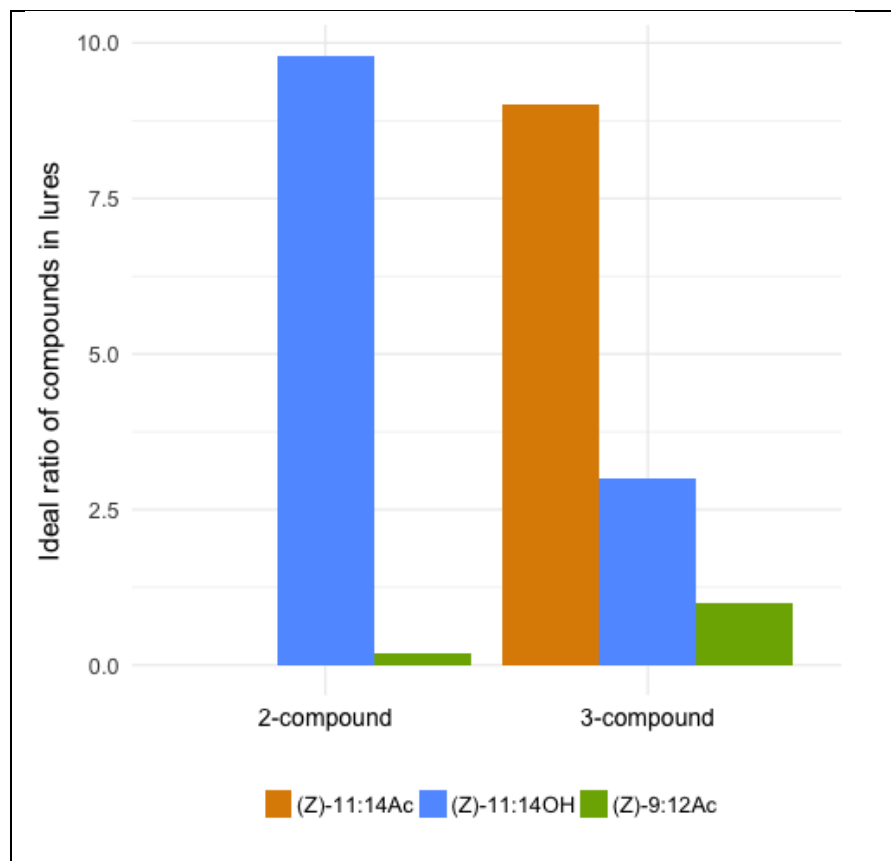


**Cranberry fruitworm lures:** This summer, the only consistent manufacturer of CFW lures was ISCA technologies. Great Lakes IPM briefly manufactured and sold them, but quickly decided not to continue selling them because they noted that their pheromone was not produced correctly. Our trap catch data clearly shows this discrepancy (fig. 2), and the lab work confirms this as well: we didn't find any of the necessary CFW pheromone components in the GLIPM lures that were analyzed. Fortunately, the ISCA lures have been loaded appropriately this year.



**Blackheaded fireworm lures:** Blackheaded fireworm lures are loaded with either a 2- or 3-compound blend. While there is not yet a definitive answer as to which combination of pheromones makes for the most attractive lure, there is evidence to show that the 3-component blend is more attractive, particularly when the populations are low (Fitzpatrick and Troubridge 1992). The 2-component blend consists of (Z)-11:14OH and (Z)-9:12Ac, and the 3-component blend includes the addition of (E)-11:14Ac.

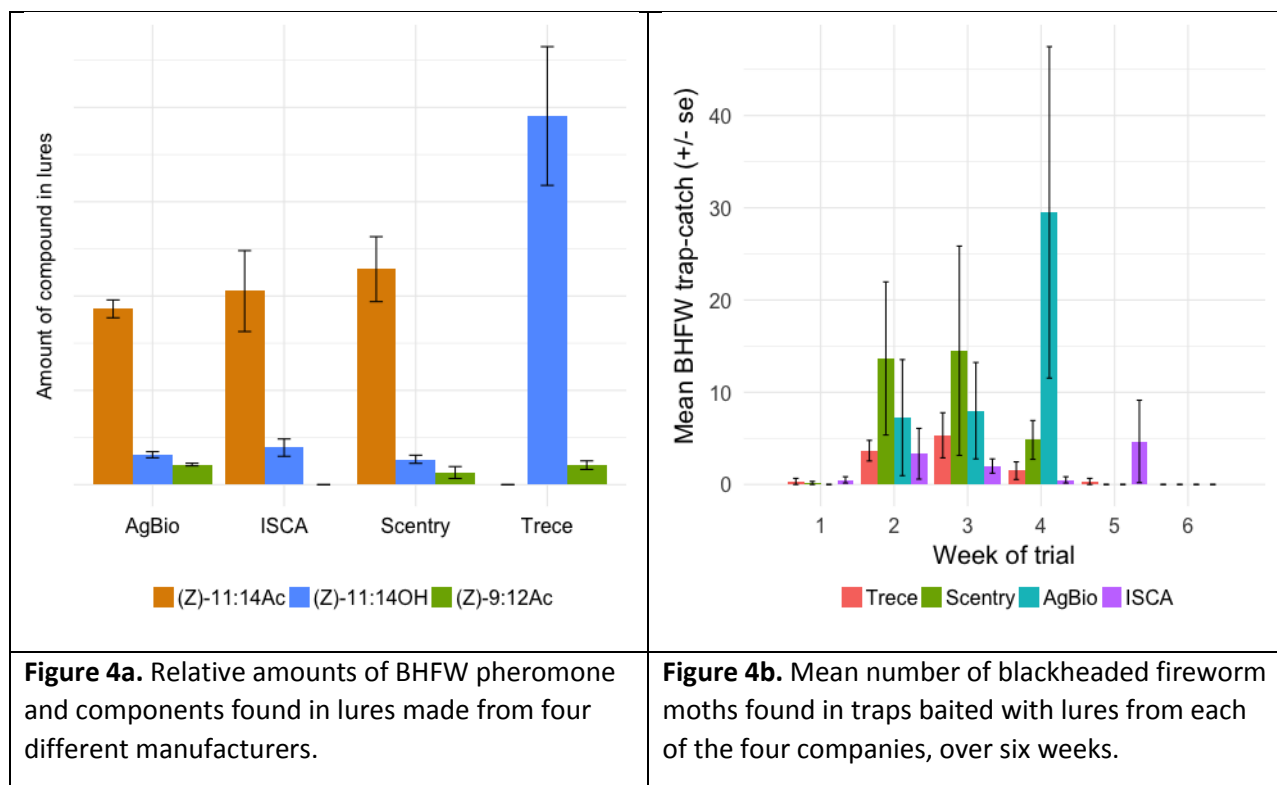
Regardless of whether a 2- or 3-component blend is used in the lure, there is a prescriptive ratio of compounds to make the most attractive lures (fig. 3).



**Figure 3.** Blackheaded fireworm lures can be loaded with either a 2- or 3 component blend effectively. However, in order for either blend to be effective, the compounds must be loaded in particular ratios. In the 2-compound blend, the ratio is 98:2 [(Z)-11:14OH: (Z)-9:12Ac] and in the 3-component blend, the ratio is 9:3:1 [(Z)-11:14Ac: (Z)-11:14OH: (Z)-9:12Ac].

The manufacturers from which we purchased BHFw lures differ in which pheromone blend they load, and sometimes miss the mark all together (for example, using a 2-component blend, but not the 2-components that are recommended). AgBio and Scentry are the only companies that use the 3-component blend. Trécé uses the 2-component blend and appears to do a good job at loading the proper ratio. ISCA intends to load the 3-component blend but most of the time their lures miss the important additive compound, without which, trap-catch declines (fig. 4a).

However, there is no consistent difference in trap-catch in the field based on manufacturer (fig. 4b). While in most weeks, Scentry traps tend to catch more moths, there is no statistical difference in trap-catch depending on lure brand.



Finally, there is the question of lure longevity. We have been measuring this and the data are forthcoming. If there are differences with SFW, CFW, or BHFw lure longevity, their loading amounts will likely explain the differences.

Many thanks are due to Jayne Sojka (LadyBug IPM), Dani Faber (Cutler Cranberries), Lindsay Wells-Hansen and Ben Tillberg (OceanSpray) for assistance with the field trapping trial. Funding for this work was provided by the Wisconsin Cranberry Board and Cranberry Institute.

#### Works cited

**Fitzpatrick, Sheila M., and James T. Troubridge. 1992.** Relative efficacies of two commercial pheromone blends for monitoring the blackheaded fireworm (Lepidoptera: Tortricidae) of cranberries. *Journal of Economic Entomology* 85(3): 947-949

## CRANBERRY PEST MANAGEMENT PROGRAM – REVIEW OF 2018 FIELD TRIALS

JACK PERRY<sup>1</sup>, JED COLQUHOUN<sup>1</sup>, CHRISTELLE GUÉDOT<sup>2</sup>, and PATRICIA McMANUS<sup>3</sup>

<sup>1</sup>*Department of Horticulture*, <sup>3</sup>*Department of Entomology*<sup>2</sup>, *Department of Plant Pathology*  
*University of Wisconsin-Madison*

### **Fungicides & Diseases**

**2018 Disease Status:** disease pressure was generally light across the Wisconsin cranberry production area

- Proline and Abound + Indar are the industry standards.
- 2018 field trials - 8 Locations: 3 trials for fruit rot, 3 trials for early rot, 2 trials for cottonball.
- Proline, Abound + Indar, Abound, Evito, Quilt Xcel, Bravo, Quilt Xcel and Quadris Top provided good control of both fruit rot and early rot.
- Tilt/Orbit, Proline, Abound + Indar, Indar, Quilt Xcel and Evito provided good control of cottonball.
- Although Regalia and Tavano/Oso generally suppressed fruit rots and cottonball when compared to the non-treated checks, they did not perform as well as the top tier of fungicides. They are approved for organic cranberry production.

### **New Fungicides for 2018:**

**Quilt Xcel 2.2SE** is a Syngenta package mix of Abound & Tilt/Orbit; tested at 21 oz/acre; has provided good control of fruit rots and cottonball in 2016 - 2018 research trials.

**Quadris Top 2.7SC** is a Syngenta package mix of Abound and difenoconazole; tested at 10-14 oz/acre; has provided good control of fruit rots and cottonball in 2016 - 2018 research trials.

**Kenja 3.3SC** is a Summit Agro USA product; tested at 15.5 oz/acre; did not provide acceptable control of fruit rots or cottonball.

**Reducing the Number of Fungicide Applications:** There has been an interest in reducing the number of or eliminating all fungicide applications in order to reduce production costs. Two applications of fungicides per season has been the standard recommendation in Wisconsin. To investigate, in 2016 and 2017, 2 applications vs 1 application vs 0 applications of each Bravo, Abound + Indar, Proline and Regalia were tested. Four fruit rot trials each with heavy disease pressure in 2016, four in 2017 with moderate disease pressure and six in 2018 with moderate disease pressure were conducted. In these trials, two applications of Bravo, Proline, Abound + Indar provided good disease control; a single application of these products provided marginally adequate disease control. Two applications of Regalia provided limited suppression of fruit rot; a single application of Regalia was inadequate. The recommendation for best control is for two applications. Two applications allow for some latitude in timing and cover extended infection

periods. One application is risky and precise application timing is critical. Eliminating fungicide applications is not recommended.

**Fungicide Timing to Minimize Bee Exposure:** Fungicide applications during bloom-time are crucial to successful disease control. Although pollinating bees are present during bloom and hence exposed to fungicides these applications are not considered to be a direct hazard to bees. However, there is concern that fungicide-contaminated pollen taken back to hives may be detrimental to the hive environment and the bee brood. Four trials were conducted in 2018 to determine if the number (2) of fungicide applications made during bloom could be reduced or eliminated. The results from the one year of trials suggest that although the standard practice of making two fungicide applications during bloom provides the most efficacious control of diseases, a single application during bloom accompanied by a second application either immediately pre-bloom or immediately post-bloom may also provide acceptable disease control. Continued work is needed.

**Rotation of Fungicides:** Should we rotate fungicides within a season or in alternating seasons? From the standpoint of reducing risk of developing fungicide resistance among pathogens this is a sound concept and should be practiced. However, there is no evidence that rotation enhances products efficacy.

### **Insecticides and Insects**

**2018 Insect Review:** Insect pressure in 2018 was generally light.

- Fruitworms were present and required control.
- Fireworms were isolated problems.
- Tipworms were scarce.
- Flea beetles were a major problem.
- Control of late season flea beetles is a challenge as control measures may be required relatively close to harvest - this precludes the use of several efficacious products that have longer pre-harvest intervals.
- Registered products performed as expected.
- Altacor continues to be the primary insecticide of choice for fruitworm control.

In 2018, trials were conducted to evaluate registered and candidate insecticides for control of tipworms, fruitworms, fireworms, spanworms, flea beetles and leafhoppers.

Insecticides evaluated in the 2018 trials were Altacor, Assail, Delegate, Diazinon AG600, Imidan, Intrepid, Confirm, Lorsban, Rimon, Cormoran, Venerate, Grandevo, and 5 experimental insecticides. The table below shows the cumulative performances of these insecticides of various target insect pests.

### **New Insecticide:**

***Cormoran 1.5 SC*** is a package mix of Rimon (novaluron) and Assail (acetamiprid) from ADAMA. The cranberry use rate is 12 fl oz/acre for most insects and the label impressively lists 21 insect

pests as controlled. This product has provided good control of most of our cranberry insect pests, except tipworms, in research trials.

**Candidate Products:** Five candidate insecticides were evaluated in 2018. Four had good activity on several of our Wisconsin insect pests. Three of these are currently making progress toward registration.

**Flea Beetles:** Flea beetles are relatively easy to control although some products are limited in use due to PHI constraints. Multiple insecticide applications may be required for best control. Insecticides that effectively control flea beetles and are registered for use on cranberries are Actara, Assail, Lorsban, Cormoran, Diazinon, Imidan, Altacor, Sevin, Orthene, and Delegate.

#### Registered Cranberry Insecticide Control Spectrum

	Tip Worm	Fruit Worm	Sparg FW	Span Worm	Fire Worm	Flea Beetle	Leaf Hopper	Bee Toxicity
Altacor	+	+++	+++	+++	++	++	+	--
Assail	+	++	++	++	++	+++	++	xxx
Confirm	--	+++	+++	+++	++	--	--	--
Movento	+++	--	--	--	--	--	--	--
Delegate	+	+++	+++	+++	++	--	--	xx
Diazinon	+	+	+	++	+	+++	+++	xxx
Grandevo	--	++	++	+++	++	--	--	--
Imidan	--	+	+	+	+	+++	+++	xxx
Intrepid	--	+++	+++	+++	+++	--	--	--
Lorsban	+	+	+	+	+	+++	+++	xxx
Rimon	+	++	++	+++	+	+	-	x

+++ >80% control, ++ 70-80% control, 60-70% control; x = bee toxicity

We have started trials to time insecticide applications with degree days based on the work done in the Steffan Lab. We have promising results and will continue this work in 2019 to refine our use patterns.



## **Weeds & Herbicides**

The objectives of 2018 herbicide trials were 1) to integrate pre-emergent and post-emergent herbicides and 2) seek control options for several weeds that are escaping our current control options with an emphasis on a response to grower concerns for moss control.

**Escapes:** Weeds that are currently not being controlled by our herbicide programs include maples, willows, popples, oaks, dewberry, northern St Johnswort, leatherleaf, poison ivy and mosses. Callisto will control willows, popples, and oaks. The key to successful control was to not wait until late season for application. Early season applications were most effective. Callisto temporarily injures maples but does not kill them. Glyphosate worked well but the kill is slow. For the control of maples and leatherleaf, a three-way wiper mix of glyphosate + 2,4-D + a silicone surfactant at 1% v/v worked well. Caution: Not all glyphosate products allow the use of a surfactant. Be sure to read the labels and select a product that does not restrict the use of a surfactant.

Our research on sphagnum moss focused on four products with the following observations:

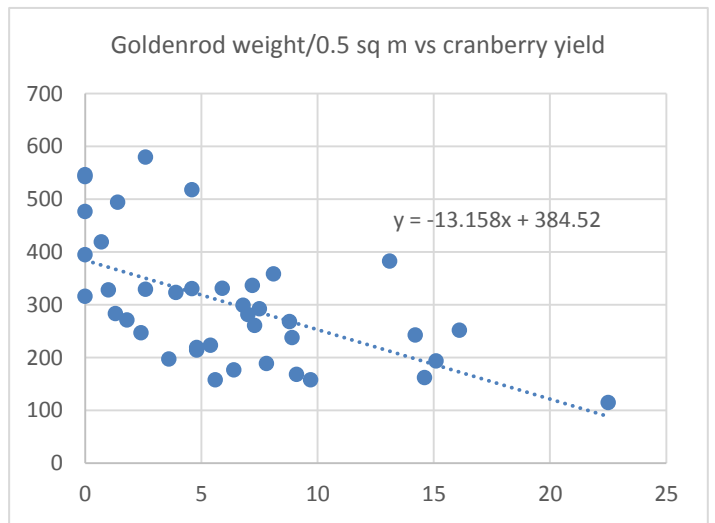
- 1) We investigated four candidate products applied to dormant cranberries (they'd be phytotoxic to actively-growing cranberries).
- 2) Fall dormant applications have not worked nearly as well thus far as spring dormant applications.
- 3) This was not a one-shot cure. Dense moss would require several applications over a period of several years to keep knocking it back.
- 4) Two candidate herbicides provided some short term phytotoxicity to sphagnum but neither provided significant long-term moss eradication. One of these products was significantly phytotoxic to cranberries.
- 5) Improved bed drainage is likely the most efficacious long-term method of eliminating moss.

**New Herbicides:** There are few new herbicides being brought into the market, although this is beginning to change as glyphosate-resistant weeds become common in GMO agronomic crops like corn and soybean. There are three candidate products pending cranberry registrations.

**Generic Callisto:** In 2018 multiple generic formulations of Callisto (mesotrione) were available. In field trials there have not been significant differences between the generic products and Callisto or among the generic products. Continued testing of generic mesotrione products is not warranted.

**Callisto – 2 Applications/Season:** Callisto is currently limited to two applications regardless of rate as long as each application does not exceed 8 oz. Despite an appeal to increase the number of permitted applications/season but not the total active ingredient in a season, registrants have denied this request. In general, changing a pesticide use pattern can result in residue levels different than those observed when the product was in the registration process.

**Impact of Weeds on Cranberry Yield:** In 2018 we developed and carried out a protocol for studies to determine the impact of weeds on cranberry yield and quality. Research partners across North America used this common protocol to complete yield impact studies in this growing season (an example with slender-leaved goldenrod shown at right). Such work is particularly critical in challenging economic times to ensure that growers are getting the best return on investment for their crop input costs. We'll now analyze and assemble the results of this collective work and share it with the cranberry industry, with anticipated expansion to additional weed species in 2019.



### **Future for Cranberry Pesticides**

Currently there are three potential new insecticides, three potential new herbicides and three potential new fungicides in the registration process.

Some products in our pesticide arsenal have challenges to their registration:

Bravo	Export residues; short-term reprieve for now?
Evito	Export residues
Proline	Export residues
QuinStar	Export residues
Belay	Threat to bees; cancelled
Assail	Threat to bees
Lorsban / OP	Threat to the environment
Insecticides	Export residues

**Always remember to:** 1) Read the pesticide label and 2) Check with the processor for approval to use.

## 2019 CRANBERRY SCHOOL GROWER SURVEY RESULTS

CHRISTELLE GUÉDOT<sup>1</sup> AND MATT LIPPERT<sup>2</sup>

<sup>1</sup> *Department of Entomology, University of Wisconsin, Madison*

<sup>2</sup> *University of Wisconsin-Extension, Wood County, Wisconsin Rapids*

Results of the live survey of growers present in the room at the 2019 Cranberry School are presented below. The survey was conducted using Turning Point 5 (Turning Technologies, LLC) software and clicker hardware. Growers were provided with clickers to allow for live anonymous responses to be collected. Questions were displayed on screens and respondents were allowed to select answers. After all responses were collected, the polling was closed, and the results of the survey were displayed on the screens. The “count” column indicates the number of growers that responded and the “percent” column indicates the % of respondents. Thank you for participating!

<b>1. In the last 2 years, have you changed the N application in Spring?</b>	<b>Responses</b>	
No	15	36%
Yes I have delayed to full bloom	15	36%
Yes , I have delayed to fruit set	7	17%
Yes, I have, in advance of fruit set	4	10%
<b>Totals</b>	<b>41</b>	<b>100%</b>

<b>2. Do you apply nitrogen fertilizer after harvest?</b>	<b>Responses</b>	
Yes, about 10% of the total N units in a year	1	2%
Yes, about 20% of the total N units in a year	0	0%
No	43	98%
<b>Totals</b>	<b>44</b>	<b>100%</b>

<b>3. In 2018, fruit size was:</b>	<b>Responses</b>	
Smaller than average	12	28%
Similar to previous years	26	60%
Bigger than average	5	12%
<b>Totals</b>	<b>43</b>	<b>100%</b>

<b>4. I struggle to achieve optimal fruit size</b>	<b>Responses</b>	
Yes, some years	26	60%
Yes, every year	0	0%
No, fruit size has never been an issue	17	40%
<b>Totals</b>	<b>43</b>	<b>100%</b>

<b>5. My fertilization plan is based on my knowledge of when the vines uptake nutrients during fruit development</b>	<b>Responses</b>	
Yes	15	38%
No	25	63%
<b>Totals</b>	<b>40</b>	<b>100%</b>

<b>6. I feel confident about my knowledge on fruit development and nutrient needs to achieve the maximum yield potential</b>	<b>Responses</b>	
Yes	3	7%
No	2	4%
I wish to learn more about this topic	41	89%
<b>Totals</b>	<b>46</b>	<b>100%</b>

7. Fertilizer (N,P,K) can help size the fruit even in late summer?	Responses	
Yes	27	59%
No	19	41%
<b>Totals</b>	<b>46</b>	<b>100%</b>

8. I apply micronutrients (Zn, B, Mn) every year	Responses	
Yes	24	51%
No	23	49%
<b>Totals</b>	<b>47</b>	<b>100%</b>

9. When reducing inputs in my marsh for production cost reduction, I would first:	Responses	
Reduce fertilizer applications	8	20%
Reduce herbicide applications	21	51%
Reduce insecticide applications	5	12%
All of the above	7	17%
<b>Totals</b>	<b>41</b>	<b>100%</b>

10. In the last 5 years I have seen an increase in hail events?	Responses	
Yes	14	29%
No	35	71%
<b>Totals</b>	<b>49</b>	<b>100%</b>

11. In the past 5 years I have experienced yield loss due to hail events?	Responses	
Yes	24	48%
No	26	52%
<b>Totals</b>	<b>50</b>	<b>100%</b>

12. I have a good understanding of how and what insurance companies will cover after a hail event	Responses	
Yes	30	60%
No	16	32%
I don't know if my crop insurance covers hail damage	4	8%
<b>Totals</b>	<b>50</b>	<b>100%</b>

13. Do you use the fungicide chlorothalonil?	Responses	
Yes	11	22%
No	40	78%
<b>Totals</b>	<b>51</b>	<b>100%</b>

14. If you do use chlorothalonil, do you feel confident in alternative fungicides?	Responses	
Don't use chlorothalonil	36	71%
Use chlorothalonil, but yes, we have good alternatives	13	25%
Use chlorothalonil, and no, not confident in the alternatives	2	4%
<b>Totals</b>	<b>51</b>	<b>100%</b>

15. Have you reduced fungicide use in the last 3-4 years because of low crop prices?	Responses	
Yes	6	12%
No	33	63%
We have never or only rarely used fungicides	13	25%
<b>Totals</b>	<b>52</b>	<b>100%</b>

**16. If you have reduced fungicide use in the last 3-4 years, has this coincided with reduced yields?**

	Responses	
Yes, definitely	2	6%
Maybe, but so many factors at play that it's hard to tell	14	40%
No, yields are good despite cutting back on fungicides	7	20%
We have never or only rarely used fungicides	12	34%
<b>Totals</b>	<b>35</b>	<b>100%</b>

**17. Have you used the fungicide Proline (prothioconazole)?**

	Responses	
Yes, good results	33	65%
Yes, fair to poor results	5	10%
No, have not used it	13	25%
<b>Totals</b>	<b>51</b>	<b>100%</b>

**18. Do you use more than one class of fungicides to control fruit rot diseases?**

	Responses	
Don't use fungicides	10	19%
We use different fungicides, but not sure if they are in different	12	23%
Yes, we use more than one class of fungicides	31	58%
<b>Totals</b>	<b>53</b>	<b>100%</b>

**19. Have you heard of cranberry false blossom disease?**

	Responses	
Yes and am concerned	10	19.6%
Yes but don't know much about it	36	70.6%
No	5	9.8%
<b>Totals</b>	<b>51</b>	<b>100%</b>

**20. When I buy plants from out of state, I ask the seller if they screen plants for viruses and/or phytoplasma pathogens.**

	Responses	
Yes	7	13%
Not timed –I run until the air temperature de...	8	15%
Don't buy plants from out of state	38	72%
<b>Totals</b>	<b>53</b>	<b>100%</b>

**21. Are you confident that you can identify berry scarring associated with viruses?**

	Responses	
Yes	24	44%
No	30	56%
<b>Totals</b>	<b>54</b>	<b>100%</b>

**22. Do you have moss on your marsh?**

	Responses	
Yes, but only on a few beds	32	62%
Yes, extensively across the marsh	12	23%
No moss on my marsh	8	15%
<b>Totals</b>	<b>52</b>	<b>100%</b>

**23. Do you feel that your weed pressure impacts cranberry yield?**

	Responses	
No impact	8	15%
Yes, by 10% or less	35	64%
Yes, by 11 to 25%	10	18%
Yes , by greater than 25%	2	4%
<b>Totals</b>	<b>55</b>	<b>100%</b>

<b>24. For your weed control program in 2018, did you:</b>	<b>Responses</b>	
Use pre-emergent herbicides only	1	2%
Use post-emergent herbicides only	3	5%
Use pre- and post-emergent herbicides	48	86%
I didn't use any herbicides	4	7%
<b>Totals</b>	<b>56</b>	<b>100%</b>

**25. Do you feel that having more relatively new herbicides, such as**

<b>Callisto, impacted the amount of herbicide you use?</b>	<b>Responses</b>	
I use more herbicide now than in the past	9	17%
I use less herbicide now than in the past	22	42%
I'm not sure or it depends on the year	22	42%
<b>Totals</b>	<b>53</b>	<b>100%</b>

**26. When considering surfactants with your pesticides:**

	<b>Responses</b>	
I use the same surfactant product every year, if possible	29	55%
I use whatever the dealer delivers with the pesticide	12	23%
I'm not that concerned about which surfactant brand I use	12	23%
<b>Totals</b>	<b>53</b>	<b>100%</b>

**27. Are you concerned about the development of herbicide-resistant weeds on your marsh?**

	<b>Responses</b>	
Very concerned	23	43%
Somewhat concerned	29	55%
Not at all concerned	1	2%
<b>Totals</b>	<b>53</b>	<b>100%</b>

**28. Do you still wick-wipe weeds with glyphosate?**

	<b>Responses</b>	
Yes, every year	43	78%
Yes, but not every year	8	15%
No, we don't wick-wipe weeds	4	7%
<b>Totals</b>	<b>55</b>	<b>100%</b>

**29. The most economically important insect pest on your marsh in 2018 was:**

	<b>Responses</b>	
Sparganothis fruitworm	12	21%
Cranberry fruitworm	14	25%
Black-headed fire worm	5	9%
Red-headed flea beetle	19	34%
Cranberry girdler	0	0%
Tipworm	2	4%
Other pest species	4	7%
<b>Totals</b>	<b>56</b>	<b>100%</b>

**30. The second most economically important insect pest on your marsh in 2018 was:**

	<b>Responses</b>	
Sparganothis fruitworm	15	31%
Cranberry fruitworm	18	37%
Black-headed fire worm	5	10%
Red-headed flea beetle	7	14%
Cranberry girdler	0	0%
Tipworm	3	6%
Other pest species	1	2%
<b>Totals</b>	<b>49</b>	<b>100%</b>

<b>31. Are degree days recorded at your marsh for insect control?</b>	<b>Responses</b>	
Yes	13	24%
No	29	54%
I don't know ask my scout!	12	22%
<b>Totals</b>	<b>54</b>	<b>100%</b>

<b>32. Would you be interested in using degree days for precisely timing your sprays to improve insecticide efficacy?</b>	<b>Responses</b>	
Yes	44	76%
No	14	24%
<b>Totals</b>	<b>58</b>	<b>100%</b>

<b>33. What was the main yield reducing pest of the 2018 crop?</b>	<b>Responses</b>	
Insects	21	39%
Disease	20	37%
Weeds	13	24%
<b>Totals</b>	<b>54</b>	<b>100%</b>

<b>34. Was your crop in 2018:</b>	<b>Responses</b>	
Up from 2017	26	47%
Down from 2017	21	38%
Similar to 2017	8	15%
<b>Totals</b>	<b>55</b>	<b>100%</b>

<b>35. In 2018 we reduced these inputs:</b>	<b>Responses</b>	
We didn't	31	58%
Number of bee hives	2	4%
Labor	8	15%
Fertilizers	3	6%
Herbicides	0	0%
Fungicides	0	0%
Insecticides	1	2%
More than one of the above	8	15%
<b>Totals</b>	<b>53</b>	<b>100%</b>

<b>36. Was your insect pressure in 2018:</b>	<b>Responses</b>	
Up from 2017	16	30%
Down from 2017	8	15%
Similar to 2017	30	56%
<b>Totals</b>	<b>54</b>	<b>100%</b>

<b>37. How many honey bee hives per acre did you bring in 2018?</b>	<b>Responses</b>	
0	8	14%
1	5	9%
2	20	34%
3	13	22%
4-7	11	19%
8 or more	1	2%
<b>Totals</b>	<b>58</b>	<b>100%</b>

<b>38. How many bumble bee colonies per acre did you bring in 2018?</b>	<b>Responses</b>	
0	42	75%
1	10	18%
2	0	0%
3	3	5%
4-7	0	0%
8 or more	1	2%
<b>Totals</b>	<b>56</b>	<b>100%</b>

<b>39. The main reason for not using bumble bee colonies is:</b>	<b>Responses</b>	
Cost of colonies	12	24%
Availability of colonies	1	2%
Cost in labor to set up and dispose of colonies	2	4%
Lack of experience with bumble bees	9	18%
More research is needed to convince me	15	31%
Other	10	20%
<b>Totals</b>	<b>49</b>	<b>100%</b>

<b>40. The main reason for using honey bees is:</b>	<b>Responses</b>	
Cost of hives	3	6%
Availability of hives	3	6%
My beekeeper takes care of all the logistics and the bees	8	15%
Consistent and reliable pollination	37	71%
Other	1	2%
<b>Totals</b>	<b>52</b>	<b>100%</b>

<b>41. How many insecticide sprays did you apply in the 2018 growing season?</b>	<b>Responses</b>	
0	3	6%
1-2	13	24%
3-4	32	59%
5-6	4	7%
More than 6	2	4%
<b>Totals</b>	<b>54</b>	<b>100%</b>

<b>42. Was your number of insecticide sprays in 2018?</b>	<b>Responses</b>	
Up from 2017	15	27%
Down from 2017	8	15%
Same as 2017	32	58%
<b>Totals</b>	<b>55</b>	<b>100%</b>

<b>43. How much did you spend in 2018 on insecticide per-acre?</b>	<b>Responses</b>	
\$ 0-40/acre	4	9%
\$41-80/acre	4	9%
\$81-120/acre	25	56%
\$121-160/acre	7	16%
\$161-200/acre	5	11%
<b>Totals</b>	<b>45</b>	<b>100%</b>

<b>44. Would you consider changing your management practices to protect pollinators?</b>	<b>Responses</b>	
Yes	33	89%
No	4	11%
<b>Totals</b>	<b>37</b>	<b>100%</b>

<b>45. In terms of pesticide use, would you consider reducing pesticide applications during bloom to protect pollinators?</b>	<b>Responses</b>	
Yes, I would consider reducing insecticide applications	9	16%
Yes, I would consider reducing fungicide applications	2	3%
Yes, I would consider reducing both types of pesticide applications	37	65%
No, I wouldn't consider reducing either type of application	9	16%
<b>Totals</b>	<b>57</b>	<b>100%</b>



**46. Are you considering planting a pollinator garden to attract wild pollinators on your marsh?**

	Responses	
Yes	10	17.0%
No	20	34.0%
I already have one	21	36.0%
I am waiting to get more info before implementing on my marsh	7	12.0%
<b>Totals</b>	<b>58</b>	<b>100%</b>

**47. How many sprays were specifically for cranberry fruitworm in 2018?**

	Responses	
0	8	14%
1	25	45%
2	18	32%
3	3	5%
4 or more	2	4%
<b>Totals</b>	<b>56</b>	<b>100%</b>

**48. How many sprays were specifically for sparganothis fruitworm in 2018?**

	Responses	
0	23	43%
1	20	37%
2	7	13%
3	3	6%
4 or more	1	2%
<b>Totals</b>	<b>54</b>	<b>100%</b>

**49. How many sprays were specifically for tipworm in 2018?**

	Responses	
0	38	67%
1	15	26%
2	3	5%
3	0	0%
4 or more	1	2%
<b>Totals</b>	<b>54</b>	<b>100%</b>

**50. How many sprays were specifically for flea beetle in 2018?**

	Responses	
0	27	47%
1	11	19%
2	12	21%
3	5	9%
4 or more	2	4%
<b>Totals</b>	<b>57</b>	<b>100%</b>

**51. Was the flea beetle population on your marsh in 2018:**

	Responses	
Up from 2017	18	33%
Down from 2017	8	15%
Same as 2017	29	53%
<b>Totals</b>	<b>55</b>	<b>100%</b>

**52. Do you typically flood in spring (mid- to late-May) for insect control?**

	Responses	
Yes	26	46%
No	31	54%
<b>Totals</b>	<b>57</b>	<b>100%</b>

**53. How much is the cranberry board assessment?**

5 cents per barrel	3	5%
10 cents per barrel	35	64%
25 cents per barrel	1	2%
I don't know	16	29%
<b>Totals</b>	<b>55</b>	<b>100%</b>

**54. What is the approximate annual budget of the Wisconsin  
Cranberry Board, Inc.?**

	<b>Responses</b>	
\$100,000	2	4%
\$200,000	12	24%
\$500,000	32	64%
\$1,000,000	4	8%
<b>Totals</b>	<b>50</b>	<b>100%</b>

**55. How many Wisconsin Cranberry Board, Inc. meetings have you  
attended in the last 3 years?**

	<b>Responses</b>	
1-3	10	19%
4-7	1	2%
All	4	7%
None	39	72%
<b>Totals</b>	<b>54</b>	<b>100%</b>

**56. What prevents you from attending Wisconsin Cranberry Board,  
Inc. meetings?**

	<b>Responses</b>	
Location	6	12%
Timing	4	8%
I'm satisfied with the performance of the Board	21	42%
Not interested	19	38%
<b>Totals</b>	<b>55</b>	<b>100%</b>

**57. How frequently do you discuss programming, budgeting, etc.  
with members of the Wisconsin Cranberry Board, Inc.?**

	<b>Responses</b>	
Quite often	6	12%
Rarely	9	18%
Never	36	71%
<b>Total</b>	<b>51</b>	<b>100%</b>

**58. The Wisconsin Cranberry Board, Inc. invests in research, grower  
education, consumer awareness, public communication and  
promotion of Wisconsin cranberries and cranberry growers. How  
well does this align with your priorities?**

	<b>Responses</b>	
Well aligned	31	60%
Somewhat aligned	19	37%
Not at all aligned	2	4%
<b>Totals</b>	<b>52</b>	<b>100%</b>

**59. Should the Wisconsin Cranberry Board, Inc. allocate more or less  
funding on communications/promotions?**

	<b>Responses</b>	
More	37	74%
Less	13	26%
<b>Totals</b>	<b>50</b>	<b>100%</b>

**60. Should the Wisconsin Cranberry Board, Inc. allocate more or less funding on research that improves management practices?**

	<b>Responses</b>	
More	35	66%
Less	18	34%
<b>Total</b>	<b>53</b>	<b>100%</b>

**61. Which area of research should be a priority for the Wisconsin Cranberry Board, Inc.?**

	<b>Responses</b>	
Compliance with new state and federal regulations	4	8%
Economic sustainability	30	60%
Environmental sustainability	10	20%
No opinion	6	12%
<b>Totals</b>	<b>50</b>	<b>100%</b>

# WISCONSIN STATE CRANBERRY GROWERS

— *Association* —



**2018 ANNUAL REPORT**







## ANNUAL MEETING

January 23, 2019

### Agenda

1:00 PM Call to Order

Minutes from the 2018 Summer Meeting  
• Steven Bartling, Secretary

Election of Directors  
• Mark Mahoney, Chair - Nominating Committee

Report of the President  
• Tyler Walker

Report of the Executive Director  
• Tom Lochner

Special Presentations:

WSCGA Public Policy Program Strategies, Tactics and Action

- Jordan Lamb, Legislative Counsel, DeWitt, Ross and Stevens

WSCGA Communications Programs – Setting the Stage for a Positive Image for Cranberry Growing in Wisconsin

- Kathryn Whitlock, Laughlin Constable

Report of Committees

Other Business

2:30 PM Adjourn

### WSCGA Summer Meeting Minutes – August 8, 2018

**Russell Rezin & Son, Inc.**  
**Warrens, WI**

The 2018 Wisconsin State Cranberry Growers Association Summer Meeting was called to order by President Tyler Walker on Wednesday - August 8, 2018 at 1:30 PM at Russell Rezin & Son in Warrens, Wisconsin. Tyler Walker welcomed the growers in attendance, and thanked the host families and WSCGA staff, including Tom Lochner, Alex Skawinski, Crystal Johnston, and Tod Planer for coordinating the Summer Field Day event, along with the WSCGA Education Committee members.

**Royalty** – Tyler Walker announced the Cranberry Festival Royalty from Warrens, WI. Members introduced themselves and shared information about their activities over the last year and the upcoming Warrens CranFest. Royalty included Queen Tatianna Briggs, Princess Hannah Hogan, and Princess Lauren von Arx.

**Secretary's Report** – Tyler Walker referred to the 2017 Winter Meeting Minutes printed on pages 50-52 in the Summer Field Day Meeting Program Book. David Amundson moved and Steven Bartling seconded a motion to approve the January 18, 2017 meeting minutes as printed. Motion carried.

**WSCGA Board Members** – Walker introduced the WSCGA Board of Directors, including:

Steven Bartling, *Vice President*  
Jenna Van Wychem, *Treasurer*

David Amundson  
Tom Gardner

Mark Mahoney  
Karl Pippenger



**Special Guests** – Tyler Walker introduced Field Day and Summer Meeting special guests, including:

Mary Ann Lippert, *Wisconsin Dept. of Administration*

Dan Baumann, *WDNR*

Sara Guild, *Congressman Duffy's office*

Doug Reinemann, *CALS Assoc. Dean for Extension and Outreach*

Juli Speck, *DATCP*

Senator Patrick Testin

**Marsh Recognition** – Each year at the Field Day event, the WSCGA recognizes milestone marsh anniversaries. Walker presented recognition plaques for the 100th anniversary of Russell Rezin & Sons, Inc., 75th anniversary of Edlen Cranberry Co. and the 25th anniversary of Jay Creek Cranberry, Leola Cranberry, Prairie Vista Cranberries, and Rodney Brockman Cranberry.

Walker also presented a Summer Field Day Host plaque to Russell Rezin & Sons, Inc. and expressed the Association's appreciation and gratefulness for their efforts to host the event.

## Reports

### Executive Director Report

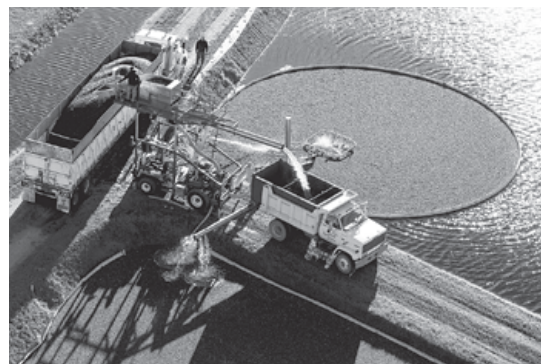
Walker invited Tom Lochner to present his Executive Director's report to the members. Lochner thanked the host families, the WSCGA Board of Directors, and the WSCGA staff for event planning and support, as well as the support of his family over the last 29 years. He also expressed his appreciation to the UW Extension faculty and the Education Committee for their leadership and participation in providing the mini-clinics. Lochner also thanked the WSCGA Associate Members who were exhibiting, the on-site vendors, the Associate Member Committee, the volunteers from the Tomah High School golf clubs, and the WSCGA Grower Members in attendance for their support.

Lochner provided a brief update on the Wisconsin Cranberry Industry Strategic Planning project. The project is jointly funded by the three grower groups in the state- the Wisconsin State Cranberry Growers Association, the Wisconsin Cranberry Board, Inc. and the Wisconsin Cranberry Research and Education Foundation. A committee consisting of a representative from each Board developed a project outline and request for proposals, and then interviewed three facilitators. Michael Best Strategies was selected for the project and has been working with the committee and WSCGA staff over the last 4 months to develop, distribute, and collect information from growers via an online survey as well as interviewing industry experts. MBS analyzed the information and organized a preliminary review with all three Boards in July. Plans are underway for a day-long Board retreat in September and then presentation of the strategic plan to the members at the 2019 Cranberry School.

In September of 2017, the Wisconsin Cranberry Research & Education Foundation purchased Robinson Creek Cranberry to serve as the site for the Wisconsin Cranberry Research Station. Lochner detailed research station progress including the launch of a Capitol Campaign in 2014, work with USDA ARS to secure funds, site selection and review, plans for research plots and buildings, and next steps. The Foundation plans move forward with bed renovations and research plots after 2018 harvest and continue the Capitol Campaign to secure the remaining funds for the building portion of the project.

**Old Business** – None

**New Business** – None



**Adjourn** – There being no further business, the President entertained a motion to adjourn. Steven Bartling made a motion to adjourn the meeting. Jill Amundson seconded the motion. All were in favor and motion carried. The Summer Meeting was adjourned.

**Announcements**

- WCREF Sporting Clay Shoot coming up on August 17, 2018
- WSCGA Winter Meeting, Trade Show and Cranberry School is January 23-24, 2019
- Future Summer Meetings:
  - 2019- DuBay Cranberry
  - 2020- Wisconsin Cranberry Research Station at Robinson Creek.

Respectfully submitted, Alex Skawinski on behalf of Rocky Biegel – WSCGA Secretary

### **President's Message – Tyler Walker**

Welcome to the 2019 Winter Meeting, Cranberry School, and Winter Trade Show. A perfect opportunity to come together with people from across the industry to share ideas that will help us move forward in a positive direction.

I would like to extend a special thank you to the WSCGA staff, the Education Committee, and the Board of Directors for their tireless efforts and hard work they put in to making this event successful. The planning required to organize everything for this event is immense and it wouldn't be possible without each of them, thank you again to all that contributed to make it possible.

I know there is an abundance of information and resources available over these two days, please take the time to absorb and utilize as much as possible. One of the most significant opportunities an event like this provides is to establish relationships with people. Researchers, vendors, associates, and growers of all kinds have the opportunity to come together, share ideas, and network.

It is no secret that the industry continues to face challenges. Coming together with others can provide some relief for these challenges. We are all looking for ways to strengthen our business and to strive for a better future. Together we can figure out the best way to navigate to a better tomorrow.

The WSCGA continues to work to provide as much benefit to Wisconsin Cranberries as possible by providing legislative and education support to the growers. Thank you for participating in the events this year and enjoy the 2019 Winter Meeting, Cranberry School, and Trade Show.

### **From the Executive Director – Tom Lochner**

In last year's annual report we spoke about the successes we had throughout the year. We also talked about moving forward to map out a future plan to strategically address grower and industry needs. Growers responded in an outstanding manner to the survey we asked you to participate in. The leadership of the three Wisconsin grower organizations – WSCGA, WCB and WCREF - worked long and hard on the development of a plan in response to your input. As a direct result, the Boards of the organizations have a shared vision and values, and a map to future collaboration and work on your behalf in addressing strategic initiatives that are outlined in the annual report and will be presented at the Opening Session of the 2019 Wisconsin Cranberry School.

We talk about Wisconsin Cranberries being our "brand" and we work as groups to provide support for what the brand represents; you the Wisconsin Cranberry Grower.





We have identified our strengths, found out where we can improve. The Boards have set a course to take advantage of opportunities and address threats that Wisconsin growers face. We don't have all of the answers and certainly some of the challenges are beyond our ability and resources to impact alone. We need to work as collective group to do what is in the best interests of Wisconsin cranberry growers. As an organization, WSCGA has been and always will be committed to that as its core mission.

We have had successes this year. Grower membership continues to be strong in spite of the economy. It is clear that you value the investment in the WSCGA. It is also clear that we respect and appreciate your confidence and we work every day to earn it. Our public policy program remains strong and our top priority. We have seen progress at the state level in legislation and in relationships with the Legislature, the Administration and state agencies. We will continue to develop these relationships as we transition to the new administration.

Our education programs remain popular with growers and are designed by growers to provide critical information you need to make decisions on the management of your farms. We continued to support and secure research funding that will result in new and better practices to enable you to grow a high quality crop in an economically sustainable manner. We continue to advocate for the implementation of sustainable practices by our growers and we take great pride in the leadership shown by Wisconsin growers in adopting innovative practices to protect the environment they farm and live in.

We continue to tell the story of the Wisconsin cranberry grower through promotions and a communications program. We promote the heritage of cranberry growing, the family farms that produce the crop and have for generations in the past and to come. As we move forward we will place greater emphasis on these messages and look at the best and most cost effective methods to reach our target audience.

Your Board has been diligent in thinking and acting strategically. They developed a plan for the next three years and now are implementing that plan. We will be looking at committee and staff structure, budgets and work plans to achieve the goals and objectives set out in the plan. We look forward to your participation in helping us to help you be successful.

## WSCGA Annual Report

The Wisconsin State Cranberry Growers Association was formed in 1887 to serve the state's newly emerging cranberry industry. Some 130 years later, the organization continues to work to meet its mission of providing quality programs for members to enable the industry to prosper.

WSCGA is organized as a non-profit, non-stock corporation governed by a nine-member Board of Directors. The Board is advised by a number of committees and working groups on topics ranging from Public Policy to Promotion to Grower and Public Education. The Association employs professional staff and consultants. The Board, committees, staff and consultants work together as a team to develop and implement programs and policy for the organization.

The 2018 Annual Report highlights activities by the Association on behalf of its membership throughout the course of the year. These successes are due to the hard work of the grower and associate members who volunteer their time and talent to work with the Association's professional staff and contractors to advance the mission of the organization. We hope all growers and members of the industry will thank those who continue to work on their behalf and to join the WSCGA in these efforts.



## WSCGA Service to Industry Award

The WSCGA Board of Directors presents the Service to Industry Award to individuals or groups who have provided outstanding service to the industry and association. The award is the highest recognition that the association provides. This year the organization is pleased to provide recognition to:

### ***Farm Technology Days Cranberry Exhibit Committee***

Heidi Slinkman      Stephanie Bennett      Ben Rezin  
Mary Smedbron      Nicki Ryner



On July 10-12th 2018, Wood County hosted Wisconsin Farm Technology Days (FTD), the largest agricultural show in Wisconsin and one of the largest in the nation. Wood County boasts its strength in the cranberry industry, and FTD was an opportunity to share our story and the vitality agri-businesses bring to our communities. The sponsors planned to prominently feature cranberries in the show.

A committee of cranberry growers was formed to work with the county committee on the show. The Cranberry Exhibit Committee had a budget of \$2000. The committee developed a plan for an exhibit to build the dry cranberry bed to illustrate how cranberries are grown and a 'wet' bed to showcase how cranberries are harvested. In addition funds were allocated for cranberry education, products, landscape for the exhibit, grower volunteer t-shirts, advertising, signage, and other areas.

The Cranberry Exhibit distributed a variety of products to sample; 63 cases of juice and 50 cases of sweet and dried cranberries. Feedback such as product variety helps meet consumer demands and new favorite quotes such as cranberries have "Pucker Power" was received from participants.

Special Guests also helped highlight the Cranberry Exhibit: Governor Walker, Ag. Secretary Harsdorf, Miss Wisconsin, Miss Wisconsin Rapids, Cran-Fest & Cranberry Blossom Fest Royalty, former Green Bay Packer -Vince Biegel, a variety of local media outlets including WSAW Channel 7 and company mascots including Mallory Lindsay/Bad Boy Mowers and Mustard Girl All American Mustards.

The Cranberry Exhibit's success is attributed to the 90 Growers/Cran-Volunteers and Cran-Businesses who modeled our industry with pride. The results were extraordinary. Nearly 15% of the total FTD attendees visited the Cranberry Exhibit. The exposure to over 42,000 attendees plus the media surge highlighted the cranberry. A media report from the event reached 89,078 people through traditional media and 90,000 people through social media.

Given a successful turnout of attendees at FTD, proceeds are raised to redistribute to the Host County. \$103,360 has been dispersed to 31 Wood County area non-profit groups to date. A portion of the proceeds are also reserved for scholarships. Lastly, The Cranberry Exhibit Committee will submit a grant application to support agriculture education.

FTD is inclusive of all farmers. We share a common ground highlighted throughout the show. We have a rich heritage to protect, and we long for a thriving future. We are interwoven into our communities and rooted to our farms. We know when farmers are united; we can make great things happen.

In recognition of the efforts of the committee members who coordinated the promotion, the WSCGA is pleased to provide them with the 2019 WSCGA Service to Industry Award.





### ***Ron Kuehn***

Ron Kuehn has represented the WSCGA's State government relations and legal interests during the past 28 years and has shared the honor of representing the Association with his daughter Jordan for the last 17 years.

A 1964 graduate of Regis High School in Eau Claire, WI, Ron was an athlete at the University of Wisconsin, Madison and a two time graduate of the University where he received a bachelor's of science degree in 1968 and a doctor of law degree in 1971.

He married Jayne, a fellow law student, in 1969. They both joined the Dewitt law firm upon graduation in 1971. Ron served as an officer in the Army Reserves during the late '60s and early '70s. They have two children, Attorney Jordan Lamb (Madison) and Reed Kuehn, MD (Providence, RI). They have three grandchildren, Jordan's 13 year old twins Grace and Rex and Reed's 3 year old daughter, Tava.

Ron spent his entire legal career at the DeWitt law firm. Government and public policy has been his life-long passion. But, he has also been entrepreneurial over the years having created; co- owned and operated a Madison area real estate development company, a Washington DC money order business and more recently two Madison area equipment leasing enterprises. He also has had, for the past 13 years, an equity interest in Vilas Cranberry Company of Manitowish Waters along with several other WSCGA member growers and friends.

Ron retired from the full time practice of law and government relations on December 31, 2018, but will remain in an Of Counsel position at DeWitt for the foreseeable future

Ron's contributions and work in representing WSCGA and Wisconsin growers has led to the development of an effective public policy and advocacy program for the industry. For these efforts, the WSCGA Board of Directors is pleased to present him with the 2019 WSCGA Service to Industry Award.

## **Wisconsin Cranberry Industry Strategic Plan**

### **Purpose**

In early 2018, the Wisconsin cranberry industry organizations – the Wisconsin State Cranberry Growers Association (WSCGA), the Wisconsin Cranberry Board (WCB), and the Wisconsin Cranberry Research and Education Foundation (WCREF) – agreed to jointly sponsor a strategic planning process. The WSCGA last conducted strategic planning in 2009. Several key initiatives from that plan, including launching a Leadership Development program and establishing a Research Station for cranberries in Wisconsin, have been successfully completed.

The goal was to develop a strategic plan for the three Wisconsin cranberry grower organizations that will coordinate their collaborative efforts to support research, education, communication, and public policy programs identified as priorities by the grower community. The organizations sought to develop a set of strategic initiatives that would enhance the success of Wisconsin's cranberry growers and would build on the organizations' existing strengths in grower education, public affairs, governmental affairs, stewardship and investment of grower resources, and operation of the new Research Station.

This article summarizes the main points and results of the planning process. A copy of the entire plan is available through the offices of each of the organizations. The Boards named a planning committee of Steven Bartling, WSCGA Vice President, Dani Faber WCREF Board Member and Mike Gnewikow, WCB Board member to identify and work with a consultant and staff to develop the plan to be presented to the Boards of each organization.



## Guiding Principles

Although the WSCGA, WCB and WCREf have distinct mission statements and areas of focus, they are connected by common Guiding Principles.

These Guiding Principles shape collaboration and cooperation across all three organizations for the benefit of Wisconsin's cranberry growers and cranberry industry.

### 1. **Wisconsin Cranberry Grower Success**

We are here to support the success of Wisconsin's cranberry growers and the \$1 billion Wisconsin cranberry industry through development and adoption of best practices, support for sensible regulatory approaches, and strong relationships with industry partners and local communities.

### 2. **Industry Leadership**

We are committed to advancing the interests of Wisconsin growers while advancing the cranberry industry as a whole.

### 3. **Operational excellence and Innovation**

We support the commitment of Wisconsin cranberry growers to leading edge agricultural and business practices through research, education, technical assistance, marketing, stakeholder engagement and advocacy.

### 4. **Stewardship**

Wisconsin cranberry growers are local farmers who are committed to sustainable agricultural practices that ensure successful harvests, positive environmental effects, long term viability of cranberry production and strong relationships with our neighbors and our communities.

### 5. **Partnership**

We cultivate collaborative relationships at the national, state and local level. Our partners include growers, researchers, handlers, industry experts, policy makers, consumers, and community members.

## Mission Statements

Each organization reviewed their mission statements and their core missions. This discussion was aimed at identifying in a focused manner how each organization worked to meet the needs of Wisconsin's Cranberry growers and setting a standard to determine how and what programs would be developed.

### **WSCGA**

The Wisconsin State Cranberry Growers Association enables Wisconsin cranberry growers to prosper by providing growers with information, championing responsible environmental stewardship, advocating for sound governmental policies and leading effective public communications and outreach.

### **Wisconsin Cranberry Board, Inc.**

The Wisconsin Cranberry Board (WCB) promotes excellence in cranberry production and acts as a steward of grower resources. WCB invests in projects that will advance the current and future success of the Wisconsin cranberry industry. Guided by Wisconsin's Cranberry Marketing Order and the priorities established by growers, the WCB invests in research, grower education, consumer awareness, public communication and promotion of Wisconsin cranberries and cranberry growers.



### ***Wisconsin Cranberry Research and Education Foundation***

The Wisconsin Cranberry Research and Education Foundation (WCREF) owns and operates the Research Station. WCREF promotes excellence in cranberry production through education, leadership training and professional development for cranberry growers. As a non-profit, 501(c)(3) charitable foundation, WCREF provides a platform for private and government funds to be invested in strengthening the Wisconsin cranberry industry.

### **Data Collection**

A priority of all of the Boards was to collect data from the grower community as well as industry and outside experts.

Michael Best Strategies developed a grower survey with guidance from the Strategic Planning Committee. The survey consisted of 114 total questions, broken into the following sections:

- Grower Profile
- Event Participation
- Examining Industry Trends
- WSCGA Overall Effectiveness
- WCREF Overall Effectiveness
- WCB Overall Effectiveness
- Specific Questions Related to Board/Committee Effectiveness – for Board/Committee Members Only

The online survey was open for responses from June 5 through June 22, 2018. There were 114 full or partial responses to the survey.

In general and to no one's surprise, oversupply was identified as the top challenge that the industry and growers were faced with. Growers evaluated programs and efforts by all three organizations as meeting or exceeding their expectations. They also provided input on future needs to remain economically and environmentally sustainable. The data collection used to conduct a SWOT analysis (Strengths, Weaknesses, Opportunities and Threats) for the industry.

A complete set of survey results is available through the WSCGA Office.

### **Industry Expert Interviews**

Michael Best Strategies also conducted telephone interviews with 14 industry experts between June 13 and July 2, 2018. Experts were identified by the Strategic Planning Committee, and the Committee also provided guidance on the most important questions.

The goal of these interviews was to gain insights about current trends facing the Wisconsin cranberry industry that should inform the Boards in their consideration of future strategic initiatives.

The questions fell into the following categories.

- Political & Legal
- Economic
- Societal
- Technological
- Environmental

Again, Michael Best Strategies (MBS) used the data to develop a SWOT analysis for presentation to the Boards as part of the planning process. This data and survey results were shared with all of the Boards at a joint session in July of 2018.

The committee and MBS worked through the summer and fall to develop a draft plan to be presented to the Boards at a full day retreat in November. Following the retreat a final draft was developed which was approved by each of the Boards.





## Strategic Initiatives

Using the information gained from the grower survey, expert interviews, joint Board retreat, and the advice of the planning committee, four broad goals for Wisconsin cranberry industry over the next three years were identified.

Those goals are:

1. Increase demand for Wisconsin cranberries and manage oversupply.
2. Enhance grower education and technical assistance.
3. Strengthen grower engagement in research.
4. Improve efforts to market the strengths of the Wisconsin cranberry industry, specifically growers and grower practices.

These goals will be accomplished through collaboration and cooperation across the three organizations. The initiatives will be interwoven with the ongoing work and core functions of the three organizations in grower education, public affairs, governmental affairs, investment of grower resources, research, marketing and outreach, and Research Station operation

### *Education*

Grower education is central to the mission of the WSCGA. WCB and WCREF also contribute to grower education through funding and sponsorship of programs including the Leadership Development Program, January Cranberry School, and mini-clinics.

Through this strategic planning process, growers and Board members identified the need to continue to evolve grower educational offerings, including exploring ways that the Wisconsin cranberry industry's educational offerings could be revenue generating.

The Boards identified two education initiatives:

1. Improve educational offerings for Wisconsin growers.
2. Explore marketing Wisconsin cranberry grower education to other growing regions and other agricultural producers as new revenue – generating service offering.

Suggestions to improve educational offerings for Wisconsin growers came from responses received from the grower survey and ideas suggested at the joint Board retreat. The second initiative reflects the insight that Wisconsin's growing expertise is an untapped asset that could provide an opportunity to educate growers outside of Wisconsin and other agricultural producers, especially given the advent of the Research Station.

### *Research*

Supporting, participating in, and sharing the results of research on cranberry production are central functions of all three cranberry Boards. The development of the new Research Station creates a tremendous opportunity for the Wisconsin cranberry industry to advance a research agenda, supported by aligned strategies across all three Boards, that is focused on driving demand. The Research Station itself can be a platform for grower engagement in research, as well as a positive industry promotion and workforce recruiting tool.

Through the survey and retreat, growers and Board members shared their perspectives on the highest priority research topics and the greatest opportunities to enhance grower adoption and use of research findings, as well as opportunities to engage more growers in research. The grower survey also revealed a need to strengthen connections between growers' operations, research topics and projects, and research findings.



Research is most useful to growers when it can inform grower practices, and conversely, grower practices should be key inputs into shaping the research planning process. A more effective connection needs to be established between growers and researchers.

#### *Public Affairs/Community Engagement*

Wisconsin has a large grower community that is committed to land and water stewardship and responsible growing practices. Growers believe there is an opportunity to promote cranberries and the Wisconsin cranberry industry through promotion of Wisconsin growers and growing practices.

Growers and Board members would like to see the industry organizations use the local, sustainable nature of cranberries and growing operations as a marketing asset.

The Wisconsin growing community's tradition of family farms and environmental stewardship is a story that has been largely left untold. The Boards believe the industry can drive demand by telling the "story of the Wisconsin grower" and differentiating cranberry production from increasing consumer concerns about "big food" and "corporate agriculture."

Future promotion, public outreach and communication should be centered on the grower and should play to the many strengths of the industry.

#### *Product Development*

Growers, Board members, and industry experts agreed that a popular new product would play a key role in reviving demand for cranberries.

In the past, new products have pulled the industry out of other periods of low demand, with sweetened dried cranberries being the most recent example.

It is unclear whether Wisconsin's three Boards ought to play a role in new product development. This responsibility traditionally has fallen to others. In the grower survey, a number of growers advocated for investing more WCB funding into product development rather than research. With the WCB's limited resources, it may be difficult to justify expenditures in this area.

Some new product ideas could be incorporated as research priorities, described above, while others may be able to be advanced through new collaborative projects with handlers.

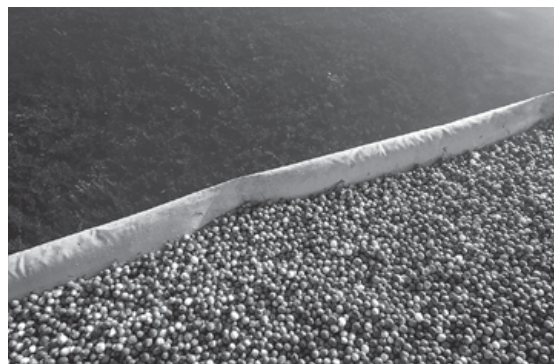
#### **Plan Implementation**

All of the Boards agree that the plan will not be placed on a shelf but will serve as a living document to be implemented over the next three years. The next steps in the process are the development of implementation and work plans by each of the organizations. WSCGA is already looking at committee structures and organizational changes to implement the initiatives. The WCB too is working on outreach to the grower and research community to enhance its programming. WCREP is incorporating the initiatives in its plans as it develops the Research Station.

### **THE TEAM – WSCGA Board of Directors 2018**

#### ***Tyler Walker –President***

Tyler works with his family at Walker Cranberry Company in the town of Cranmoor, west of Wisconsin Rapids. He was elected to the Board in 2011. He serves on the Public Policy and Environmental Affairs Committee, and the Personnel Committee.



### ***Steven Bartling, Vice President***

Steven and his family own and operate Bartling's Manitowish Cranberry in Manitowish Waters. Steven is a member of the Education Committee, Information Technology Subcommittee, and Research Committee. He also worked as the WSCGA representative on the Strategic Planning Committee. He participated in the WCREF Cranberry Leadership Development Program in 2012-13. He was elected to the Board in 2016.

### ***Rocky Biegel - Secretary***

Rocky Biegel is part of Dempze Cranberry Co., King Cranberries LLC and Tamarack Flowage Cranberry Co. He joined the Board in 2017 and serves on the Nominating Committee.

### ***Jenna Van Wychen - Treasurer***

Jenna joined the Board in 2017 and is part of Van Kow Cranberries and Wetherby Cranberry in Monroe County. She participated in the 2013-14 Wisconsin Cranberry Leadership Development Program.

### ***David Amundson***

David's family operations, Wisconsin Moss Company and Amundson Cranberry, are located outside of Babcock where he farms with his wife, Jill. David was elected to the Board in 2009, served as Vice President in 2011, and as President in 2012-13.

### ***Tom Gardner***

Tom is part of Gardner Cranberry and Hay Creek Cranberry located near Pittsville. Tom joined the Board in 2012. He serves on the Public Policy and Environmental Affairs Committee, and the Personnel Committee.

### ***Mark Mahoney***

Mark joined the Board in 2011 and is part owner of Owen Rock Cranberries in Adams County, which served as the host site for the 2012 Summer Meeting, Field Day and Trade Show. Mark serves as chair of the Nominating Committee as well as serves on the Public Policy and Environmental Affairs Committee, Personnel Committee, and Research Committee. He served as President in 2013 through 2016.

### ***Karl Pippenger***

Karl is part of the team at Cranberry Lake Cranberries in Phillips and owns and operates his own small cranberry marsh, "Pip's Cranberries". He participated in the 2013-14 Wisconsin Cranberry Leadership Development Program. He joined the Board in 2015, is the chair of the Administration Committee, and serves on the Nominating Committee.

### ***Rusty Schultz***

Rusty joined the Board in 2018 and is part of Russell Rezin & Son and Jay Creek Cranberries in Monroe County. He participated in the inaugural class of the leadership Development Program in 2012-13.

## **WSCGA Committees**

### **Public Policy and Environmental Affairs Committee**

The committee is responsible for the development of recommendations on policy related to environmental issues as well as other state and federal regulatory and legislative actions that arise as part of the public policy advocacy program. The committee also makes recommendation on disbursements from the restricted account for water and wetlands.





### **WSCGA Public Policy and Environmental Affairs Members**

*Bill Hatch - Chair*  
Mike Bartling  
Tom Gardner  
Bryan Heuer  
Randy Jonjak

Bill Klouda  
Greg Knorr  
Leroy Kummer  
Mark Mahoney  
Fran Po dvin

Fred Prehn  
Dan Rayala  
Andy Reitz  
Russ Rifleman  
Gary Roberts

Scott Schultz  
Craig P. Scott  
Ryan Walker  
Tyler Walker  
Luke Weiland

### **Administration Committee**

The committee advises the WSCGA Board on the internal operations of the association. Its major responsibility is development of a recommendation for an annual budget for the WSCGA.

### **Administration Committee Members**

*Jenna VanWyche-*  
*Chair*  
Bill Hatch

Mike Moss  
Karl Pippenger  
Fran Podvin

Russ Rifleman  
Scott Schultz  
John Stauner

### **Education Committee**

The main emphasis of the WSCGA mission is education, both of growers and the general public on cranberry growing. A large portion of this responsibility is assigned to the Education Committee, making it one of the key committees in the association. The committee meets with UW Extension faculty and others during the year to review and plan the various education programs for the association including the Wisconsin Cranberry School, early season workshops and the Summer Meeting and Field Day.

### **WSCGA Education Committee Members**

*Christelle Guedot –*  
*Cranberry School*  
*Program Chair*  
*Steven Bartling –*  
*Committee Chair*

Jim Bielmeier  
Alex Billman  
Dani Faber  
Steve Hahn  
Nicole Hansen

Jason Hatch  
Matt Lippert  
John Moss  
Andy Reitz  
Russ Sawyer

Jayne Sojka  
Pam Verhulst  
Lindsay  
Wells-Hansen

### **Public Relations Committee**

The Public Relations Committee is responsible for development and implementation of communications plan for the Association.

The objectives of the communications program of the WSCGA are twofold. First, to promote the general knowledge of cranberry growing in Wisconsin to enhance the image of growers and the industry. Second, to inform consumers and the public about cranberries and cranberry products to enhance and promote the consumption of fruit and increase overall demand for cranberry products.

### **WSCGA Public Relations Committee Members**

*Mike Gnewikow –*  
*Chair*  
Robert Detlefsen  
Dani Faber

Amy Gebhardt  
Fawn Gottschalk  
Leroy Kummer  
Gabriella Liddane

Beth Oemichen  
Jessica Rezin  
Scott Schultz  
Mary Smedbron

Nodji Van Wyche



## Research Committee

The Board of Directors established the committee to provide growers with a forum to discuss research needs with University of Wisconsin research faculty and the cranberry research community on a national basis. The committee works cooperatively with the Wisconsin Cranberry Board, Inc. (WCB), The Cranberry Institute (CI), and others to identify grower research needs, coordinate projects to avoid duplication and to help establish priorities.

### WSCGA Research Committee Members

Nicole Hansen – Chair	Dani Faber	John Moss	Pam Verhulst
Suzanne Arendt	Mike Gnewikow	Doug Rifleman	Andy Walker
Steven Bartling	Fawn Gottschalk	Ben Ryner	Lindsay
Mike Bretl	Edward A. Grygleski	Dustin Sawyer	Wells-Hansen
Stephen Brown	Jeff Habelman	Russ Sawyer	Bill Wolfe
Robert Detlefsen	Gabriella Liddane	Scott Schultz	
	Mark Mahoney	Jayne Sojka	

## Information Technology Subcommittee

In 2016 the Education Committee named an Information Technology Subcommittee to work on redesign of the WSCGA Grower website and to analyze the best available technologies to provide growers with needed information. The group worked on this project from September of 2017 to January of 2018 under a Specialty Crop Block Grant from Wisconsin DATCP to create new tools for growers, crop consultants and researchers to use in the field.

### WSCGA Information Technology Subcommittee Members

<i>John Moss- Chair</i>	Dani Faber	Russell Sawyer	Pam Verhulst
-------------------------	------------	----------------	--------------

## Associate Member Committee

The Associate Member Committee provides input on topics including Associate Membership benefits, Summer & Winter Trade Shows, WSCGA NEWS advertising, Program Book & Buyers Guide publication advertising, sponsorships and member surveys. Committee members are polled for input on topics related to membership related topics and inquiries. The group meets prior to the Summer Meeting & Trade Show for an on-site visit and event planning.

### WSCGA Associate Member Committee Members

Tom Altmann	Derek Johnson	Paul Roberts	Nicki Ryner
Amy Bosen	Casey Koback	Dawn Ruiter	Jay Weidman

## WSCGA Staff

### Tom Lochner, Executive Director

Tom Lochner was named the first WSCGA Executive Director in 1988. Since then, the association has grown into a well-respected voice for the Wisconsin cranberry grower. The Association expanded its education, communications and public policy programs. It took on the responsibility of providing administrative services to the Wisconsin Cranberry Board, Inc. to enable it to implement its research, education and promotion programs in a cost efficient manner. In 2004 the WSCGA also assisted the Cranberry Museum, Inc. develop and operate the Wisconsin Cranberry Discovery Center in the Village of Warrens. Most recently, WSCGA has provided administrative services to the Wisconsin Cranberry Research and Education Foundation for its effort to establish a research station for cranberries in Wisconsin.



As the chief staff person, Tom serves as the lead spokesman for the organization and represents WSCGA in interactions with University Research and Extension faculty and administration, as well as with Federal, State and local governmental organizations. He is also responsible for coordinating the activities of staff and various consultants who assist with communications and public policy programs. He serves as a liaison with industry groups, such as the Cranberry Institute and the USDA Cranberry Marketing Committee.

Over the course of his career, Tom has worked with the Board and committees on growing the programs and membership of the association. He believes in a team approach to program planning and development. This approach has resulted in active committees, an engaged and high performing Board, and high grower participation in WSCGA programs.

### **Alex Skawinski**

Alex Skawinski joined WSCGA in December 2015. As the Administrative Assistant, she is responsible for keeping the office in Wisconsin Rapids up and running smoothly. Her responsibilities include the Associate Member programs, the Associate Member Committee, and working with the WCRE Development Fund Committee to plan and hold the annual Cranberry Open Golf Outing and the Sporting Clay Shoot. She also provides administrative support to the Wisconsin Cranberry Research and Education Foundation and the Wisconsin Cranberry Board, Inc.

She also manages the annual Trade Shows for WSCGA, which are premier events in the industry. She coordinates exhibit space registrations, as well as sponsorships and booth upgrades. Alex works with Crystal Johnston on the Cranberry School registration, coordinating the publication of the WSCGA NEWS, and keeping the WSCGA website up-to-date and fresh with event information and resources. Alex has taken on responsibilities for conducting grower safety seminars and the redesign and upgrade to the Wiscran.org website.

### **Crystal Johnston**

Cris joined the staff at WSCGA in 2005 as a part time bookkeeper. Her main responsibility is to keep the financial records for the Association. She also assists as a back-up for staff support and assists at meetings and WSCGA events. Cris has additional responsibilities as Clerical Assistant managing the databases for the membership, the assessment forms and filings for the Wisconsin Cranberry Board, Inc. and serves as the office manager in purchasing supplies and equipment for the Association. She provides administrative support to the Wisconsin Cranberry Research and Education Foundation.

## **Association Consultants**

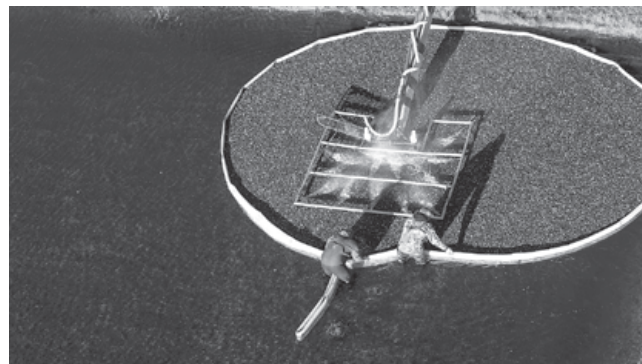
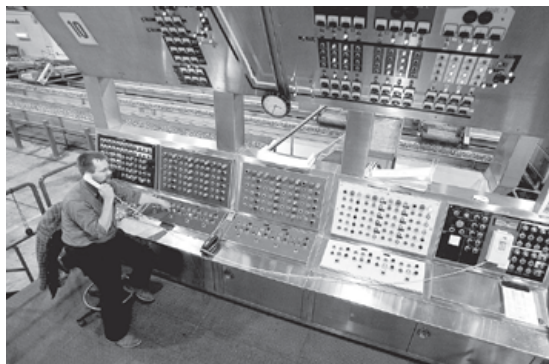


### **Dewitt, Ross and Stevens, Legislative Counsel**

DeWitt Ross & Stevens is a full service law firm with experienced attorneys in virtually all areas of practice. Throughout the firm, there are attorneys who have developed expertise in niche areas but still understand the big picture.

The Government Relations team of DeWitt Ross & Stevens is the largest lobbying group in Wisconsin. Because they are located directly on Madison's Capitol Square, often times WSCGA strategizes with Legislative Counsel Ron Kuehn and Jordan Lamb and later head to the Capitol for meetings with legislators and other key policymakers.





**Ron Kuehn** began his career at Dewitt Ross & Stevens upon graduation from the University of Wisconsin Law School in 1971. Early in his career, he directed his practice into business law and, after a few years, expanded to government relations. Today, he exclusively works in state and federal government relations as the leader of the DeWitt Ross & Stevens, and Wisconsin's largest government relations practice group. Ron has been representing WSCGA since 1988, when the industry faced the most significant challenge to the rights of growers to access water. Throughout the years, Ron has worked for WSCGA on issues ranging from environmental quality and regulation to property taxes to transportation.

A key component of the ongoing governmental relations program is establishing relationships through regular communication with legislative and agency leadership, as well as with the grower community. These efforts over the past 20 plus years have positioned the industry so that it is able to respond to challenges, as well as initiate regulatory and legislative changes to help growers businesses.



**Jordan Lamb's** expertise in environmental regulation is a particular asset to WSCGA and our members, as they navigate the interplay between state and federal regulations and running a successful business. She is a major voice for us in the development and current rewrite of the State non-point source pollution program in NR151 and ATP50. She played a major role in the development of Wetland Reform Legislation in last session of the Legislature and in developing protocol for dealing with floodplain issues with FEMA, DNR and county zoning offices. She has provided leadership on issues related to groundwater, drainage, artificial and navigable water bodies to name a few.

### Laughlin Constable, Communications and Public Relations



Laughlin Constable (LC) is a multi-faceted and full-service agency. The LC team is made up of a group of talented and creative public relations professionals with a wide variety of backgrounds. LC provides access to expertise for communications, public relations and social media programs for WSCGA.



**Kris Naidl, APR**, began working with WSCGA in 1994 and she has assisted the cranberry industry with a number of efforts, including strategic communications work to affect change in state regulations, branding, publicity and media relations, issues management, digital strategy and more. She has earned her national accreditation from the Public Relations Society of America (PRSA), and has been honored on numerous occasions from PRSA for her communications work to support Wisconsin's cranberry industry.



**Katie Whitlock, APR**, has worked with WSCGA for four years, assisting the industry with communication efforts, including strategic planning, media relations, issues management, event and sponsorship coordination, social media and more. She has earned her national accreditation from the Public Relations Society of America (PRSA).



**Alicia Wilson** is an Account Coordinator at Laughlin Constable where she helps manage WSCGA's social media communications, event coordination, media relations and other efforts. She is a graduate of Marquette University in Milwaukee and has been with Laughlin Constable for three years.



## WSCGA Program Activities

### Public Policy Advocacy

#### ***Policy Statement of WSCGA Public Policy Advocacy Program***

The WSCGA's Public Policy Advocacy Program strives for state and federal legislative outcomes that allow Wisconsin growers to farm in an environmentally and economically sustainable manner. Public Policy Program position statements and activities are weighed against this goal:

Wisconsin cranberry growers support legislation, rules and policies that balance the conservation of important natural resources and the stewardship of resources by growers against the economic needs and benefits of cranberry growing in Wisconsin.

The following are priority areas for the WSCGA Public Policy Advocacy Program:

#### ***Environmental Policy and Regulation***

The greatest threats – and opportunities – for the industry in public policy are in the area of environmental regulation. Whether it pertains to water access and quality, wetlands or the use of chemicals for crop production that growers use, WSCGA members expect their Association to represent their interests.

#### ***Water Access***

An abundant and high quality water supply is the key to the success of cranberry growing in Wisconsin. As such, the highest priority for the WSCGA is to maintain and protect growers' ability to access surface and groundwater for their farming operations. Conducting normal farming operations to maintain and enhance water use and conservation must be protected and must continue to be allowed with limited regulation.

#### ***Water Quality***

Cranberry farming practices face increasing scrutiny as to their impacts on water quality. WSCGA has lead efforts with UWEX, USDA NRCS, DNR and DATCP to address Best Management Practices to protect water quality. Maintaining the definition of return flow from irrigated agriculture as a non-point source is a priority for the WSCGA. Changes to the state water regulatory program need continuous monitoring. TMDL development for cranberry waters and the Statewide Nutrient Management Strategy are also priorities for WSCGA.

#### ***Federal/State Linkage***

In many cases with environmental regulation, there is a strong and important relationship between Wisconsin and federal laws and regulation. This is the case with the Clean Water Act and floodplain regulation. As changes take place in federal programs, they impact the state as the delegated authority to administer those programs. At the same time, attempts to reform or revise state regulatory programs require federal approval. WSCGA and its Legislative Counsel continue to be vigilant in these areas.

With these identified priorities, WSCGA staff and leadership will closely communicate with the WSCGA Legislative Counsel to evaluate issues as they arise, assess risk and threats to the industry, and then determine the level of activity that is required to meet the organization's goal and mission.





## Annual State Legislative Update

The 2019 Wisconsin State Legislature and our newly elected Governor Evers were sworn in on January 7, 2019. This session, WSCGA's state advocacy program will focus on the state budget bill at the beginning of this session. We will also be carefully monitoring any regulatory developments related to rural drinking water quality and agricultural runoff. Although it remains to be seen exactly which legislative issues will dominate our advocacy program in the 2019-2020 legislative session, below is a summary of what we anticipate we will be working on for WSCGA members this year in the 2019-2020 biennial budget bill.

**Request State Funding for WI Cranberry Research Station.** The WSCGA is seeking \$500,000 in state funding to be used as a 1:1 match for Phase I and Phase II of the cranberry Research Station project. Wisconsin's cranberry industry, led by the Wisconsin Cranberry Research and Education Foundation, has purchased a 133 acre cranberry farm located in Jackson County, south of Black River Falls, to be used as a dedicated facility for cranberry research. This cranberry Research Station would provide a source of sound science for Wisconsin growers as they face challenges with growing Wisconsin's number one fruit crop in an economical manner.

**Request Funding for Ag Innovation Package - Additional Funding for Applied Agricultural Research at UW Cooperative Extension.** UW Cooperative Extension was recently reorganized and moved under the UW-Madison structure. Wisconsin farmers rely on Cooperative Extension to provide applied agricultural research to farmers on a daily basis. In this budget cycle, the WSCGA and several other commodity trade associations, are interested in (1) getting more funding to our state specialists for applied agricultural research and (2) ensuring that any performance metrics used to evaluate those specialists take into account their "teaching" of our farmer members.

Specifically, we would support an Ag Innovation Package containing two parts:

- \$15 million line-item directed through UW Board of Regents to go to the state specialists at UW-Extension for applied Ag research; and
- A specific directive that any performance measure applied to the specialists receiving this funding must take into account their teaching of Wisconsin farmers (i.e., the extension function of the land grant.)

This commitment to increasing funding for agricultural research would support one of the core land grant functions of this university system - extension.

**Oppose Elimination of the Fruit & Vegetable Inspection Program.** In the 2019-2021 biennial budget request submitted by DATCP on September 17, 2018, DATCP proposed to eliminate the fruit and vegetable inspection program funding and associated full-time positions. WSCGA opposes this proposed elimination. These inspectors are critical to the fresh fruit and vegetable industry in Wisconsin and are essential to our ability to ship and export commodities from Wisconsin. We rely on the DATCP employees who are currently conducting these required USDA inspections. DATCP inspectors should continue to provide this service.

**Transportation Funding.** Last Session, a broad-based coalition from across industry sectors, known as the "DRIVE Coalition," formed to participate in and to support the development of a funding solution to Wisconsin's transportation crisis. DRIVE, which stands for "Devote Resources - Invest for a Vibrant Economy" (<http://wisconsin-drive.com/>), includes members from tourism, road building, manufacturing and agriculture. The Coalition is devoted to finding a solution to Wisconsin's state transportation funding crisis through increased transportation revenue generation. The DRIVE Coalition has renewed its efforts to support a funding solution in the 2019-21 biennial budget with the new Wisconsin State Legislature and Governor Evers.



Governor-Elect Tony Evers met with the DRIVE Coalition early in December as a part of his stakeholder outreach on transportation issues. He expressed commitment to solving Wisconsin's transportation funding crisis over the next two budgets (four years). Importantly, he stated that, "All [funding] options are on the table." This includes potential fee increases, gas tax increases, indexing and minimum markup changes. He did not eliminate any option as a means to generate additional transportation revenue for the State.

The WSCGA supports the concept of increasing revenue to fund Wisconsin's roads and will work with our Coalition partners, the legislature and the Governor to evaluate all options as the transportation budget debate unfolds.

## Communication & Marketing Highlights – 2018

The WSCGA Communications Program is developed as part of a team effort with the organization's Public Relations Committee and the team at Laughlin Constable. In 2018, the overall objectives of WSCGA's communications efforts were to promote the purchase and consumption of cranberries and cranberry products by emphasizing their taste, versatility and health benefits, and to continue to build on the positive image of cranberry growing and cranberry growers in Wisconsin.

### Partnerships/Sponsorships

WSCGA uses grants from the Wisconsin Cranberry Board, Inc. for partnerships and sponsorships with the Milwaukee Brewers Radio Network, UW Badger Sports, Green Bay Packers and American Birkebeiner.

Through its partnership with the Milwaukee Brewers Radio Network, WSCGA sponsored three Brewers game series in May, June and August, with radio ads running each day of the series. Advertisements in late May and June encouraged listeners to add cranberries into their summer and Fourth of July menus, and ads in August promoted WSCGA's Wisconsin State Fair presence. The team at Laughlin Constable helped coordinate the effort and write the radio scripts.

As part of the UW sponsorship, WSCGA sampled dried cranberries and cranberry juice at various Badgers events, including basketball, volleyball and hockey games. WSCGA also sampled cranberry products at the Green Bay Packers 5K Run, Training Camp and a Green Bay Packers preseason game and talked with guests and families about Wisconsin's cranberry heritage. WSCGA will sponsor the American Birkebeiner in 2019, which will include product sampling as an exhibitor at the Birkie tradeshow.

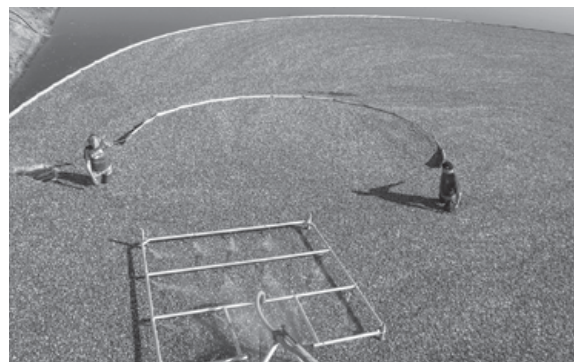
### Wisconsin State Fair

For more than two decades, Laughlin Constable has helped support the Wisconsin Cranberries booth at the Wisconsin State Fair. To boost booth traffic and interest in 2018, WSCGA worked with "Made with Wisconsin Cranberries" partner O&H Danish Bakery on a brand new cranberry product to debut at the Fair – the "Cranberry Cannoli."

Laughlin Constable promoted the new product with a pre-fair announcement, media deliveries and media pitching, as well as WSCGA social media efforts, including a behind-the-scenes making-of video. The Cranberry Cannoli was one of the most popular products in WSCGA Fair history and helped generate media interest and social media buzz that resulted in more than 12 million impressions, including local TV and online media coverage and a placement in Better Homes & Garden's "Wildest New State Fair Foods to Try" article.







The new product helped spur booth traffic and boost product sales across the Board. Other items offered included the Cranberry White Chocolate Chunk Cookie, dried cranberry snack packs, cranberry mango and cranberry lemonade bottled juice, and single serve cranberry cocktail. The booth also featured the popular mini marsh, four-season model marsh, educational video and displays, and the cranberry mascot.

### Social Media

Laughlin Constable manages WSCGA's social media accounts, including Facebook, Instagram, Twitter and YouTube. This includes drafting and posting fun, engaging content, managing comments and questions from consumers, and coordinating sponsored posts and ads to boost engagement.

In 2017, WSCGA launched an Instagram channel with a goal of better reaching the next generation of cranberry consumers. In 2018, to further the engagement on that channel, the PR Committee invested in Instagram ads/sponsored posts. This effort was extremely successful, increasing Instagram impressions from 7,000 in 2017 to more than 750,000 in 2018. Reach and engagement on Facebook – WSCGA's core platform – continues to remain strong as well. Facebook page likes increased 31% in 2018 to more than 27,600. In total, Facebook posts reached nearly 1.7 million people in 2018.



### Photography

In 2018, WSCGA commissioned a food photographer to capture new images to refresh the recipe page of the WisCran.org website. Many of the recipes listed on the site did not have corresponding images, and the 2018 effort added an additional 20 cranberry food photos to the website. This addition created a better experience for the user, and the images were also repurposed for social media and used to refresh the dated WSCGA recipe brochure that is distributed at events and the State Fair.

### Food Bloggers

WSCGA partnered with two food bloggers – Recipe Rebel and Spoonful of Flavor – during the summer in 2018 to encourage consumers to add healthy cranberries to their year-round menus. Combined, the food bloggers have a website and social media audience of nearly 2 million consumers.

Bloggers were sent dried cranberries and cranberry juice and were tasked with creating a custom recipe using the ingredients and sharing it via their blog and social media channels. The posts, which ran in May and June, featured a Cranberry Pulled Pork with Cranberry BBQ Sauce and a Fourth of July-themed Cranberry, Blueberry and Goat Cheese Salad with a Cranberry Vinaigrette. Both were very well received by followers.



### Fall Harvest Efforts

Each year, Laughlin Constable assists with WSCGA's media relations efforts surrounding the annual cranberry harvest. Due to a number of challenges facing the industry this year, the PR Committee made the decision to adjust its harvest communications efforts from previous years, with a slightly less proactive media strategy.







Despite these challenges, WSCGA took part in a number of positive efforts. Through a partnership with the Wisconsin Department of Tourism, WSCGA hosted more than 20 national food, feature and travel writers in Wisconsin for a cranberry press trip that included a marsh and manufacturing facility visit, cranberry-themed dinners, a cranberry cooking class, cranberry spa treatments and more. WSCGA also worked with Carmex on the launch of its new SuperCran lip balm and helped host five social media influencers on a cranberry marsh to debut the new product.

WSCGA and grower members participated in a number of media interviews and marsh visits throughout the harvest season. These efforts combined resulted in more than 360 print, online, radio and TV stories across the country, including coverage in the New York Times, Oxygen, and two syndicated TV stories produced by Sinclair Broadcasting Group that ran on TV stations across the country. Overall, media relations efforts during harvest resulted in 82 million impressions.



## WSCGA Federal Governmental Issues – 2018

The WSCGA Federal advocacy program was very active in calendar-year 2018. Federal activities include working with agencies, members of congress, and the Congressional Cranberry Caucus. The following is a list of issues addressed by the WSCGA during calendar-year 2018. These include work by Broydrick and Associates on behalf of WSCGA along with direct activities by WSCGA with other state and national groups.

### Research Funding

In 2015 WSCGA was able to secure an increase in the budget for the USDA ARS Cranberry Research Program of \$750,000. Since the budget increase the WSCGA has been providing support to the Wisconsin Cranberry Research and Education Foundation to develop a cooperative agreement to make the funds available for the establishment of a cranberry research station. In September of 2016, a final agreement was signed to secure the funds for the project. In 2018 an amendment to the agreement was negotiated to provide \$191,000 in additional support for renovation work at the Research Station. All told, the agreements will provide about \$1.3 million for the project.

WSCGA partnered with the Cape Cod Cranberry Growers Association and the American Cranberry Growers Association (New Jersey growers) in an effort to increase the USDA ARS commitment to cranberry research. As a result of support from members of the Wisconsin, New Jersey and Massachusetts Congressional Delegations, the effort secured a \$2 million increase in the USDA ARS Base Budget for the Cranberry Research Programs in each of the states. The additional funding will be used to enhance the support of USDA ARS programming at UW Madison by about \$600,000 each year. This will raise the annual budget at UW Madison for the ARS Cranberry research program to almost \$2 million per year.

### Pest Management Tools

WSCGA has adopted a general policy to support the development of a toolbox of management practices for growers to use in their farming operations. These practices include cultural – such as flooding for pest control or sanding – as well as the use of chemical control options. The chemical control options may include new, softer pest specific compounds and traditional broad spectrum control. The organization encourages integrated use of these tools by growers through IPM.



As a result, WSCGA advocates continuing registrations for pesticides as long as their judicious use does not present an environmental or food safety risk. The Association works with the Cranberry Institute and other organizations to monitor proposals by EPA and others that impact grower use of pest control products and strategies. During the past year the WSCGA was active on a number of proposals including a meeting with EPA on issues in the registration process review.

### **USDA Purchases of Cranberry Products**

WSCGA has been a leader in efforts to encourage USDA to use its authority under Section 32 to purchase cranberry products for school lunch programs and other feeding programs that the agency supports. The Association has worked with other groups to secure letters from members of the Congressional Cranberry Caucus and written directly to USDA requesting action.

### **USDA Tariff Mitigation Program**

The Trump administration announced tariffs on steel and aluminum imports which resulted in retaliatory tariffs on cranberries by the EU, China, Mexico and others. The administration announced a package of 12 billion dollars to offset the losses to agriculture from the tariffs.

WSCGA joined with grower groups from Massachusetts and New Jersey to support additional purchases of cranberries, funding for future market development grants and to seek direct payments to growers to mitigate the impact of the tariffs on growers.

The effort was successful in supporting \$32 million in purchases as well as funding for the market development grant program. However, despite strong congressional support and efforts by the grower groups, USDA chose not to include cranberry growers in the payment program.

## **Research Programs**

### **Research Coordination and Administration**

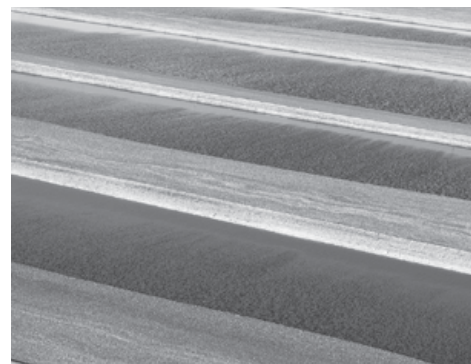
Although the WSCGA does not have a direct research program, it does provide administrative services to the Wisconsin Cranberry Board, Inc. Under this agreement, WSCGA provides the staffing services that the WCB needs in order to operate. This allows WCB to maximize its investment in research, education and promotion programs on behalf of the Wisconsin growers and minimize administration costs.

As part of this service, the WSCGA also works with other cranberry groups to coordinate research activities to avoid duplication and to create synergies and partnerships to maximize the investments by growers.

WSCGA again helped to co-sponsor the annual Research Roundtable. The event this year featured a revised agenda to provide for several smaller group discussions between growers and researchers on specific topics and priorities.

## **Education Program Highlights**

Education is a major component of the WSCGA Mission. The organization's Education Committee works throughout the year to present programs for growers on improving management practices with the goal of allowing growers to operate their farms in an economically sustainable manner.



### **Wisconsin Cranberry School**

The 2018 Wisconsin Cranberry School was held at the Holiday Inn Hotel & Convention Center in Stevens Point, WI. With more than 350 registrants, the event provided educational sessions, an interactive grower management session, and a forum for growers and related affiliates to exchange ideas and best practices in the cranberry industry. The School is the signature education event for the WSCGA.

The annual program is sponsored as a collaborative effort by the Wisconsin Cranberry Research & Education Foundation (WCREF), the Wisconsin State Cranberry Growers Association, and UW-Extension.

A Pesticide Applicator Training and Certification (PAT) session with information and exam was provided on-site as a one-stop convenience to growers by Wood County Extension, and facilitated by Matt Lippert.

A popular session utilizing live CLKR technology provided growers with insights into industry management practices. A range of questions were posed to the audience; growers responded with their respective answers on the hand-held device, and could see an immediate summary of the results, which showed the percentages for each answer of each question.

Presentations by session speakers covered a diverse array of topics, from plant and insect phenology to cranberry variety improvement research, disease issues, soil moisture monitoring, cold tolerance, nutrient management and research on pollination. There were also updates on the effect of fungicide applications on bee fidelity, pheromone mating / moth birth control in cranberries, cranberry pest management reports, and problematic weed management strategies. The Education committee also incorporated more interactive grower panels to discuss production and management practices.

### **Nutrient Management Training**

In late-March, about 50 people attended the Nutrient Management training sessions held in Wisconsin Rapids and co-sponsored by the WSCGA, USDA / NRCS, and UW Extension.

The full-day workshop was designed to help cranberry farmers write their own nutrient management plans to meet DATCP requirements. Wisconsin DATCP also requires that farmers complete a department-approved training course at least once every four years to maintain their qualification.

Presentations were provided by NRCS, along with Pam Verhulst from Lady Bug IPM, and Amaya Atucha from UW Extension. Since the start of the program, more than 400 growers have participated in the training to become qualified to write a nutrient management plan for their farm.

### **Early Season Grower Workshops**

The WSCGA and UWEX co-sponsored two early season grower workshops – one at Valley Corporation in Valley Junction, and the other at Elm Lake Cranberry in Wisconsin Rapids. More than 150 participants attended the two workshops, available to growers at no charge.

These events are held each spring to update growers on new management practices and strategies for the growing season, review of winter impacts on crop, new crop production tools available, and informal discussions on the upcoming growing season.

Topics included: Observations from the Field by Crop Consultants, Pollinator Best Management Practices, Native Pollinator Habitat and Gardens, Tipworm Prevention/Treatment, Pest control strategy review new and existing tools for growers, WPS update, Fertilizer Timing Project, and Root Development and Considerations.





### **Cranberry Farm Safety Seminar**

The Education Committee sponsored a safety training seminar at Scott Cranberry. The program featured respirator information, fit testing and PPE basics, as well as topics such as safety in the shop, planning for emergencies, tick borne diseases in Wisconsin and prevention techniques, stress prevention and management, and a review of current worker protection standards.

### **Summer Meeting, Field Day and Trade Show**

The 131st Summer Annual Meeting, Field Day and Trade Show were held in Warrens Wisconsin at Russell Rezin and Sons who were celebrating their 100th year of cranberry growing. Bus tours of the marsh were held from 9:00 a.m. - 2:30 p.m. There were also 5 mini sessions for growers to attend and 59 on-site exhibits. More than 800 lunches were served between 11:00 a.m. and 1:00 p.m.

### **WSCGA NEWS**

Each month, members of the WSCGA are provided with up-to-date information on the cranberry industry, news, activities and anything that would be of interest to the growers of Wisconsin's number one fruit crop. WSCGA coordinates the publication of the newsletter and solicits articles from a cross-section of organizations and individuals. The NEWS is distributed in both print and electronic form with over 600 people on the subscription list.

### **Weather Forecasting**

The Wisconsin Cranberry Board, Inc. has provided funding for weather forecasting services for decades. WSCGA administers the program for the industry. Working with forecasters from Great Lakes Weather Services, daily forecasts are available online and via a toll free number. The forecasts are specific to cranberry farms and are an important tool for growers as they make decisions about management practices such as frost protection. The forecasts are available April 15 through October 31.

## **Associate Member Programs**

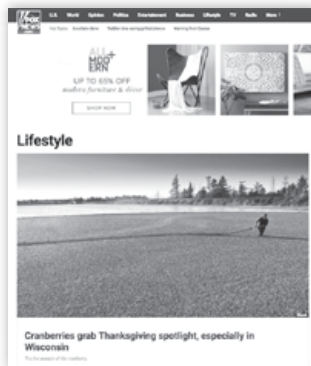
The WSCGA has an active program for the businesses that support the industry in the state. Associate Membership in WSCGA allows these companies to participate in a wide variety of marketing opportunities. The most popular are the Winter and Summer Trade Shows. The Association's advertising program offers opportunities in the WSCGA NEWS as well as the Summer Meeting publications. Associate members are also actively involved in industry events such as the annual Cranberry Open Golf Outing and the Sporting Clays Shoot.

A committee of the Associate membership works with WSCGA Staff to develop and conduct these programs. Highlights for 2018 include:

### **Winter Trade Show**

This event is held in conjunction with the Wisconsin Cranberry School and the WSCGA Winter Meeting. The 2018 Winter Trade Show took place on Wednesday, January 24 at the Holiday Inn Hotel and Convention Center in Stevens Point, WI. There were 68 Associate Members represented at this annual event, as well as the Marshfield Clinic Occupational Health Department.

Cranberry School attendance exceeded 350 people, all of whom were provided with opportunities to visit the trade show throughout the day. Tradeshow exhibitors shared samples and materials, provided demonstrations, displayed equipment, and introduced new products and services.



### **Summer Trade Show**

This event is held in conjunction with the WSCGA Summer Meeting and Field Day. Over 700 people attended, taking part in a busy program of marsh tours, educational mini-sessions, the WSCGA annual Summer Meeting, and summer trade show.

The trade show was comprised of 59 exhibitors who provided inviting displays and shared information on new products and services. Cranberry growers and their families had the opportunity to experience the host marsh and take part in the above activities, as well as renew connections with the Associate members that made the trade show possible.

### **New Membership Benefits**

As part of sustaining the Associate member program, the staff and Associate Member Committee recognize that financial constraints are effecting everyone's decisions on marketing and advertising dollars. With this in mind, the staff and Associate Member Committee conducted an evaluation of Associate Membership benefits.

With the start of the 2018 membership year, there have been revisions of the existing benefits and the introduction of several new programs to bring more value to the investment in WSCGA Associate Membership:

- Grower-Direct Outreach (revised)
- Member Logo Use Program (new)
- Vendor Corner in WSCGA News (new)
- New Member introduction article in WSCGA News (new)

### **WCREF Fundraising Activities**

The Wisconsin Cranberry Research and Education Foundation hosts annual fundraising activities including the Cranberry Open Golf Outing and the Sporting Clays Shoot. The Associate Membership of the WSCGA has a strong history of supporting these events through participation and sponsorships, as well as monetary and raffle donations.

Proceeds from past events have been used for scholarship funds at UW-Madison, UW-Stevens Point, UW-La Crosse, UW-River Falls, WWTC Foundation, and provided support for the Wisconsin Cranberry Discovery Center, WCREF and UW Koller Fund for Graduate Studies.

## **NOTES**







# WISCONSIN STATE CRANBERRY GROWERS

— Association —

## **WSCGA MISSION:**

The Wisconsin State Cranberry Growers Association enables Wisconsin cranberry growers to prosper by providing growers with information, championing responsible environmental stewardship, advocating for sound governmental policies and leading effective public communications and outreach.