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INTREPID® USE IN CRANBERRY

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Background

The insecticide Intrepid® (methoxyfenozide) is an insect growth regulator (IGR) that mimics the insect molting hormone ecdysone. It is highly specific to lepidopteran pests. When ingested, Intrepid® induces a premature lethal molt in caterpillars. Intrepid® is safe to beneficial arthropods including bees and other pollinators, predators, and parasitoids; thus, it has a good fit in most IPM programs.

Recent spray records show that cranberry growers in New Jersey use on average 1 to 2 insecticides per acre. This is a tremendous decline from 20 years ago where the number of insecticides used in the state averaged 4 to 5 per acre. Furthermore, out of all insecticides currently used in New Jersey more than 50% are considered reduced-risk. Reduced-risk insecticides, such as IGRs, are safer to the environment and non-target organisms than conventional broad-spectrum insecticides, and thus are more compatible with IPM practices. In fact, the percent use of Intrepid® in New Jersey has increased since it became registered in cranberries from about 20% of all insecticides used in the state in 2005 to 35% in 2007. Before Intrepid®, New Jersey cranberry growers were already familiar with the benefits and efficacy of IGRs. Use of the IGR Confirm® (tebufenozide) increased from about 5% in 1998 to more than 20% in 2005. While the use of Intrepid® continues to increase, the use of Confirm in New Jersey cranberries has declined to less than 20% in 2007. Intrepid® is considered a “better” Confirm® because it generally has greater insecticidal activity and longer residual toxicity.

Field Efficacy Trials

In New Jersey, as in other cranberry-producing states, the most important pests in cranberries are a complex of lepidopteran species. New Jersey has experienced a gypsy moth outbreak in the past few years. Thus, this pest became the current driving force of insecticide sprays in the state. As a consequence several trials were conducted to determine the efficacy of Intrepid® and other recently-registered reduced-risk insecticides (Avaunt®, Delegate®, and Assail®) against gypsy moth. Toxicity of these insecticides was also evaluated against other less abundant but common lepidopteran pests, including spotted fireworm, blackheaded fireworm, *Sparganothis* fruitworm, and spanworms.

Trial 1: Large-scale Pre-bloom Application

A trial was conducted to evaluate the efficacy of a pre-bloom application of Intrepid®, Delegate®, Avaunt®, and Assail® against gypsy moth larvae. This trial was conducted in 12 commercial cranberry bogs, cv. ‘Early Black’, located in Chatsworth, New Jersey. Each bog received one treatment, and each treatment was replicated 3 times. Applications were made by airplane, using standard grower methods, on 7 May.

Intrepid® was applied at 16 oz per acre; while Delegate®, Assail®, and Avaunt® were applied at 6 oz per acre.

Five sweep sets were taken from each bog on 5 May (2 days before treatment), and on 13 May and 21 May (6 and 14 days after treatment, respectively). A sweep set consisted of 25 sweeps. All samples were brought back to the lab and the number of gypsy moth larvae was recorded.

All treatments provided > 90% control against gypsy moth 14 days after insecticide applications (Table 1).

Table 1. Efficacy of a pre-bloom application of Intrepid®, Delegate®, Avaunt®, and Assail® for gypsy moth larval control in cranberries

Treatments	Rate/ acre	Pre-spray 5/5/08	Post-spray 1 5/13/08	Post-spray 2 5/21/08	% Control 5/13/08	% Control 5/21/08
Intrepid	16 oz	16.1 A	3.0 B	1.5 B	81.4	90.5
Delegate	6 oz	20.9 A	0.0 B	0.0 B	100.0	100.0
Avaunt	6 oz	12.9 A	0.0 B	0.1 B	100.0	99.5
Assail	6 oz	30.8 A	0.3 B	0.0 B	98.9	100.0
Numbers are averages per sweep set.						
Averages followed by the same letter are not statistically different.						

Trial 2: Medium-Scale Pre-bloom Application

This trial evaluated the efficacy of a pre-bloom application of Intrepid®, Assail®, Avaunt®, and Delegate® against gypsy moth larvae and other lepidopteran pests (*Sparganothis* fruitworm, spotted fireworm, and false armyworm) at 2 different rates in cranberries. The trial was conducted in a 5.5-acre commercial cranberry bog, cv. Stevens, located in Browns Mills, New Jersey. The bog was 170 ft wide by 1550 ft long, and was bordered by cranberry bogs (on both long sides) and forest (on both short sides). The bog was divided into 28 plots, each 70 ft wide by 85 ft long. Plots were separated by a 20 ft buffer zone. Treatments were Assail® at 3 and 5 oz per acre, Avaunt® at 4 and 6 oz per acre, Delegate® at 3 and 6 oz per acre, Intrepid® at 10 and 16 oz per acre, and untreated control. All treatments were replicated 3 times (leaving 1 plot unused), in a completely randomized design. Application was made via 80 ft boom sprayer using grower standard methods on 8 May.

We used sweepnet samples to assess number of larvae before and after sprays. Three sweep sets were taken from each plot on 7 May (1 day before treatment), and on 15 and 19 May (7 and 11 days after treatment, respectively). A sweep set consisted of 25 sweeps. Data for lepidopteran pests other than gypsy moth were pooled prior to analysis.

There were no differences in number of gypsy moth larvae, and larvae from other lepidopteran pests, among treatments before insecticide application (Table 2). One week after application, Assail® (high rate), Delegate® (both rates), and Intrepid® (both rates) reduced the number of gypsy moth larvae compared to controls (Table 2). There was no effect of treatment on other lepidopteran pests (all of which remained at low densities). After 11 days, Delegate® (both rates) and Intrepid® (high rate) continued to reduce the number of gypsy moth larvae compared to controls. Larval numbers of other lepidopteran pests were also lower on the high rate of the Delegate® treatment compared to the controls; no differences were found between controls and the other treatments for these other pests.

Table 2. Efficacy of a pre-bloom application of Assail®, Avaunt®, Delegate®, and Intrepid® at 2 rates for control of gypsy moth and other lepidopteran pests in cranberries

Treatment	Rate/ac	Pre-Spray 5/7/08		Post-Spray 1 5/15/08		Post-Spray 2 5/19/08		% Control
		GM	Other Leps	GM	Other Leps	GM	Other Leps	
Assail	5 oz	43.3 a	0.6 a	11.6 bc	0.3 a	7.3 bcd	1.1 a	80.8
Assail	3 oz	52.9 a	0.3 a	13.3 bcd	0.6 a	5.6 bcd	0.7 ab	88.3
Avaunt	6 oz	53.0 a	0.4 a	18.3 cd	0.3 a	11.1 bcd	0.4 ab	78.4
Avaunt	4 oz	46.9 a	0.1 a	21.2 cd	0.2 a	14.2 cd	0.1 ab	69.5
Delegate	6 oz	49.4 a	0.6 a	0.0 a	0.0 a	0.0 a	0.0 b	100.0
Delegate	3 oz	40.9 a	0.1 a	0.0 a	0.1 a	0.3 a	0.2 ab	98.6
Intrepid	16 floz	41.3 a	0.1 a	8.0 b	0.0 a	3.0 b	0.3 ab	92.0
Intrepid	10 floz	36.3 a	0.2 a	10.9 bc	0.3 a	6.7 bcd	0.7 ab	79.9
Control	-	44.1 a	0.2 a	24.6 d	0.7 a	20.7 d	1.2 a	50.6

GM = gypsy moth; Other Leps = *Sparganothis* fruitworm + spotted fireworm + false armyworm

Numbers are averages per sweep set.

Averages within a column followed by the same letter are not statistically different.

Trial 3: Large-Scale Post-Bloom Application

This trial evaluated the efficacy of a post-bloom application of Intrepid®, Delegate®, Avaunt®, and Assail® against blackheaded fireworm larvae and larvae of other post-bloom lepidopteran pests (*Sparganothis* fruitworm, spotted fireworm, and spanworms) in cranberries. The trial was conducted in 42.7-acres of commercial cranberry bogs, cv. 'Early Black', located in Chatsworth, New Jersey. Application was

made via airplane, using grower standard methods, on 10 July. Intrepid® was applied at 16 oz per acre; while Delegate®, Assail®, and Avaunt® were applied at 6 oz per acre.

Fifteen sweepnet samples (five cross-bog transects of three sweep sets each) were taken from each treatment-area on 9 July (1 day before treatment), and on 15 July (5 days after treatment). A sweep set consists of 25 sweeps. Samples were brought back to the laboratory, and number of larvae was recorded.

The areas where Intrepid® and Delegate® were sprayed contained higher numbers of blackheaded fireworm, and other caterpillars, than areas treated with Avaunt® and Assail®, possibly due to their greater proximity to the forest. Both Intrepid® and Delegate® were effective at reducing numbers of caterpillars (> 90% control) (Table 3). Although the same trend was observed in areas treated with Avaunt® and Assail®, the number of caterpillars in these areas was too low to detect any treatment effects.

Table 3. Efficacy of a post-bloom application of Intrepid®, Delegate®, Avaunt®, and Assail® for control of blackheaded fireworm and other lepidopteran pests in cranberries

Treatment	Rate/ac	Pre-Spray 7/9/08		Post-Spray 7/15/08		% Control
		# BHFWS / sweep	# Other / sweep	# BHFWS / sweep	# Other / sweep	
Intrepid	16 oz	1.53 A	0.27 a	0.00 B	0.07 b	96.3
Delegate	6 oz	1.33 A	0.67 a	0.17 B	0.00 b	93.3
Avaunt	6 oz	0.20 B	0.33 b	0.07 B	0.13 b	62.5
Assail	6 oz	0.33 B	0.07 b	0.00 B	0.00 b	100.0

BHFWS = blackheaded fireworm; Other = *Sparganothis* fruitworm + spotted fireworm + spanworms

Numbers are averages per sweep set.

Averages followed by the same letter are not statistically different.

Residual Toxicity

Experiments were conducted to determine the residual toxicity of Intrepid®, Avaunt®, Delegate®, and Assail®. In 2007, residual toxicity of Intrepid® was evaluated by placing newly hatched gypsy moth larvae on field-weathered foliage residues collected 1, 5, 7, 11, 17, and 25 days after treatment. On each of these sampling dates, five insecticide-treated uprights were inserted in florists' water picks, enclosed in a ventilated 40-dram plastic vial, and secured in Styrofoam trays. Each replicate consisted of a total of 10 vials per treatment. One newly hatched gypsy moth larva was placed

individually in each vial. Plants and larvae were placed in the laboratory at approx. 25 °C. Mortality was assessed 7 days after transfer. Number of larvae alive, dead, or missing was recorded. Similar studies were conducted in 2008 to evaluate the residual toxicity of Intrepid®, Avaunt®, Delegate®, and Assail® of field application rates by placing newly hatched gypsy moth larvae on field-weathered foliage residues collected 7 and 14 days after treatment.

Our study showed that Intrepid® lasted for at least 11 days (Figure 1). After 17 days, toxicity of Intrepid® against gypsy moth decreased to 0%. Toxicity of all insecticides (Intrepid®, Avaunt®, Delegate®, and Assail®) remained high (70-100%) 7 days after application but declined to 20-60% after 14 days (Figure 2).

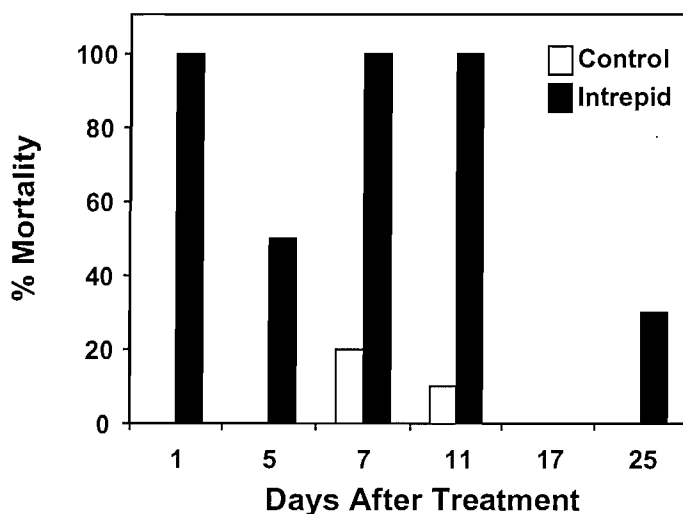


Figure 1. Percent gypsy moth larval mortality (1st instars) fed foliage treated with Intrepid® or untreated (control) foliage

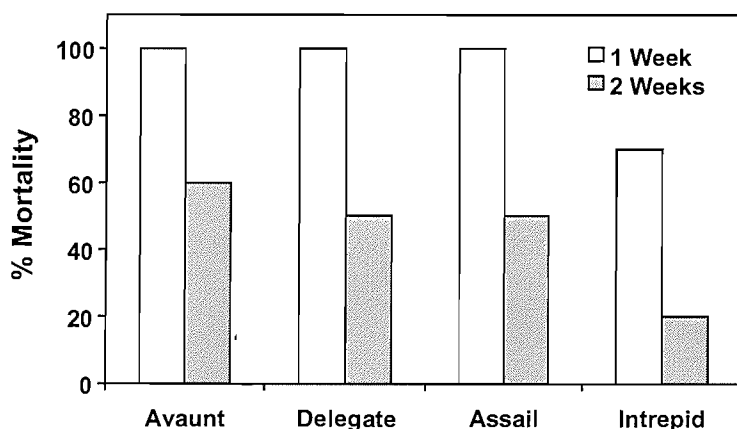


Figure 2. Percent gypsy moth larval mortality (1st instars) fed foliage treated with Avaunt®, Delegate®, Assail®, or Intrepid®

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Thank you to Brian Olson (Dow AgroSciences), who provided information on Intrepid, and to Dan Schiffhauer (Ocean Spray), who provided information on insecticide spray records for cranberries in New Jersey. Thanks also to Haines and Whitesbog Farms for allowing us to use cranberry plots to conduct these studies. Funding for this work was provided by the Blueberry/Cranberry Council, Cranberry Institute, Dow AgroSciences, Bayer CropScience, and United Phosphorus Inc.

INTREPID® INSECTICIDE USE IN WISCONSIN UNDER RESTRICTIONS TO PROTECT THE KARNER BLUE BUTTERFLY

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A supplemental label allowing the use of Intrepid® 2F insecticide on cranberry was first issued in March 2004. However, because of concerns of its potential impact on the Karner blue butterfly, which is federally listed as an endangered species, usage has been extremely limited in nine cranberry-producing counties in the central and northeastern regions of the state. Several agencies and organizations have worked to enable usage of Intrepid® in all Wisconsin cranberry growing areas, though some precautionary restrictions on use are still in place. Recently the U.S. EPA in conjunction with the Fish and Wildlife Service has developed a series of county-level Endangered Species Protection Bulletins that detail how Intrepid® can be used by Wisconsin cranberry growers. This has resulted in new labeling language for Intrepid® and in April 2009 Dow AgroSciences issued a new supplemental label that is consistent with the new usage allowances. This article is meant to introduce you to Intrepid® and to outline the process that you need to follow to legally use it in regulated counties.

What Is Intrepid® Insecticide?

Intrepid® (common name of the active ingredient is methoxyfenozide) is in the insecticide class known as the insect growth regulators (IGRs); this class of insecticides functions by interfering with those normal biological processes of insects that are regulated by hormones. Different IGRs have different modes of action; Intrepid® specifically works by disrupting the process of molting (shedding the skin) that all insects must do periodically in their immature stages. IGRs tend to be more specific as to the types of target insects as compared with traditional broad spectrum insecticides such as the various organophosphates that have long been used in cranberry. Methoxyfenozide is primarily effective against the insect order Lepidoptera, which consists of the butterflies and moths. Lepidopterans are the most important group of cranberry pests and include insects such as blackheaded fireworm, cranberry fruitworm, sparganothis fruitworm, spanworms, cutworms, and cranberry girdler. Though probably not effective on all cranberry Lepidoptera, methoxyfenozide shows good potential against some of our more important direct fruit feeders. As a highly selective type of pesticide, EPA has granted methoxyfenozide “reduced risk” status on cranberry and several other crops. Because of its selectivity, it has low risk to beneficial predatory and parasitic insects and therefore is ideally suited for IPM programs.

Intrepid® is marketed by Dow AgroSciences as a 2F (flowable) formulation. It is registered against these cranberry pests: blackheaded fireworm, gypsy moth, sparganothis fruitworm, spanworms, and spotted fireworm. Although the label lists these pests for “suppression”, Intrepid® has shown very good control in both east coast and Wisconsin

university trials. Cranberry fruitworm is not on the label, but efficacy has been good against this pest as well. The application rate is 10-16 fl oz/acre with a maximum of 64 fl oz/acre/year. The preharvest interval is 14 days and the restricted entry interval is 4 hours. It may be applied by ground application equipment and solid-set irrigation equipment. Outside of Karner blue regulated areas it may also be applied by air. It is not a restricted-use pesticide. In studies on laboratory animals, the LD₅₀ by ingestion is >5000 mg/kg and by skin absorption is >2000. Based on oral toxicity, this is considered to be a Category 4 (lowest toxicity) pesticide.

As we gain more experience with Intrepid® we will be able to give more detailed guidelines how it will best be used in cranberry. But do remember that this IGR works primarily by ingestion rather than contact activity and therefore good coverage is important. Also, it does not provide immediate kill at the time of application – the active ingredient takes awhile to interfere with the insect's normal biological process. However, it does interfere with the feeding process, usually starting within a few hours of ingestion. Therefore, although death may not occur for a couple days, damage stops fairly quickly after application. Intrepid® is most effective when applied against the egg stage or youngest larvae.

Usage of Intrepid® Outside the Karner Blue Range.

Wisconsin (and Michigan) counties that are within the natural range of Karner blue butterfly have restrictions on the usage of Intrepid®. The Wisconsin Karner blue counties are Adams, Burnett, Chippewa, Clark, Eau Claire, Green Lake, Jackson, Juneau, Marquette, Monroe, Polk, Portage, Waupaca, Waushara, and Wood. Outside of this area, including most of the northern cranberry counties, Intrepid® can be used according to standard labeling without additional restrictions. Farms that are within these counties but outside of the regulated Karner blue area can also use Intrepid® according to standard labeling. [Note that all uses of Intrepid® are prohibited in Door Co.]

Usage of Intrepid® Within the Karner Blue Range.

Within the Karner blue habitats of those counties listed above, Intrepid® can still be used on all cranberry farms, but there are additional restrictions on usage in order to assure safety to the Karner blue. These restrictions are designed to reduce insecticide drift and include (1) the use of a drift retardant, (2) the usage of nozzles that will assure a coarser (and therefore heavier) droplet size, and (3) application only during periods of low wind speed. More details on these methods are outlined below.

Some background. In order to use Intrepid® in the regulated areas will require a very minor amount of additional paperwork that should only take a few minutes for each application. To understand the reasoning behind this, a bit of background may be helpful.

The following statement was found in the **Endangered Species** section of the 2008 Intrepid® specimen label:

“Do not apply this product within one mile of sandy habitats that support wild lupine plants [the host plant for the larvae of the Karner blue] in the

following states/counties:” [followed by the list of affected counties in Michigan and Wisconsin (as noted above)].

In 2009 the endangered species protection language on the Intrepid 2F label has been replaced by a generic label statement, as follows:

“This product may have effects on endangered species. When using this product, you must follow the measures contained in the Endangered Species Protection Bulletin for the area in which you are applying the product. To obtain Bulletins, consult www.epa.gov/espp, or call 1-800-447-3813 **no sooner** than six months before using this product. You must use the Bulletin valid for the month and year in which you will apply the product.”

This statement applies to all usages, not just cranberry.

Previously the burden was on the potential user to assure that there was no wild lupine growing within a mile of the target application site. This significantly reduced potential usage of Intrepid® throughout each county, even in those counties (such as Adams, Chippewa, Marquette, and Polk) where the Karner blue protection zone occurs in a relatively small area. Under the current (new) process, county maps are available through the internet and a toll-free hotline that specifically pinpoint the regulated areas relevant to Karner blue. Within these areas the drift reduction guidelines must be followed. Outside of these areas (even in regulated counties), Intrepid® use can be according to normal usage guidelines. For instance, Portage County is on the list. However, the Karner blue regulated area is only in the southwest corner of the county, and the entire area from Plover to Stevens Point to Junction City is outside the regulated area. Another example is Wood County, in which the area from Nekoosa to Wisconsin Rapids and Biron are outside of the Karner blue regulated area, but from Pittsville south to Babcock and beyond is in the regulated area.

Finding the maps – EPA’s website. Each regulated county has its own “bulletin” on EPA’s website. The bulletin includes the map of the regulated area within the county, as well as the specific language that relates to Intrepid® use within the regulated areas. The address for the website is <http://www.epa.gov/espp/bulletins.htm>. This site’s opening page gives general information about EPA’s “Pesticides: Endangered Species Protection Program”. It gives general background information and an explanation of the “Bulletins Live!” program. There is also a tutorial on how to access and use the bulletins. This page also provides the link to the Bulletins Live! opening page. From here you use either the map or the drop-down menu to access Wisconsin. From the Wisconsin page, use the menu to access your county. You will then be asked to indicate what month the pesticide application will take place. Note that bulletins are good for only one month; therefore, if you intend to make applications in both May and July (for example), you should print off the bulletins for both of these months. (Bulletins are available for the upcoming six months, so you can print off bulletins for the entire growing season at one sitting.) Once you click on a specific month, the bulletin (including map) for that county

and that month will appear. The township, range, and sections are delimited and numbered on each map so that you can pinpoint your application site. The Karner blue (regulated) areas are shaded in yellow. [Note that neither EPA nor the state of Wisconsin require that you print and keep copies of the bulletin, but doing so is encouraged in case you have future questions about your applications in relation to the regulated areas.]

Drift reduction guidelines. Growers in regulated areas (Karner blue habitat) must use drift reduction techniques when using Intrepid®. The following quote, which specifies the required drift reduction practices, is extracted directly from one of the county bulletins.

“...pesticide application within the pesticide use limitation area is limited to ground application methods or chemigation. Ground applications must be made using a drift retardant and nozzles that produce an American Society of Agricultural Engineers (ASAE) coarse droplet size distribution (median droplet size of 450-500 microns), and when the wind speed is between 2-10 mph. Chemigation must be conducted consistent with the instructions on the current chemigation label AND must be made using a solid-set sprinkler system producing a minimum median droplet size of 500 microns (median droplet size of 450-550 microns) or larger, and when the wind speed is between 2-10 mph.”

Drift retardants are commonly used in agricultural pesticide applications and should be available through pesticide distributors; several types are on the market. For general information on pesticide drift retardants, type “drift retardant” into your internet search engine and you will find several articles.

For both ground application equipment and chemigation equipment, literature from the manufacturer should indicate median droplet sizes; contact your equipment supplier for additional information.

Also note that with ground equipment, higher spray pressures will usually result in smaller droplet sizes that are more prone to drift.

Note: the current specifications apply to use on cranberry only. The bulletins stipulate that Intrepid® can not be used on any other sites (crops) in the regulated areas.

Being a “Voluntary Participant” in the Karner Blue Habitat Conservation Plan. The bulletin language stipulates that growers in the regulated areas must be voluntary participants in the Wisconsin Statewide Karner Blue Butterfly Habitat Conservation Plan (HCP). Partnership is automatic; here are the details.

The Wisconsin Department of Natural Resources is the state agency responsible for overseeing endangered species. WDNR, in cooperation with the U.S. Fish and Wildlife Service, public and private organizations, and private landowners, has developed

the Wisconsin Statewide Karner Blue Butterfly Habitat Conservation Plan (HCP). Information on the HCP can be found at <http://dnr.wi.gov/forestry/karner/hcp.htm> .

Federal and state regulations regarding the protection of endangered species require that there can be no intentional activities that will “take” protected organisms. From the U.S. Fish and Wildlife’s Endangered Species Program internet site <http://www.fws.gov/endangered/hcp/hcpplan.html> :

“‘Take’ is defined in the Endangered Species Act as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any threatened or endangered species. Harm may include significant habitat modification where it actually kills or injures a listed species through impairment of essential behavior (e.g., nesting or reproduction).”

Further:

“Incidental take permits are required when non-Federal activities will result in “take” of threatened or endangered species. A habitat conservation plan or “HCP” must accompany an application for an incidental take permit.”

However, as part of the Wisconsin Karner blue butterfly HCP, agricultural landowners are automatically considered as voluntary participants and may go about their normal agricultural practices without need of applying for an incidental take permit. In other words, cranberry growers are not required to apply for any permits or do any additional paperwork to be automatically included in the HCP. For more detailed information, see <http://dnr.wi.gov/forestry/karner/landowners.htm> .

Bulletins are part of the Intrepid® labeling. The county/month bulletins are considered to be part of the overall labeling package of Intrepid®. Therefore, if you are applying within the Karner blue regulated area, you are encouraged to print off a copy of the bulletin for each month the product will be applied and keep this as part of your pesticide records. Regardless of where you are located, you should also have the most recent Intrepid® specimen label (with the new endangered species statement) as well as the supplemental label for cranberry.

Summary.

- Intrepid® is an insect growth regulator insecticide with good activity against certain Lepidoptera pests of cranberry. It is a selective material, easy on beneficial insects, and therefore a good tool in Integrated Pest Management programs.
- Intrepid® usage has been very limited in central Wisconsin because of label restrictions designed to protect the federally endangered Karner blue butterfly.
- EPA, working in conjunction with the federal Fish and Wildlife Service and Wisconsin agencies, has approved labeling changes that will allow usage on all Wisconsin cranberry farms. Those farms that are within Karner blue habitat must use application practices designed to reduce spray drift. Those farms outside of

Karner blue habitat (even within regulated counties) may use Intrepid® according to standard specimen and supplemental labels.

- Farms that are within Karner blue regulated counties should follow the following procedure.
 - Go to EPAs Bulletins Live! website - <http://www.epa.gov/espp/bulletins.htm> - and follow the instructions to access the bulletin for your county and spray date.
 - Check the map provided with the county bulletin to determine if the application site is within the regulated area.
 - If the application site is outside of the regulated area, use the standard labeling to make your applications.
 - If the application site is within the regulated area, follow the bulletin guidelines to reduce spray drift. These guidelines include
 - ✓ using a drift retardant with ground application equipment,
 - ✓ using proper nozzles for ground application equipment and proper sprinkler heads for chemigation equipment that will assure droplet sizes in the specified range,
 - ✓ spraying at wind speeds 2-10 mph, and
 - ✓ aerial applications are prohibited in regulated areas.
 - ✓ You are encouraged to keep copies of the county/month bulletins and the supplemental label with your pesticide records.

This article was reviewed and improved by representatives of the cranberry industry, Dow AgroSciences, the U.S. EPA, and the Wisconsin Department of Agriculture, Trade, and Consumer Protection. Their input is much appreciated.

CALLISTO® OBSERVATIONS: FROM RESEARCH PLOTS TO COMMERCIAL USE

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The herbicide Callisto® (active ingredient: mesotrione) was available with a full label for control of common cranberry weeds in the 2008 growing season. This herbicide has great utility in both new plantings and established beds. The following is a list of research and commercial use observations with the intention of refining the use of the product in future years. Additionally, potential Callisto® label changes are pending that will (positively) impact use in cranberries – be sure to follow the label and keep an eye out for updates.

- *Use rates and application timings.* In general terms, weed control in research trials has been best when Callisto® was applied to emerged but young weeds (early post-emergence). Late post-emergent applications, or combinations of two applications (with at least 14 days between applications; see label for maximum use rates), can also be useful. Keep in mind that it is hard to stop a freight train: late season control of weeds that are well-established and/or reproductive is very difficult and may require higher herbicide rates than early post-emergent applications. In new plantings, research suggested that lower rates (such as 4 oz Callisto®/acre) adequately controlled weeds and could be a good starting point. In non-bearing cranberries, Callisto® must be applied after the cranberry bud break stage, but not less than 45 days before flooding in fall or winter. In bearing beds, Callisto® must be applied after the cranberry bud break stage, but not less than 45 days prior to flooding or harvest. Regardless of bed age or application rate, only two Callisto® applications can be made per crop year. If two applications are made, they must be spaced at least 14 days apart.
- *Callisto® and flooding for insect control.* If you have applied Callisto®, the beds cannot be flooded for 45 days after application. Therefore, given the timing of weed management and insect management with flooding, growers will likely need to choose one task or the other in a given season, but not both.
- *Use of spray adjuvants.* If weeds have not emerged, spray adjuvants will not improve control. Applications after weed emergence will need a spray adjuvant to optimize control. In University of Wisconsin research trials, no difference in weed response was observed when Callisto® was applied post-emergence with either crop oil concentrate or non-ionic surfactant. Avoid adjuvants that are phytotoxic to cranberries.

- *Avoid applications to stressed plants.* Do not apply if the cranberry vines are stressed by drought, rapidly fluctuating temperatures, previous injury, or other factors. This is particularly true in new plantings that are often stressed based on the lack of establishment and susceptible to drying out without a significant root system. In our research trials, any slight injury observed has been temporary and inconsequential to yield.
- *Use a calibrated sprayer.* The Callisto® use rate is much lower than several other herbicides registered on cranberry, therefore, a small deviation in the dose could result in crop damage or illegal application rates. Be sure to apply with a recently calibrated sprayer. Do not apply aerially or with a wick wiper.
- *Callisto® is a great tool, but not the only tool in cranberries.* Over-reliance on Callisto® presents two significant risks to cranberry weed control. First, Callisto® has a broad spectrum of control, but there are species such as clover that it doesn't adequately manage. Therefore, relying solely on Callisto® for weed control will eventually result in expansion of weeds that it doesn't control. Second, over-reliance increases the risk for selecting resistant weeds. In this case, species that may have been controlled in the past will no longer be controlled, reducing the utility of the product. Thus far, there is no resistance to Callisto® in any weed/crop scenario – let's be sure to keep it that way! Callisto® makes a good addition to integrate into our arsenal of cranberry herbicides.

TOPICS IN CRANBERRY ENTOMOLOGY

Cesar Rodriguez-Saona

P.E. Marucci Center for Blueberry and Cranberry Research and Extension
Rutgers University, Chatsworth, New Jersey

Background

After the *Food Quality Protection Act* (FQPA) was implemented in 1996 several broad-spectrum organophosphate and carbamate insecticides have been either under review, scheduled for cancellation, or their use in cranberries was severely restricted. Since then, several new selective, reduced-risk insecticides were registered in cranberries, such as Confirm®, Intrepid®, and more recently Avaunt®, Assail®, and Delegate®. Although these new insecticides have proven effective in controlling pests, they are fairly selective and with a few exceptions mainly target lepidopteran pests. Thus, a continued reduction in the use of broad-spectrum insecticides and an increased use of selective insecticides may lead to greater populations of insect pests previously considered secondary or minor. This potential increase in secondary pest populations has created a growing concern among cranberry farmers in New Jersey and in other cranberry-growing states. In a recent survey conducted at the Rutgers Blueberry and Cranberry Research and Extension Center (Rodriguez-Saona, unpublished data), New Jersey cranberry growers ranked blunt-nosed leafhoppers and white grubs as the insects most likely to become major pests.

The blunt-nosed leafhopper is a secondary pest historically controlled in cranberries with applications of broad-spectrum insecticides. This insect is distributed throughout the eastern USA, feeds on several species of host plants, and overwinters in the egg stage. In New Jersey, blunt-nosed leafhoppers complete a single generation per year. The eggs hatch in early May, nymphs can be collected in sweep-net samples from mid- to late-May (prior to bloom), and adults are most abundant in July. Eggs are laid in July-August. Blunt-nosed leafhoppers are vectors of a phytoplasma that causes false-blossom disease. False blossom can be recognized by the malformation of flowers, which stand erect and with petals redder than normal. This disease almost eliminated the cranberry industry in New Jersey in the 1920s. Blunt-nosed leafhoppers are very difficult to monitor with sweep-net sampling prior to bloom because of their small size in the nymphal stage. A better monitoring tool might be the use of sticky traps to monitor adult populations after bloom. Yellow sticky traps are commonly used to monitor populations of closely related species, such as the sharp-nosed leafhopper, in blueberries. However, the potential and the effectiveness of these traps for monitoring blunt-nosed leafhoppers in cranberry bogs have not been investigated.

White grubs have become one of the most important pests in cranberries in the USA, and cause special concern among cranberry growers because of limited control options. Current control practices rely exclusively on the use of imidacloprid. There are several constraints in using imidacloprid in cranberries including resistance management and its limited efficacy against older, larger grubs. In New Jersey cranberries,

Phyllophaga georgiana is the most common white grub pest, but the life cycle in New Jersey has not been studied in detail, which makes control strategies difficult to effectively target. Based on our limited field observations, the species has a 2-year life cycle with a new generation starting every year. Adults fly in June and early July and lay eggs among the roots of host plants. The 1st instars occur during July and August. Second instars are found starting in late August and this is the overwintering lifestage. In the spring, larvae resume feeding on roots of the host plant. Third instars can be found in mid-June and will feed voraciously into September. Grubs collected in September have been observed to purge their intestines within a few weeks and become much less active. Thus, these third instars appear to enter a prepupal stage in early fall, that lasts through the winter, followed by pupation in the following spring around May-June.

Research is currently being conducted at Rutgers University to investigate novel and improved methods for monitoring blunt-nosed leafhopper and white grub populations, and to test new control strategies against these pests. Below I present an overview of this research.

Blunt-nosed Leafhopper: On-going Research

Colored Sticky Traps. Currently studies are being conducted to investigate the attraction of blunt-nosed leafhopper to colored sticky traps. In 2006-2007, we compared attraction of adult blunt-nosed leafhoppers to yellow and red colored traps in cranberry bogs. These colors were chosen because they are known to attract other species of leafhoppers. The study found blunt-nosed leafhoppers to be more attracted to yellow than red traps. Studies were also conducted to determine the optimum height for placing traps. Only traps placed at canopy level caught adult blunt-nosed leafhoppers. No blunt-nosed leafhoppers were caught on traps placed at 0.5 m or higher. Further studies are being conducted this year to compare the attraction of adult blunt-nosed leafhoppers to five different colors: blue, red, yellow, green, and white.

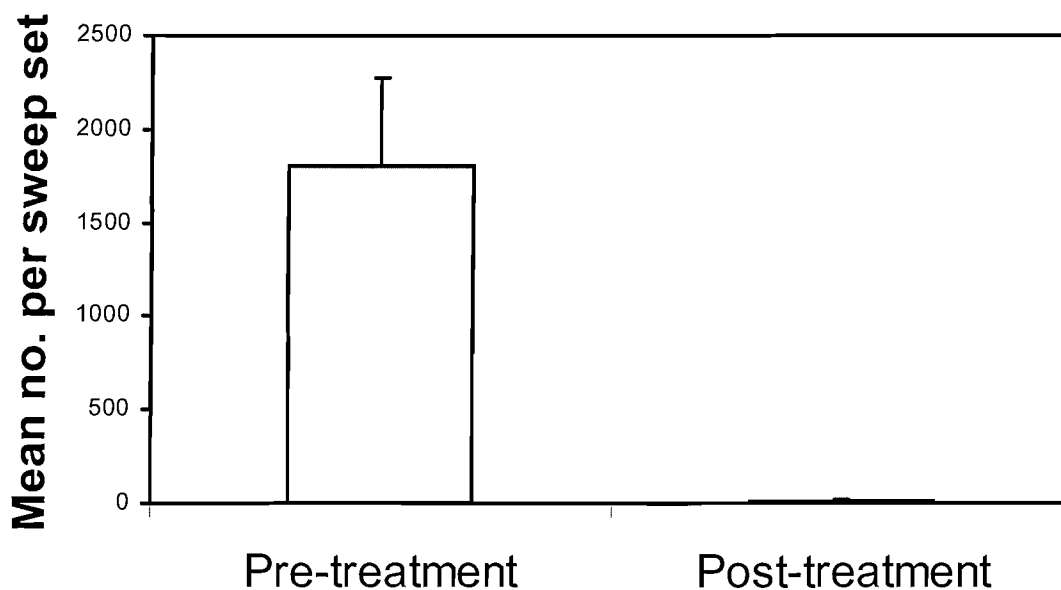
New Insecticide Trials. The objective of this trial was to test the efficacy of Actara® (thiamethoxam) in controlling blunt-nosed leafhoppers on cranberries. The trial was conducted in a commercial 5-acre cranberry bog, cv. 'Stevens,' located in Jenkins, New Jersey. This location was selected due to a history of high blunt-nosed leafhopper infestation. Application was made via chemigation using grower standard methods. Actara 25WG was applied at 4 oz per acre on 22 May (pre-bloom). Sweep-net samples were taken on 21 May and 31 May, before and after treatment, respectively. A sweep-net sample consisted of 25 sweeps, and 5 samples were taken for each sampling date.

Before treatment, the number of blunt-nosed leafhoppers was an average of 1,808 per sweep-net sample (Fig. 1). After treatment, the number of blunt-nosed leafhoppers decreased to an average of 12 per sweep-net sample (> 99% control).

Actara® is a neonicotinoid insecticide, which may systemically accumulate in the flowers, and thus have negative effects on pollinators. Therefore, *care should be taken when using these chemicals; in general, growers should avoid their use pre-bloom and during bloom if possible.* Studies are underway to evaluate the efficacy of Assail®,

considered to be a softer neonicotinoid insecticide, in controlling adult blunt-nosed populations (post-bloom sprays).

Figure 1. Effect of Actara® on mortality of blunt-nosed leafhopper nymphs



White Grubs: On-going Research

Phyllophaga georgiana Pheromone. The sex pheromone of *Phyllophaga georgiana* has recently been characterized as L-valine methyl ester. In 2008, studies were conducted in New Jersey to investigate the seasonal flight patterns of *P. georgiana* adults using pheromone-baited traps. Results show that the adult flight is initiated in late June, peaks in mid-July, and continues throughout August and early September.

The potential use of the sex pheromone for controlling *P. georgiana* has not been investigated. The sex pheromone of a related species *P. anxia* is currently being employed in Wisconsin for mass trapping (Jayne Sojka, personal communication). Other possibilities are the use of sex pheromones in mating disruption, a tactic that remains unexplored for *Phyllophaga* spp. control in cranberries.

Entomopathogenic Nematodes. Entomopathogenic nematodes offer a new and environmentally safer alternative compared to imidacloprid for controlling root-feeding insects. Cranberries provide an ideal habitat for entomopathogenic nematodes because: a) the soil moisture levels and relative humidity are high; b) vines provide protection from direct sunlight; and c) temperatures in May rarely reach levels harmful to nematodes. In collaboration with Dr. Albrecht Koppenhöfer, we have evaluated the feasibility of using entomopathogenic nematodes for the control of *Phyllophaga georgiana* grubs. In 2007, greenhouse experiments were conducted in 2-liter pots planted with cranberry vines. *P. georgiana* grubs were added to each pot 3-4 days before treatment application. Treatments were applied in 100 ml water, and control pots were

treated with water only. Treatments were evaluated destructively after 21 days by carefully going through the soil and recording the number of live, dead, and nematode-infected grubs. Grubs were collected in mid to late May (mostly second instars) and in June (third instars) and the experiment was conducted in July. Pots received either eight second instars or six third instars. Second and third instars were exposed to the entomopathogenic nematodes *Steinernema scarabaei* (0.31×10^9 , 0.63×10^9 , 1.25×10^9 , or 2.5×10^9 infective juveniles (IJ)/ha), *Heterorhabditis bacteriophora* (2.5×10^9 IJ/ha), or *H. zealandica* (2.5×10^9 IJ/ha).

We found that grub survival for both second and third instars was lower in the *S. scarabaei* treatments compared to the controls, but not in the *H. bacteriophora* or *H. zealandica* treatments. The lowest *S. scarabaei* rate caused significantly higher mortality than *H. bacteriophora* and *H. zealandica*. At the 2.5×10^9 IJ/ha rate, *S. scarabaei* caused 2.3 times higher second instar mortality and 2.6-3.7 times higher third instar mortality than *H. zealandica* and *H. bacteriophora*.

Unfortunately, *S. scarabaei* is not commercially available, and the commercially available nematodes *H. bacteriophora* and *H. zealandica* do not provide good control unless used in very high rates, which will not be cost effective to growers.

Bacillus thuringiensis japonensis. We are currently studying the possibility of using *Bacillus thuringiensis* subspecies *japonensis* (Btj) for grub control in cranberries. Btj has been tested extensively in turfgrass and proven effective at low rates against oriental beetle *Anomala orientalis* grubs, as well as other grub species. No studies have evaluated Btj for grub control under cranberry soil conditions.

Acknowledgements

Thank you to Robert Holdcraft and Elizabeth Bender for laboratory and field assistance. Thanks also to Dan Schiffhauer, and Haines, Cutts, and Whitesbog Farms. Funding for this work was provided by the EPA Region 2, Blueberry/Cranberry Council, Cranberry Institute, and Syngenta.

Editors notes.

Although both bluntnosed leafhopper and false blossom were at one time of concern in Wisconsin, IPM consultants have seen neither in the field in many years. Further, a 2008 UW season-long survey of 14 Wisconsin cranberry farms detected no bluntnosed leafhopper; the survey will be repeated in 2009. Until such time as bluntnosed leafhopper and false blossom once again become a problem in the state, we are not recommending control practices.

*The Wisconsin white grub species is *Phyllophaga anxia*. It is unknown at this point if control practices and products evaluated against *P. georgiana* in New Jersey will be effective here. – DLM*

PROPOSED NATIONAL SUSTAINABILITY STANDARDS: IMPLICATIONS FOR THE CRANBERRY INDUSTRY

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From environmentally-concerned groups to buyers, retailers and consumers, “sustainability” is certainly the current buzzword in many industries, including agriculture. Several retailers and agricultural industries are independently developing sustainability standards, indices, and certification programs for their businesses and others throughout the supply chain. Additionally, national sustainability standards, which would ultimately encompass all agricultural crops, have been proposed or are in development by multiple groups. Given the rapid pace of developments and fluidity of the situation with these sustainability standards, the intention of this abstract is to “set the table” for discussion.

While the concept of sustainable agriculture has been a point of discussion for several years, the desire to use it as a marketing tool or to add value to products in the marketplace is a relatively recent development. Individual retailers and suppliers, such as Walmart, are developing sustainability scorecards and standards. As a result, growers may be required to fill out several surveys to sell to multiple buyers, in addition to current requirements for good agricultural practice (GAP) surveys.

In response, multiple entities are developing national standards that would be applicable to agriculture in general and could be used to certify agricultural production with a single survey, thus reducing the duplicative efforts required to satisfy multiple buyers. Two proposed national standards in particular have floated to the top: one in development by Scientific Certification Systems, and one in development by the Keystone Center.

Scientific Certification Systems developed the “Draft American National Standard for Trial Use for Sustainable Agriculture.” This standard was proposed to the American National Standards Institute (ANSI) in 2007, an organization that develops and implements voluntary standards for a variety of industries. The Leonardo Academy, a Madison-based organization accredited by ANSI, will lead the standard development process. After an initial meeting of the Standards Committee in September 2008, the initial draft standard will be re-tooled. Those critical of the initial draft standard have cited two primary issues: 1) the standard set organic production as the highest level of sustainability, and may in fact be duplicative of current organic standards in many areas; and, 2) the initial standard prohibited the use of genetically modified crops. The groups involved in this standard development are in the process of developing a new draft standard.

The Keystone Center Field to Market group consists of entities with varying interests, including several food and fiber national commodity groups, environmental organizations, end-users and retailers, and academia. The goal of this group is not to develop a certification system, but to develop a grower tool that can be used to gauge production and sustainability metrics relative to neighbors, regional and national producers of a given crop. The proposed tool would allow growers to identify potential areas of improvement as well as to follow sustainability trends through time in terms of production efficiency per unit of production area. The Keystone Center participants are currently investigating methodology and feasibility of quantifying sustainability parameters, such as water quality and energy use, at the grower level.

THE NEW FACE OF FRUIT ROT

Patricia McManus
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University of Wisconsin – Madison

The profile of cranberry fruit rot has changed over the past decade in Wisconsin. During the 1990s, fruit rot rarely exceeded 10%, fungicides were rarely used, and there were no clearly predominant pathogens. Since about 2004, however, fruit rot in excess of 20% has occurred at several sites. The reasons for this are not clear but probably include a change in cultural practices, introduction of a formerly rare pathogen on vines, and a trend toward relatively mild winters that allow the survival of fungal pathogens.

The term “fruit rot” technically includes rot before harvest (sometimes called field rot) and rot after harvest (sometimes called storage rot). For this article, the term fruit rot will refer to pre-harvest rot in the field. In reality, many of the 10 to 15 fungi commonly associated with rotten cranberry fruit can be active both in the field and while berries are stored. The focus here will be on two fungi: *Colletotrichum*, the bitter rot pathogen, and *Phyllosticta vaccinii*, the early rot pathogen.

Colletotrichum (bitter rot)

Bitter rot tends to show up late in the season (mid September or later), but once the rot is detected, the decline in fruit quality is rapid. Beds can look good one week, and have 40% or more rot just a week or so later.

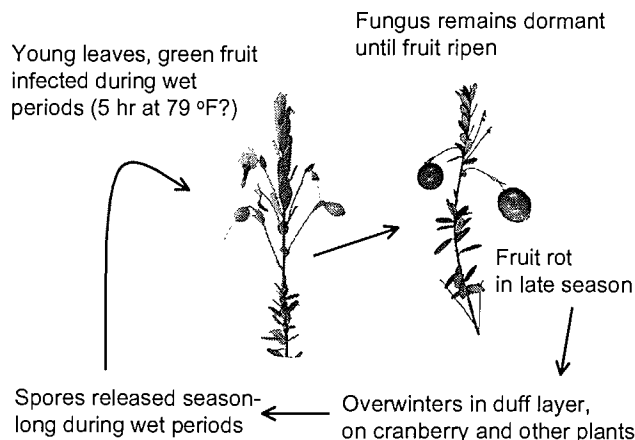


Figure 1. Proposed disease cycle for bitter rot, caused by species of *Colletotrichum*.

Details of the bitter rot disease cycle are not well understood but are proposed in Figure 1 and as follows. The fungus overwinters in the duff layer, and on cranberry vines and other plants. *Colletotrichum* species are not specific to cranberry, but rather infect many woody plants and weeds. Spores are released starting when shoot growth resumes

in the spring and continue to be released season-long during rainy periods. Wind-driven rain and splashing rain spread spores. Young leaves and young, green fruit are most susceptible. Studies have not been done on cranberry, but on apple, species of *Colletotrichum* can infect after five consecutive hours of wetness at 79 °F. Infection presumably would take a longer duration of wetness at higher or lower temperatures. Rather than rotting green fruit shortly after infection, the fungus goes dormant or “latent” for several weeks. Then, when fruit begin to ripen, the fungus comes to life again, growing quickly and rotting fruit.

***Phyllosticta vaccinii* (early rot)**

Early rot causes leaf spots, blossom blast, premature leaf drop, and fruit rot. Early rot is so named because the disease starts rotting fruit relatively early compared to other fungal pathogens (e.g., in August vs. September). By mid to late August, early rot appears on a berry as a soft, watery spot, usually with a distinct margin. The spot is often lighter in color than the healthy tissue surrounding it. Sometimes, but not always, dark concentric rings give the spot a bull’s-eye appearance.

Historically, early rot has been very important in New Jersey, moderately important in Massachusetts, and rare in Wisconsin. In 2005, however, early rot was found at four sites on the variety HyRed and in established plantings adjacent to HyRed. It was also detected at one site on vines from the Rutgers breeding program. Early rot has been detected in Wisconsin every year since 2005, and is most common in newer plantings of GH1 and Rutgers introductions. *P. vaccinii* thrives at temperatures of 84 °F or greater. Newer plantings may be especially prone to early rot because their open canopies result in a warmer environment favorable for the fungus but stressful for the vines. Also, pushing vines with nitrogen makes them more susceptible.

Details of the early rot disease cycle are not well understood, but are depicted in Figure 2 (next page) and described as follows. *Phyllosticta vaccinii* overwinters on living cranberry plants (leaves and possibly stems) rather than in the duff layer or soil. Spores are released beginning in spring and continuing season-long during wet periods. Wind-driven rain and splashing rain droplets spread spores. Young leaves and berries are more susceptible to infection than are older tissues. Unlike *Colletotrichum*, which undergoes a long latent period, *Phyllosticta vaccinii* starts rotting fruit while they are green and continues until harvest. In addition to cranberry, *Phyllosticta vaccinii* infects blueberry and possibly related plants in the genus *Vaccinium*; however, it is not known to infect weeds common in Wisconsin cranberry beds. Transfer of spores on feet or machinery is possible if vines are wet. However, spread of the disease requires not just movement of spores but also that the plants are susceptible. Therefore, the risk of spreading the disease is probably greatest when there are young, susceptible tissues present. Movement of cranberry vines for propagation spreads the pathogen among beds on a marsh and over greater distances (e.g., between states).

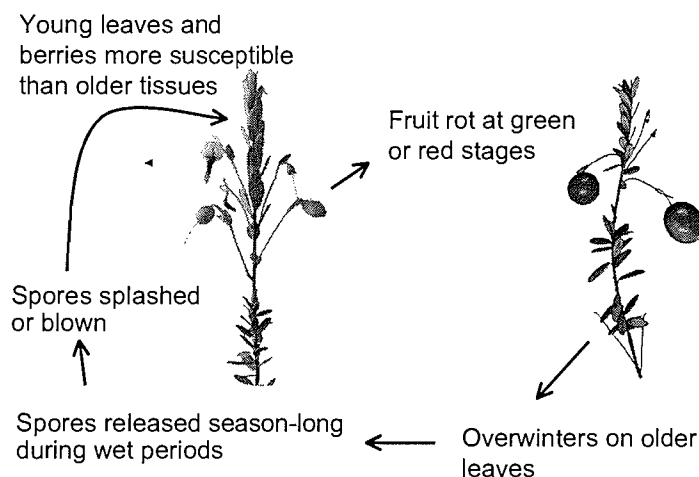


Figure 2. Proposed disease cycle for early rot, caused by *Phyllosticta vaccinii*.

Cultural practices for fruit rot management

- Since some fruit rot pathogens overwinter and persist on vines, especially *Phyllosticta vaccinii*, do not establish plantings with vines from beds with a history of rot problems.
- Avoid excessive nitrogen fertilization. Nitrogen causes tissues to be succulent and soft, thereby making them more susceptible to infection. Over-fertilization also increases canopy density and causes foliage to stay wet for longer periods.
- On hot days, vines might benefit from sprinkling to reduce heat stress. It is not known how long vines must remain wet in order for fruit rot pathogens to infect. However, sprinkling for 15- to 20-minute periods on hot, breezy, sunny days does not provide a long enough period of wetness for most fungi to infect.
- Do not irrigate in the evening, as vines will remain wet for several hours. The prolonged wetness will increase fungal infection.
- Remove vines from beaters and other equipment before moving between beds.
- Wear washable boots if walking in a bed known to have rot problems, and disinfest boots with dilute bleach (1:10 dilution) or other disinfectant before entering other beds.
- Fall and/or spring flooding to remove “trash” is an effective way to reduce inoculum for those pathogens that overwinter on leaf debris.

Fungicides for fruit rot management

- Most research on fruit rot control with fungicides has looked at the fruit rot complex rather than individual pathogens such as *Colletotrichum* or *Phyllosticta vaccinii*. Fungicides tend to be more effective when their use is integrated with the cultural practices listed above.
- Sometimes suppliers of vines and plugs use fungicides, and as a result, their plants look perfectly clean. But when the cuttings or plugs are planted and pushed with fertilizer in an open canopy, symptoms develop, especially if fungicides are not used. If planting stock is from a site known to harbor *Phyllosticta vaccinii*, use fungicides until the canopy closes (about 3 years).

- The details on cranberry fungicides can be found in University of Wisconsin-Extension publication A3276, *Cranberry Pest Management in Wisconsin* and in the Cranberry Crop Management Newsletter. A brief description of fungicides and their role in fruit rot management follows.

Bravo®, Echo®, Equus®: These chlorothalonil products are effective but can be phytotoxic in low spray volume and/or if applied on days when the canopy temperature reaches 85 to 90 °F. Phytotoxicity includes browning of petals and red flecks on fruit. The fruit flecks become almost invisible once the fruit turn red. In some trials, chlorothalonil has reduced yields, presumably from burning flowers.

Mancozeb (e.g., Dithane®, Penncozeb®): Moderately effective; reduces fruit color if applied during bloom or to fruit.

Abound®: Reduced-risk fungicide; usually effective in controlling fruit rot in WI, but not as consistent as chlorothalonil.

Indar®: Usually not effective in Wisconsin. Effective against *Phyllosticta vaccinii* in trials in New Jersey.

Copper: Not effective.

- Timing of fungicide applications dramatically affects results. In established, bearing beds, fungicides should be applied during bloom and/or early fruit set stages for best results. The fungi that lead to fruit rot infect when fruit are small and green.
- In newer beds that have been established with cuttings or plugs that are at risk of harboring *Phyllosticta vaccinii*, a rotation of Indar, mancozeb, and chlorothalonil should begin at bloom (i.e., when bearing beds are blooming) and continue at 14-day intervals as long as shoots are actively growing. Sprays can be stopped if no leaf symptoms of early rot are visible by early August.



F O U N D E D 1 8 8 7

**2009
Winter Meeting**

January 20, 2009

**Holiday Inn Hotel & Convention Center
Stevens Point, WI**

WSCGA Mission Statement

The mission of the Wisconsin State Cranberry Growers Association is to enable the cranberry industry in Wisconsin to prosper through the provision of grower information, responsible environmental stewardship, sound governmental policies and effective public communications.

WSCGA Winter Meeting
January 20, 2009

Holiday Inn Hotel
& Convention Center
Stevens Point, WI

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Welcome

The WSCGA Board of Directors, Staff and Committees once again welcome you to the 2009 Winter Meeting and Trade Show. The events are again being held in conjunction with the 2009 Wisconsin Cranberry School. The two day program is designed to provide growers and industry stakeholders with the latest information and training programs available to help you to be successful in your farming operation and to network with fellow growers to share knowledge and experience with each other.

We are pleased at the turnout for the meetings this year. We have a record number of exhibitors for the Trade Show and a healthy registration for the Wisconsin Cranberry School and the WSCGA Winter Meeting. These are reflective of the current positive economics in the industry and the interest in growers in obtaining information to incorporate in their farming operations.

The year has been an exciting and successful one for your organization. 2009 promises to bring more challenges and opportunities for the industry. WSCGA will be conducting a strategic planning process in the coming year and be launching programs to reach out to all growers. The board has approved efforts to develop new leaders for the organization for the future as we transition to the next generation in the industry.

Again Welcome!

Program

Trade Show

The Trade Show runs concurrent with the Wisconsin Cranberry School on Tuesday, January 20. The Trade Show hours are:

8:00 a.m. - 9:30 a.m.
10:30 a.m. - 11:00 a.m.
11:30 a.m. - 1:00 p.m.
2:30 p.m. - 3:30 p.m.

Lunch

Lunch on Tuesday and Wednesday is included with your school registration fee. Tickets are included with your registration materials. The lunch will be served in Section 4 of the Expo Center.

Social Hour

A social hour will be held from 5:00 PM – 6:00 PM. School participants were provided with a ticket for a complimentary beverage as part of their school registration. Hors d'oeuvres will be provided.

Pesticide Applicator Training and Certification

The training program is being conducted on Tuesday, January 20. Pre-registration was mandatory for the session and, hence, no walk-ins can be allowed.

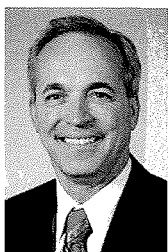
We appreciate your cooperation in allowing us to start events on time to keep the meeting on schedule.

Wisconsin Cranberry School

The school begins on January 20 at 9:30 AM with a general session and continues throughout the day, Tuesday and Wednesday, adjourning on January 21st at 3:30 PM. A detailed grid is included in your school registration materials. We ask that you wear, or present your name badges as you enter the school sessions as they will be required for admission.

WSCGA Winter Business Meeting

The business meeting will be held concurrent with the school and will begin at 1:00 PM on January 20 and adjourn at 2:30 PM. Elections will be held for the WSCGA Board of Directors. Ballots should be obtained at registration. There is no registration fee. The session is open to the public, but only WSCGA members can participate in the meeting. We are pleased to have two guest speakers this year.



Matthew J. Frank, Secretary

Wisconsin Department of Natural Resources.

Matt Frank a lifelong love of the outdoors to the DNR. Secretary Frank comes to the DNR with extensive executive experience in state government, having served as Secretary of the Department of Corrections for more than four years and 22 years as an Assistant Attorney General for the Wisconsin Department of Justice. His tenure at DOJ included six years as Administrator of the Division of Legal Services during which time he oversaw the state's environmental protection defense and enforcement actions in state and federal courts.

Frank worked with the WSCGA this past year to reform the permitting process for growers who wish to apply for wetland alteration permits. His leadership on this issue resulted in major changes to the process that will make it much more efficient for growers.

A Wisconsin native, Secretary Frank is an avid outdoorsman whose appreciation for the outdoors took root during his childhood in Cross Plains near the banks of Black Earth Creek. Secretary Frank is a 1978 graduate of Carleton College, and he received a law degree from the University of Wisconsin-Madison Law School in 1981.

Representative Amy Sue Vruwink

Chair, Assembly Committee on Agriculture

Amy Sue Vruwink comes from the heart of Wisconsin born and raised on a family farm in the rural community of Milladore. After graduating from Auburndale High School, she attended Marian College in Fond du Lac. After earning a degree in Communication, Amy Sue accepted a position with the Minnesota Farm Bureau Federation. Following employment there she moved to Representative Dave Obey's district office in Central Wisconsin where she worked on agricultural issues.



She was elected to the Assembly in 2002 and named to Chair the Assembly Agriculture Committee by Speaker Mike Sheridan in December of 2008.

From Your President

Ed
Sabey

On behalf of your WSCGA Board and staff, let me welcome you to the 2009 Winter Trade Show and WSCGA Annual Winter Meeting. We are in a great facility and would like to thank the staff here at the Holiday Inn Hotel & Convention Center in Stevens Point, WI for accommodating the cranberry industry for the festivities. What a good way to spend a couple of cold Wisconsin winter days, to see and hear what's new in the cranberry industry; gain some knowledge from all of our experts; and also to re-acquaint ourselves with our fellow growers, and all under one roof.

The WSCGA and all of its committees work all year long for such programs as this to ensure that you have the best information available to you, so when we convene, you can return home knowing that you have the latest and greatest technologies at your fingertips, ready to be integrated into your operation.

The cranberry industry has just come off of a great harvest in 2008 throughout most regions of the U.S. and Canada. Wisconsin especially enjoyed its second largest crop ever, so emotions here are running high. Along with a good harvest we also are enjoying good market prices and hope to continue that trend throughout 2009.

Though nationally and regionally many sectors of businesses are dwindling, the cranberry industry is looking to continue growing, and steady growth means good business for WI and its economy. There is no better place than right here in Wisconsin, where 60% of the world's cranberries are produced. From climatic conditions to infrastructure, we are optimistic that Wisconsin will continue to lead the way in smart business growth.

The year 2008 was good all around, but we also had our challenges. The producers are seeing good market prices but also record high input costs, and in this business it all starts with fuel prices. With fuel prices soaring to three to four times the average price, all other inputs fall in right behind. That is why it is important to continue to invest in efficiencies wherever possible. We are also constantly under scrutiny from the public to farm the land that our forefathers farmed 150 years ago. We all must continue to use Best Management Practices and strive to ensure that our lands will be here tomorrow to feed our continually growing populations. Our hope today is that you will absorb new ideas to help you ensure success today and in the future.

The WSCGA must also continue to be successful and without your membership, today would not be possible. We strive for leadership that is dedicated, qualified and interested in you and your well-being. We have several seats on our Board that are open for 2009 and would like to encourage anyone who is willing to serve their industry, to run for office. These positions are not time consuming but are important. We at the WSCGA also strive to give it's members efficient and effective information whenever possible and today is the perfect example. We also look for input from our members on how we can improve our association from personnel to services provided, so please fill out your evaluations and contact any WSCGA Board member to share your thoughts and ideas.

The WSCGA would like to thank the Education Committee for another successful event and also the Associate Members who contribute year round to our industry to ensure our success. Please thank them today and continue to patronize their businesses whenever possible.

There are many people to thank and many things to see, so please take time to enjoy our industry, the people that you associate with, and the WSCGA staff. We thank you and look forward to a successful 2009.

From Your
Executive
Director

Tom Lochner

Each year at this time we take time to look back on the past twelve months to see what we have been able to accomplish and look ahead to our objectives for the next year. I am always impressed at the progress we make each year and how your association is able to meet the needs of the grower members. These are spelled out in the pages of this annual report to the membership.

Our two major accomplishments for the year were the conclusion of the litigation involving Zawistowski with the award of \$500,000 in expenses for attorney's fees and the reform of the wetland permitting review process.

As we move into 2009 and beyond we need to think strategically as an organization and plan for whatever the future may bring. Your Board of Directors and staff have made a strong commitment to this idea. We will begin our program evaluation and planning process this year as we have on a five year basis. This includes soliciting grower input on programs and activities. This includes your evaluation of current programs and what types of services you look to us to provide in the future.

We are committed to developing grower leadership to continue the success of the organization into the next generation. We have to be cognizant of the changing needs of growers for information and how to best deliver it to them.

Our future as an organization appears to be bright. Our challenge is to develop good information, encourage healthy and inclusive debate and arrive at good decisions for the industry.

In 1934 the UW Board of Regents adopted a policy statement that reads:

"Whatever may be the limitations that trammel inquiry elsewhere, we believe that the great State University of Wisconsin should ever encourage that continual and fearless sifting and winnowing by which alone the truth can be found."

As an organization we can follow the same thought; that is that ideas and methods should be constantly reviewed and discussed to arrive at continual improvement.

I look forward to hearing your ideas on how we can continue to serve you.

Agenda

**Tuesday
January 20, 2009**

**Holiday Inn Hotel
& Convention
Center
Stevens Point
Wisconsin**

1:00 PM

2009 WSCGA Business Meeting

1:00 PM Call to Order

Minutes From 2008 Summer Meeting
- Jim Van Wychen, Secretary

Report of the President
- Ed Sabey, President

Report of the Executive Director
- Tom Lochner, Executive Director

Report of the Committees

Election of Directors
- Nominating Committee

Miscellaneous Business
- Guest Speakers:

- *Matt Frank, Secretary
Wisconsin Department of Natural
Resources*
- *Representative Amy Sue Vruwink,
Chair Assembly Agriculture
Committee*

Legislative Report
- Ron Kuehn, Legislative Counsel

2:30 PM Adjourn

WSCGA
Summer
Meeting

August 13, 2008

*Spring Valley Cranberry, LLC
Warrens Cranberry Festival, Inc.
Wisconsin Cranberry Discovery Center
Warrens, WI*

Minutes

The 120th Wisconsin State Cranberry Growers Association summer meeting and field day and trade show was held on August 13, 2008 in Warrens, Wisconsin hosted by Warrens Cranberry Festival, Inc., the Wisconsin Cranberry Discovery Center and Spring Valley Cranberry, LLC. President Ed Sabey called the meeting to order at 1:15 PM and introduced Warrens Cranberry Festival Princess Makayla McGinnis, who welcomed everyone to Warrens. The WSCGA Board members were introduced: Mike Moss, Heidi Dobbs, Jim VanWychen, Dan Brockman, Bill Hatch, Scott Schultz, John Stauner and Bill Wolfe.

Recognition plaques were presented to Todd & Gina Potter of Spring Valley Cranberry, LLC for providing the marsh tours; Vicki Nemitz of the Warrens Cranberry Festival, Inc. and Lorry Erickson of the Wisconsin Cranberry Discovery Center for hosting this year's event. Special thanks were given to the Warrens Lion Club for catering the lunch and to Tom Lochner & Jane Anderson for organizing the event. Kim Cates attending the meeting from Senator Herb Kohl's Office was introduced.

Secretary's Report: Heidi Dobbs made a motion to waive the reading of the minutes from the January 15, 2008 Winter Meeting and to approve the minutes as printed in the 2008 Summer Meeting Program Book. Mike Moss seconded the motion. Motion carried.

Ron Kuehn, WSCGA Legislative Counsel of DeWitt, Ross & Stevens SC provided information on legislative priorities and issues including progress on General Permit 014 to expand cranberries in Wisconsin and legislative races coming up in November.

Tom Lochner extended his thanks to all of the hosts of this year's event, exhibitors and everyone attending Field Day. Updates were provided on efforts to improve the permitting process for growers, improvements to the association website, debut of the new recipe brochure and new video at State Fair, status of faculty vacancies at UW-Madison and Cranberry Night at Miller Park scheduled for September 5th.

Tom thanked Jane Anderson for her work organizing the summer field day and trade show. Tom also thanked Matt Lippert from Wood County Extension for providing the sound system for the meeting.

Russ Rifleman moved and Vicki Nemitz seconded a motion to adjourn the 120th meeting of the Wisconsin State Cranberry Growers Association. Motion passed.

Respectfully submitted,

*Secretary WSCGA
James Van Wychen*

Whole Farm Conservation Planning

2008 Annual Report



Julie Ammel
Resource Conservationist

Cranberry growers continue to demonstrate their commitment to conservation in an impressive manner. More conservation was implemented on Wisconsin cranberry marshes as a result of the cooperative agreement between the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) and the Wisconsin State Cranberry Growers Association (WSCGA) during 2008. The following is a summary:

Environmental Quality Incentives Program (EQIP)

Eleven additional EQIP contracts were signed with Wisconsin cranberry growers in 2008, bringing the 5-year total to 42 contracts totaling more than \$1.65 million allocated for resource conservation. These contracts include more than 1,976 acres of nutrient management, 1800+ acres of pest management, 1,755 acres of irrigation water management, 8 tailwater recovery systems, 621 acres of high uniformity irrigation systems and nearly 7 miles of buried irrigation mainline. It is expected that approximately \$200,000 in EQIP contracts will be signed with cranberry growers in 2009.

Whole Farm Planning Incentives Program (WFPIP)

The WSCGA launched its own conservation program in 2007 to supplement conservation work left unfunded through EQIP and continued to offer the cost-share program in 2008. Sixty-eight WFPIP contracts have been signed so far, including 9 for the soil moisture monitoring project for a total of \$299,569. Approximately 7,000 acres have been contracted for nutrient management and irrigation water management was implemented on over 1,000 acres. The WFPIP program also funded high uniformity irrigation systems, along with buried mainline, for marshes not selected for funding through the EQIP program due to unavailability of funds. Approximately \$50,000 could be made available to Wisconsin cranberry growers not funded through EQIP during the 2009 program year.

Potential Cost-Share Practices for 2010

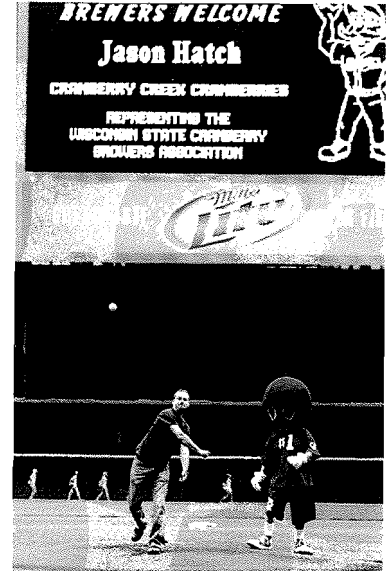
NRCS, in cooperation with the WSCGA, hope to add new practices to the cost-share list in 2010. The new practices that could potentially be offered will be soil moisture monitoring, in conjunction with temperature monitoring, to be installed with pump auto-start technology. The addition of the two new practices will depend on data collection from growers who received funding for the demo projects in 2008. The data will include efficacy information, or in other words, usefulness of the systems used in the demo projects and the submittal of cost data from the growers and from the vendors who supply the technology.

Cranberry Night at Miller Park

On September 5th the Milwaukee Brewers and Miller Park celebrated the state's number 1 fruit crop by hosting "Cranberry Night at Miller Park". Activities included an appearance at the park by WSCGA mascot Cary Cranberry, the opportunity to throw out the first pitch and promotions during the in game radio broadcast by Bob Uecker and Jim Powell.

Jason Hatch of Cranberry Creek Cranberries threw out the first pitch. (Despite throwing a strike he was immediately pulled by Brewer skipper Ned Yost in favor of CC Sabbathia). Cranberry Creek was the top bidder in an auction to secure the opportunity to throw out the first pitch. Proceeds from the auction were added to the WSCGA Development Fund.

Wisconsin cranberry growers have had a relationship with the Milwaukee Brewers Radio network for 6 years as sponsors of the nightly "Umpire Report". Funding for the sponsorship is provided through a grant from the Wisconsin Cranberry Board, Inc.



Sporting Clay Shoot and Cranberry Open Fundraisers Net Over \$22,000

The WSCGA held two fundraisers during the year conducted by the Development Committee of the organization. The Sporting Clay Shoot held August 22nd and the WSCGA Cranberry Open Golf Outing held June 18th raised a total of over \$22,000.

The proceeds of the events were used to create a new undergraduate Scholarship Fund at the UW River Falls Foundation, to support the on-going mission of the Wisconsin Cranberry Discovery Center and the efforts to develop an Experiment Station for Cranberries in Wisconsin. Thanks to the committee members who worked so hard on the events and to all of the growers and associate members who supported them through participation or sponsorship.



2008 Cranberry Open Winning Foursome
Randy Newmann, Krya Newmann, Shanna Steele, Ryan Steele
Score: 59

2008 WSCGA Summer Meeting, Field Day and Trade Show

In August more than 1,000 people descended on the Village of Warrens for the largest grower program of the association. The annual event was hosted by the Wisconsin Cranberry Discovery Center and the Warrens Cranberry Festival, Inc. Spring Valley Cranberry, LLC provided the marsh tours throughout the day.

Sixty-eight exhibitors took part in the trade show. There were mini sessions for growers on new irrigation technologies and evaluating pollination services. At the business meeting President Ed Sabey provided recognition to the hosts for the meeting.



2008 WSCGA Winter Meeting, Trade Show and Wisconsin Cranberry School

2008 started with the annual meeting of cranberry growers from across North America at the Holiday Inn Hotel and Convention Center in Stevens Point. This year attendance grew to over 400 participants in the educational programs, awards presentations and trade show.

Three growers were elected to serve three year terms on the WSCGA Board of Directors. Ed Sabey and Bill Wolfe were re elected to their positions and John Stauner was elected to the seat vacated by the retiring John Sager.

The association presented awards to recognize individuals and groups for their efforts in supporting the cranberry industry.

AgriView Agri Communicator of the Year

Each year AgriView recognizes a member of the cranberry industry who has done an outstanding job of communicating with the public about their commodity. Jane Fyksen, a Regional Editor for the statewide farm paper presented the award to Scott and Shelly Schultz. The Schultzes were recognized for their hosting media day on the marsh, tours during the annual Warrens Cranberry Festival and for giving many interviews and working with the communications programs of the WSCGA.

WSCGA Summer Meeting Hosts

The event this past year was held at Copper River Cranberry near Merrill. Over 70 exhibitors and 1,000 people attended the event that included a Callisto field trial, workshops on irrigation and soil water along with a great meal and the opportunity to socialize with growers from across the state. Ed Sabey representing Copper River was presented with an aerial portrait of the marsh taken on the day of the event.

WSCGA President's Award

This year two individuals were presented with this recognition for their efforts on behalf of the association over the past year. Both of the individuals have worked with growers for a number of years on growing a better crop. They provide consulting services to growers but also go beyond the normal expectations of a consultant by treating their grower clients as close friends.

They have served as valuable members of the Education Committee assisting in putting together school programs, workshops and summer meeting programs. The first individual is Jayne Sojka. The second is Leroy Kummer of Ocean Spray.

WSCGA Service to Industry Awards

LaVerne "Joe" Heuer was recognized for his long service to the industry WSCGA as a grower and builder of cranberry marshes across the state and nation. Wisconsin Farm Bureau Federation.

The Wisconsin Farm Bureau Federation was recognized for their efforts on behalf of all agriculture in the state and in particular for their support of a cranberry grower in Northwest Wisconsin involved in a nuisance suit.

Zawistowski Litigation Complete Victory for Grower

In late August Judge John Anderson of Bayfield County awarded \$549,632 in legal fees and costs to Bill Zawistowski. The award was made under the state's Right to Farm law which allows for recovery of fees from plaintiffs who sue a farmer under nuisance law and lose. The fees and costs are to be paid by several out of state landowners who filed a nuisance suit against Zawistowski dating back to 2004.

Zawistowski prevailed in Sawyer County Circuit Court, at the Wisconsin Court of Appeals and in May, 2008 the Wisconsin Supreme Court declined to review the plaintiffs' case.

This was an important ruling for Mr. Zawistowski and his family, as well as for all of Wisconsin agriculture. The grower prevailed at every level of the court system and the facts clearly did not support the claims made against him. Still, he and his family incurred significant legal costs to defend their farm from these claims.

The Wisconsin Right to Farm Law is purposefully designed to protect Wisconsin farmers from false claims and frivolous lawsuits that could bankrupt their farming operation. This decision reinforces the Right to Farm Law as well as the facts that Mr. Zawistowski's operation is in complete compliance with the law, that his operation is not a nuisance and that such lawsuits are not to be entered into lightly.

WSCGA has offered in the past to work with the plaintiffs to address their concerns, but they have consistently chosen to pursue litigation instead. Zawistowski on his part is following industry BMPs and farming under an approved nutrient management plan.

WSCGA Efforts on Regulatory Reform Successful in 2008

The U.S. Army Corps of Engineers issued General Permit 014 (GP014) for activities on cranberry marshes that would impact wetlands in December of 2008. This was the final administrative step needed to streamline regulatory review of cranberry marsh activities that may require a permit under Section 404 of the Clean Water Act. "With this federal permit now issued, and thanks to a great deal of hard work and collaboration by both state and federal agencies, Wisconsin is poised to allow state growers to take advantage of market opportunities if it fits with plans for their farms," said Tom Lochner, executive director for WSCGA. "With the new permitting review process, our growers have an efficient process to review permits while maintaining the same regulatory standards required under the previous, lengthier process. This is great example of federal, state and private collaboration to bring about economic growth for Wisconsin."

According to Lochner, the 2008 Wisconsin cranberry crop will be above earlier forecasts, and worldwide demand for the fruit remains strong. Because of that demand, in July 2008, WSCGA and industry leaders announced an effort to grow the industry in Wisconsin and with it the economic benefits and manufacturing jobs that would follow. Key to that effort was the new streamlined permitting review process now set in place with GP014.

“Foresight earlier this year by the Governor, WDNR and others to make this effort a priority has put our state in a good position to bring new investments and economic activity into the state when we need it most,” said Ed Sabey, president of WSCGA.

The Corps of Engineers and Wisconsin DNR reached a Memo of Understanding October on the new permitting review process, the industry and state and federal regulators held educational sessions for Wisconsin growers and wetland consultants and engineers to educate them on the new regulatory process while they awaited GP014.

GP014 can be used for a number of activities on Wisconsin cranberry marshes that have minor impacts on wetlands, including the expansion of an existing marsh, the squaring off of an existing cranberry bed, rehabilitation of abandoned cranberry beds, dike construction or extensions.

Federal regulations requiring compensatory mitigation for all wetland impacts are the same under the new process and if a project would have a significant adverse impact on wetlands it will not be approved. The new permitting review process allows for one common permit application to be submitted to the Corps and the WDNR, rather than two separate applications. The process includes a pre-application meeting between the grower and regulators to discuss the project and gain feedback before the costly and time-consuming permit application is finalized. That early dialogue and feedback will result in more complete and realistic permit applications being submitted, making the process more efficient for both growers and federal and state regulators.

These times are challenging for capital investments like a marsh expansion. We need to take advantage of the opportunity to grow the industry here in Wisconsin before other growing regions do,” said Lochner. “Wisconsin has the growing expertise, weather conditions, abundance of water, and research and

manufacturing facilities to make it the best place for the cranberry industry to grow. And, with this new permitting review process, we can make strides in upholding all regulations while expanding the economy and creating jobs in Wisconsin.”

Good Participation in Wetland Permitting Workshops

Three sessions were held in October and November to detail the new permitting process for cranberry operations under Section 404 of the Clean Water Act. Cranberry consultants met on October 30 with two grower meetings being conducted on November 6. Roughly 10 consultants participated in their session with over 65 growers taking in the workshops in Wisconsin Rapids and Tomah.

These workshops were the second step in industry efforts at reform of the permitting process. Significant progress has been made to improve information and review by the agencies. The outreach to the growers detailed changes to permit applications, pre-proposal meetings and a new joint review process by the Corps and DNR. The Corps also announced the imminent issuance of General Permit 014 to handle cranberry expansions that affect ten acres of wetland or less and a new sequence in mitigation that would allow growers to go to mitigation banks early on in the process.

Copies of materials distributed at the meeting are available from the WSCGA office and on the website www.wiscran.org.

Committee Activity Reports

In the next section of the program book we have tried to briefly summarize the activities of the Association over the course of the past twelve months. They are organized according to the various advisory committees of the WSCGA which provide support and guidance for the board of directors on programming.

Associate Member Programs

2008 Committee:

Gary Fehrman - Chair
Tom Altmann
Brian Ashbeck
Joel Hoag
Randy Miller
Angie Paulsen
Paul Roberts
Ken Schwab
Chris Shafer
Joel Strack
Bob Wilson

Associate membership in the WSCGA is open to any non cranberry producing individual, firm, organization or institution. In general, associate members are companies or individuals that provide products or services to growers. They became members to support a strong industry in the state and participate in marketing opportunities provided by the WSCGA. These programs include the two trade shows and advertising programs. In 2008 the WSCGA had a record 140 Associate Members.

The Associate Member Committee advises the WSCGA Board of Directors on services for the associate membership. The committee meets with staff during the year to work on trade shows, advertising programs, mailing services and the WSCGA Buyers Guide.

Revenue from trade shows helps to cover the costs of the summer and winter meetings. 67 exhibitors participated in the 2008 Winter Trade Show at the Holiday Inn Hotel & Convention Center in Stevens Point and 68 displayed at the 2008 Summer Trade Show at in Warrens, WI.

Advertising by associate members helps cover the costs of publication of the WSCGA NEWS and the Summer Program Book. Associate Members also provide support through sponsorships of the WSCGA Winter Meeting and the Wisconsin Cranberry School. The Associate Members have been enthusiastic supporters of the Cranberry Open and Sporting Clay Shoot which raise money to be used to enhance the scholarship funds at UW-LaCrosse, UW-Madison, Western Wisconsin Technical Colleges, establish an endowed fund at UW-River Falls, support the establishment of an experiment station in Wisconsin and provide support for the Wisconsin Cranberry Discovery Center.

Each year the WSCGA Buyer's Guide is published and distributed at the Summer Meeting. The guide contains a complete listing of Associate Members and a breakdown of the various services and products that they provide.

Development Fund Committee

2008 Committee:

Dave & Diane Kerkman
Co Chairs Cranberry Open
Rusty Schultz
Chair Clay Shoot
Carol & Donavon Dix
Lorry Erickson
Betty Gebhardt
Mike & Tonya Gnewikow
Joel Hoag
Vicki Nemitz
Ben Rezin
Shelly Schultz
Ken Schwab
Gordy Seamans
Nodji Van Wychen
Andrea & Luke Weiland

Administration Committee

2008 Committee

Heidi Dobbs, Chair
Dan Brockman
Bob Duckart
Greg Fanning
Bill Hatch
Fran Podvin
Russ Rifleman
Kelly Rudd
John Sager
Scott Schultz
Ryan Walker

The Development Fund Committee is responsible for efforts by the association to raise funds for scholarships for students attending post high school educational institutions. Since the committee held its first event in 1991 it has raised over \$167,000 to endow scholarship funds at the UW Madison Foundation, the UW Stevens Point Foundation, the Western Wisconsin Technical Foundation and the UW LaCrosse Foundation. In 2007 the committee established a new endowed fund for students at the UW River Falls Foundation.

The 18th Annual Cranberry Open was held on June 18, 2008 at the Lake Arrowhead Golf Course in Rome, WI. One hundred and fifty-five (155) golfers participated in the best ball scramble and over 160 attended the post outing social.

The committee also sponsored the eleventh annual WSCGA Sporting Clay Shoot on August 22, 2008 at the Woods and Meadows Game Farm in Warrens. The shoot had a total of 145 shooters participating.

The 2009 Cranberry Open is planned for June 24th at Lake Arrowhead - Lakes Course, Rome, WI and the Sporting Clay Shoot will be held in August at Woods and Meadows in Warrens, Wisconsin. This year we were able to raise over \$22,000 to be used to establish a scholarship fund at UW-River Falls, to support the Wisconsin Cranberry Discovery Center and the project to establish an experiment station for cranberries in Wisconsin.

The Administration 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.

The budget is developed in August and September for presentation to the board at their September meeting.

Over the last several years the committee has been able to develop budgets that provide the necessary funds to operate the organization. The operational budget for the organization has remained fairly stable over the past five years.

The 2008-09 budget presented a challenge for the committee again this year. During its discussions the committee identified additional sources of revenue for the association to pursue to enhance the financial picture. The committee also reviewed and adjusted all expense items to allow for operation of the organization while limiting expenditures as much as possible.

Education Committee

2008 Committee:

Leroy Kummer, Chair
Dan Brockman
Heidi Dobbs
Bob Evsich
Steve Hahn
Nicole Hansen
Jason Hatch
Matt Lippert
Tod Planer
Jayne Sojka
Nodji Van Wychen

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.

In January of 2008 the WSCGA Winter Meeting, Trade Show and Wisconsin Cranberry School were held in Stevens Point. The event is the marquee program for the committee each year. Attendance over the two days exceeded 400 people from across North America. The school curriculum provided specialized sessions for the audience based on their job responsibilities with general sessions

covering topics of interest to all. There was a special emphasis on overall cranberry crop management at the 2008 School with a focus on water management.

The school also included a pesticide applicator training and certification session to allow growers to use the event as a one stop training program for themselves and employees. The grower roundtable discussions were expanded this year. These are informal yet structured discussions about topics of interest to growers.

The committee distributes a number of brochures that have been developed in the past. The most popular are the recipe brochures and Activity Books for elementary students. A new recipe brochure was developed in 2008 and features suggestions on how to use a variety of cranberry products in recipes all year round. The Activity Book focuses on fourth grade social studies curriculum and includes a variety of activities such as word searches, puzzles and creation of a cranberry rake.

The WSCGA NEWS remains the main vehicle for communication with the members. Regular features of the newsletter include research updates and legislative reports. Each month UW Extension faculty and staff from the Cranberry Institute contribute articles to provide up to date information on their programs. The committee continues to look for ways to improve the editorial content of the NEWS.

The WSCGA UW Extension Summer Meeting Field Day and Trade Show were held on August 13 in Warrens, WI. In addition to the marsh tours and exhibits at the trade show the WSCGA sponsored two mini sessions. The sessions involved evaluating pollination services and new irrigation technology.

The Education Committee also worked with members of the Public Relations Committee on the redesign of the industry website at www.wiscran.org. The newly organized site includes a members only section as well as a section with items of interest to the general public including, health, history, education programs and industry links along with video and audio capabilities. Pod casts and other features are part of the new site. A portion of the costs are provided by a grant from the Wisconsin Cranberry Board, Inc.

A sub committee from the Education Committee and the Public Relations Committee worked on two video projects in 2008. The first was an update of the six minute videotape: Wisconsin Cranberries - Growing Strong. This update was completed in time for the 2008 Wisconsin State Fair. The second project was in developing the four segments on cranberries for the Into the Outdoors program. When completed, the video segments will be used to compliment a new curriculum packet which WSCGA will be working on in 2009.

Many of the projects initiated in the area of education are funded in part by grants from the Wisconsin Cranberry Board, Inc.

Public Relations Committee

2008 Committee

Nodji Van Wyche - Chair
Mike Gnewikow
Kathy Henkel
Sue Indermuehle
Jim Peterson
Jessica Rezin
Ben Tilberg
Cheryl Urban
Rusty Schultz
Andrea Weiland

The Public Relations Committee is responsible for generating a positive image of the industry in the state. That responsibility includes working with the media to tell the industry's story and working with other groups to help promote the state's largest fruit crop. The committee also works on the association exhibit and booth at the Wisconsin State Fair and with the various cranberry festivals held in the communities of Eagle River, Manitowish Waters, Stone Lake, and Warrens.

The WSCGA represented Wisconsin growers on a sub-committee to coordinate promotion and communication efforts nationally. This sub-committee was set up by the USDA CMC to assist in the implementation of the domestic and international generic promotion programs.

The CMC Generic Promotion Advisory Sub-committee worked to develop a

program focused on the health benefits of cranberry consumption.

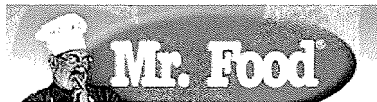
In August the Wisconsin State Fair offers promotion opportunities for the industry. The association utilizes a grant from the Wisconsin Cranberry Board, Inc. to support a portion of the cost of its state fair promotion program. The WSCGA secures space for a booth in the Wisconsin Products Pavilion. The booth features educational exhibits on cranberries and cranberry growing, a model of a cranberry marsh, a videotape and sales of specialty cranberry products and cranberry juice drinks. A new recipe brochure and video debuted at the Fair this year. WSCGA made drops of products to the various media outlets at the fair and participated in radio and television interviews. The association also conducted cooking demonstrations on the stage in the Wisconsin Products Pavilion.

As the fall harvest season approached the association utilized materials and messages from the national effort in its fall communications program. Media kits and releases were sent in September statewide and follow up releases were sent in October. The releases focused on economic and health messages.



The fall harvest efforts focused on generating statewide and regional and national interests. Those efforts included Martha Stewart Living Radio, American Profile, Associated Press and Growing Magazine.

The committee worked with the USDA Cranberry Marketing Committee to host a marsh and media tour for the industry in-country trade representatives from Japan. The effort included generating media interest about the visit of the Japanese representatives, the industry's international marketing efforts and the 2008 crop.



Working with the nationally shown Mr. Food program the WSCGA developed a program featuring the use of cranberries that aired during the week prior to Labor Day and during the week of Thanksgiving. The association provided products for the set, stock videotape footage and the script for the program.

Utilizing grants from the Wisconsin Cranberry Board, Inc. the association entered into an advertising agreement with the Milwaukee Brewers Baseball Radio Network. The ads promote the health benefits and great taste of cranberries and cranberry products. Through the sponsorship with the Milwaukee Brewers a "Cranberry Night at Miller Park" promotion was held on September 5.

The association also provides financial support for Ducks Unlimited through co-sponsorship of "Duck Camp". Under this program select Greenwing members are participants in a camping experience to learn more about wetlands and their role in providing wildlife habitat.

WSCGA also provides scholarships for students to attend Trees for Tomorrow, and co-sponsors two FFA Proficiency Awards.

Research Committee

2008 Committee:

Kay A. Finch - Chair
Tim Dittl
Guy Gottschalk
Edward A. Grygleski
Jeff Habelman
Nicole Hansen
Mike Moss
Suzanne Rodewald
Scott Schultz
Jayne Sojka

The WSCGA Research Committee was established by the Board of Directors 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.

The Research Committee works each year to provide the cranberry weather forecasts through a grant from the Wisconsin Cranberry Board, Inc. In 2008 Freese Notis Weather of Des Moines, Iowa prepared the forecasts for distribution via a toll free telephone number as well as the World Wide Web.

The WSCGA participates in the Cranberry Institute Ag Research Committee to help identify and prioritize needs for research projects that lead to development of Best Management Practices and pesticide registrations. The Wisconsin Cranberry Board, Inc., CI and WSCGA also work with other regional grower groups to coordinate research programs to avoid duplication and to enhance and compliment efforts elsewhere.

This year Section 3 registrations were obtained for the herbicide Callisto and a new insecticide Assail. Efforts to address labeling problems associated with endangered species concerns with the Karner Blue Butterfly and the use of Intrepid seem to be close to fruition. New use restrictions and county bulletins are expected to be completed in January of 2009.

Wisconsin growers continued their support for research on the health benefits of cranberry consumption through the partnership between the Cranberry Institute and the Wisconsin Cranberry Board, Inc. This partnership teamed up in 2006-07 to support close to \$150,000 of health related research. The organizations are now beginning to see the results of this research being published which has led to the development of plans to communicate the results with the consuming public.

The committee participated in the December meeting of the Wisconsin Cranberry Board, Inc. Participants reviewed funding and research priorities and discussed industry needs for the future with research faculty and others. The session helped the WCB and industry to identify future needs in terms of research, education and promotion as well as funding. The results of the discussion will be reviewed at the next meeting of the WCB and be used to guide the board in making its funding decisions in 2009.

The WSCGA provides administrative services to the Wisconsin Cranberry Board, Inc. under a contract. Under the agreement the Association staff performs a number of administrative functions such as collection of assessments, recordkeeping, making arrangements for meetings, preparation of annual reports, issuing calls for proposals and answering requests for information. The Wisconsin Department of Agriculture, Trade and Consumer Protection maintains oversight of the WCB to insure compliance with the marketing order and to conduct elections.

Public Policy & Environmental Affairs Committee

2008 Committee:

Albert J. Amundson
Mike Bartling
Kay A. Finch
Bryan Heuer
Jeff Huttenburg
Richard D. Indermuehle
Gary Jensen
Eric Jonjak
Randy Jonjak
Bill Klouda
Greg Knorr
William Metcalf
Al O'Leary
Jim Peterson
Fran Podvin
Fred Prehn
Dan Rayala
Russ Rifleman
Gary Roberts
Clare Searles
John Sager
Scott Schultz
Craig Scott
Dick Teske
Ryan Walker
Luke Weiland

In 2008 the Board of Directors combined the Water and Wetlands Committee and Governmental Relations Committee responsibilities into a new Public Policy and Environmental Affairs Committee. The committee is responsible for the development of recommendations on policy for environmental issues as well as other issues that arise as part of the public policy advocacy program. The committee also makes recommendations on the disbursement of funds from the restricted account for water and wetlands.

Water Use Issues

The committee plays a major role in the efforts of the Association to protect the rights of growers to access water for their cranberry operations. This right has been challenged twice in the past 14 years, the most recent attempt in 2002 session of the legislature. Another challenge is expected in the near future as water will be the major environmental issue in the state over the course of the next ten years. As both surface and groundwater have become major issues in the state, agricultural use of this resource has come under close scrutiny. Alliances are being formed with farm organizations as well as lake owners and other groups to help protect grower rights while also conserving resources.

Great Lakes Compact

The Great Lakes Compact posed a serious threat to growers' access to water. WSCGA supported protection of the Great Lakes resource some of the proposed legislation to ratify and implement the compact went beyond what was needed to provide this protection. The association worked with the Legislative and Governor's office to develop a piece of legislation that protected growers interests.

Water Quality Issues

The association continued its work on important water quality issues for the industry in 2008. These efforts included support of individual grower cases, regional and statewide water quality issues.

WSCGA has been working for the past six years with NRCS, UW Extension, DATCP and other agencies to develop conservation programs for Wisconsin cranberry growers. These programs include the establishment of pilot conservation projects, a statewide Cranberry Environmental Quality Incentives Program, farm conservation planning and nutrient management planning.

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) revised the state's non point source pollution regulations. The updated rules use phosphorous based nutrient management standards for the development of required nutrient management plans. The new rules, under certain conditions, require all farmers to have a nutrient management plan that meets the new NRCS 590 standard for nutrient management by 2008. WSCGA has been successful in working with the agencies to develop guidelines to meet the 590 standards and meet the agronomic needs of the crop. These guidelines were field tested with growers prior to being adopted. The association worked with DATCP to make sure the rules were written in a manner acceptable to the grower community. Training workshops have been held for growers. Over 9,000 acres of cranberries are now covered by an approved plan.

Information on the Cranberry EQIP sign up and the demonstration projects are provided in articles in the program book.

Continued

Public Policy & Environmental Affairs Committee

The long running litigation involving a cranberry grower in Northwest Wisconsin came to a conclusion in 2008. In late August Judge John Anderson of Bayfield County awarded \$549,632 in legal fees and costs to Bill Zawistowski. The award was made under the state's Right to Farm Law which allows for recovery of fees from plaintiffs who sue a farmer under nuisance law and lose. The fees and costs are to be paid by several out of state landowners who filed a nuisance suit against Zawistowski dating back to 2004.

Zawistowski prevailed in Sawyer County Circuit Court, at the Wisconsin Court of Appeals and in May, 2008 the Wisconsin Supreme Court declined to review the plaintiffs' case. WSCGA provided support for the grower since the inception of the issues in 2002.

Wetland Issues

The association launched a major initiative in July to address problems with the wetland permitting process. The effort included communications as well as lobbying at the state and local level and work with the St. Paul District of The Corps of Engineers. The work secured a new General Permit and a streamlined permitting process. Workshops were held for growers and consultants on the new process.

Local Issues

This past year WSCGA worked with growers facing local ordinances that conflicted with state statutes. Zoning ordinances in Adams, Portage, Sawyer and Wood Counties were attempting to regulate grower use and access to water in conflict with state statutes. The WSCGA was successful in having the ordinances amended to recognize grower rights.

WSCGA also works individually with growers on permitting issues and exempt activities under the Clean Water Act. This type of one on one service is available to all growers to protect their rights as well as protect the industry from an activity that may result in a violation.

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