

WISCONSIN CRANBERRY SCHOOL

2010

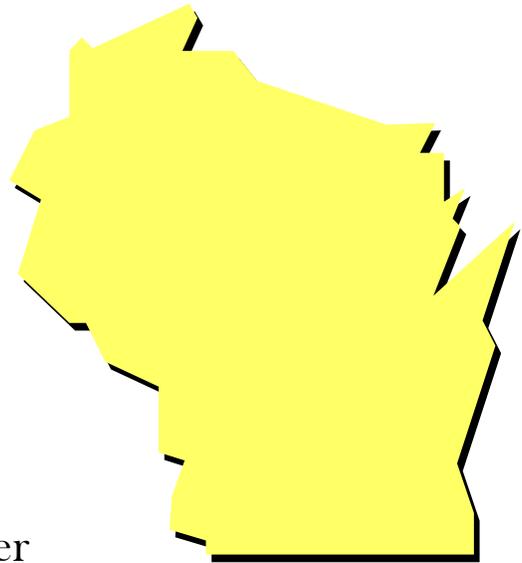
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PROPOSED NATIONAL SUSTAINABILITY STANDARDS: IMPLICATIONS FOR THE CRANBERRY INDUSTRY

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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. The intent of this presentation is to give an overview and update on national sustainability standards, and to outline potential implications for cranberry production.

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. For example, McDonald’s recently agreed to comply with a shareholder request to look at ways to reduce pesticide use in potatoes and document such progress. 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. Three national sustainability standard efforts are now taking place: the Field to Market efforts led by the Keystone Center, the Stewardship Index for Specialty Crops, and the American National Standards Institute efforts organized by Scientific Certification Systems.

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, is leading 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 some areas;

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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 Field to Market participants are currently investigating methodology and feasibility of quantifying sustainability parameters, such as water quality and energy use, at the grower level. The focus of this group is on major agronomic crops, such as cotton, corn, soybeans and wheat.

The Stewardship Index for Specialty Crops has taken an approach analogous to Field to Market, but with a focus on specialty food crops. The approach is outcome-based and not practice-based, and has focused on self-evaluation instead of certification. This group has organized several well-attended webinars and educational venues on parameters that would be included in the people, planet and profit parameters of sustainability.

While these efforts and others are currently very active, quantifying agricultural sustainability poses many challenges.

1. Agriculture is a complex biological system overlaid with an equally complex management system. Therefore, an inclusive standard across regions and crops is logistically challenging.
2. Quantifying sustainability could be costly, particularly with parameters such as water quality, where there is no substitute for expensive laboratory analyses.
3. At some point, participants or leaders may need to weight parameters in order to make difficult choices. This will raise questions of differing values systems. For example, which is more important: preserving rural farmland or preserving water?

Many involved have indicated that, ultimately, consumers will determine the success of such programs. So, will consumers pay for sustainability? The Healthy Grown potato program in Wisconsin provides an interesting case study. The Healthy Grown potato program is a unique collaboration among growers, academics and environmentally-oriented NGOs. The research-based program was built with over 20 grants totaling \$2.7 million, about \$200,000 per year in research support directly from growers, and about 15 to 20 researchers involved through time. In terms of documenting and improving “sustainability” parameters, Healthy Grown has been a great success. Between 2001 and 2005, IPM adoption increased 30 to 40% while pesticide toxicity scores decreased. The program is third-party certified by Protected Harvest and is

rigorous. In market surveys, 70% of consumers said that they were likely to purchase Healthy Grown potatoes, and of those, 88% indicated that they would pay \$0.25 more than standard potatoes. However, in 2004 and 2005, only 1% of the certified crop was sold as Healthy Grown. It appears that there is a strong disconnect between what consumers say they will buy and what is actually riding around in their grocery carts.

The measurement of “sustainability” parameters, such as the carbon footprint, has been successfully adopted in industrial processes; however, there are a couple of key differences between these efforts in industry versus agricultural production. First, the parameters often surveyed in industrial processes can be and are currently quantified with something as simple as a meter, such as electricity, natural gas and water usage, whereas those proposed for measurement in agriculture are much more nebulous, such as fair labor, rural community value and biodiversity. Second, the outcome of measuring these parameters in industry is often an implementation of efficiencies that slow the meter down - i.e. quantifying sustainability saves money. We have not yet been able to demonstrate a similar relationship in agriculture.

NATIVE BEES IN WISCONSIN CRANBERRY

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Background

Pollination is a valuable ecosystem service (NRC 2007) worth an estimated \$14.6 billion annually in the United States (Morse & Calderone 2000). One in every three bites of food we eat is dependent, directly or indirectly, on insect pollination (Klein et al. 2007). Historically, farmers have relied upon one species, the non-native honey bee (*Apis mellifera*) for their pollination requirements. In recent years, however, honey bees have declined drastically as a result of mites, disease, and the recent emergence of Colony Collapse Disorder (CCD)(Stokstad 2007). As CCD continues to spread and devastate honey bee colonies, farmers will need to seek alternative ways of pollinating their crops.

A honey bee pollinating cranberry.



Native bees also provide valuable pollination services (Losey and Vaughan 2006, Winfree et al. 2008) but have largely been overlooked and are at risk of decline due to habitat fragmentation, intensified agriculture, and agri-chemical exposure (Kearns et al. 1998, Kremen and Ricketts 2000). Native bees, unlike honey bees, are mainly solitary and do not produce honey. They nest in patches of bare ground or in hollow stems. In the springtime the adult bees emerge after over-wintering as pupae and begin foraging for nectar and pollen. In order for native bees to survive, flower resources must be readily available throughout their entire flight period. Previous studies have shown that the abundance and diversity of native bees in agro-ecosystems increase with proximity to natural habitat (e.g. Kremen et al. 2004, Morandin and Winston 2006) and areas with diverse floral resources (Potts et al. 2003). In order to inform management strategies to protect and enhance native bee communities in agricultural landscapes, it is essential to understand how habitat configuration and farm management affect native pollinators.

Megachile addenda may be an important cranberry pollinator.



Cranberry production is especially vulnerable to pollinator declines due to its dependence on insect pollination. While most cranberry growers rent honey bees each year for pollination, previous research has shown that native bees are more efficient pollinators of cranberry than honey bees (Cane and Schiffhauer 2003). To date, 44 species of native bees have been documented pollinating cranberry (Cane et al. 1996, Delaplane & Mayer 2000, Free 1993, Mackenzie & Averill 1995,

Stubbs & Drummond 1997) and I have personally recorded over 100 species present in the Wisconsin cranberry system (Gaines, unpublished data). Native bees alone are able to provide sufficient pollination for some cranberry bogs in Ontario, Canada (Mohr and Kevan 1987), and this may also be possible in Wisconsin (Evans and Spivak 2006). In light of recent pollinator declines and the importance of pollinators to cranberry, the objective of my research is to determine **to what extent the variation in native bee communities depend on surrounding landscape as well as local farm management and to determine how much native bees contribute to the pollination of cranberries.**

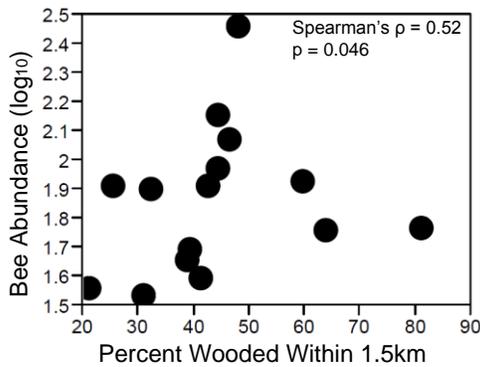
Preliminary Research

In 2008 I did an initial survey of native bees at 15 commercial marshes in central Wisconsin. I selected my sample sites so that the landscape within one km of the marsh varied from 20-83% woodland and 0-39% agriculture (see aerial photos at right). Using blue, yellow, and white pan traps filled with soapy water (which to a bee looks like a flower), I sampled once before, twice during, and once after cranberry bloom. The bees were identified to species and I then analyzed my data based on surrounding landscape.

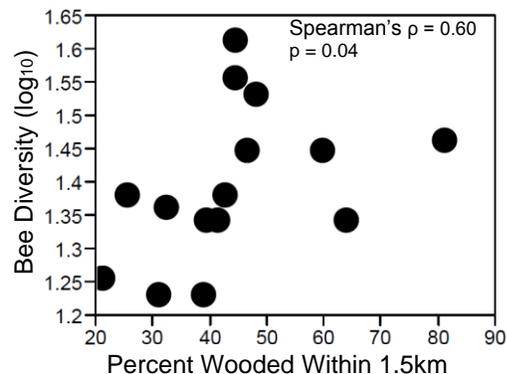
Overall, I collected 1282 specimens representing 108 species of native bees. The native bee species composition changed as a function of surrounding woodland and agriculture. The total number of bee species and specimens collected increased as wooded habitat increased (see graphs below) and decreased with increasing agriculture in the surrounding kilometer.



Two marshes surrounded by agriculture (top) and woodland (bottom).



Native bee abundance (l) and diversity (r) increased with increasing wooded habitat in the surrounding landscape.



From this initial study, I found that native bees are abundant and diverse in Wisconsin cranberries, suggesting their contribution to cranberry pollination could be significant. As the causes of honey bee die-offs remain uncertain, growers will need to seek alternative pollination methods. Habitat management and landscape planning may be one way for growers and communities to enhance native bee populations and thus pollination services on their farms.

Future research plans

In 2010 I will continue to study native bees in Wisconsin cranberry. I will continue to look at how surrounding landscape influences native bees as well as studying how local farm practices affect native bees. I plan to look at which bees are actually visiting cranberry flowers and determine how much they are contributing to pollination. The overall goal of my research is to understand what factors influence native bees and inform growers about ways to enhance native bee pollinators on their farms.

Acknowledgements

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NEW BUGS, OLD REMEDIES

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Background

A few new insects are generating some interest in some Wisconsin cranberry beds. I am not certain that they are really abundant enough to cause economic problems at this point, but if that becomes the case we already have effective tools for managing them.

Note that in the following I have listed some insecticide products that are not labeled for these specific pests on cranberry. However, these are products which are registered for the target pests on other crops, and are registered for other pests on cranberry. Use of such products on cranberry is legal as long as the usage pattern conforms to cranberry label restrictions, such as the maximum rate, maximum seasonal usage, and preharvest interval (PHI).

Rose chafer, *Macroductylus subspinosus*, is a native insect in the scarab beetle family. The larva is a type of white grub that feeds on the roots of grasses and is largely confined to areas of sandy soils. The adult beetles are day-active insects, often found on flowers; they are about ½” long and of a yellowish-tan color. The adult beetles are notoriously common scourges of gardens and crops, feeding on a multitude of different types of plants, from grasses to fruit trees and rose bushes. For some reason, in recent years rose chafer has taken a modest liking to cranberry. If it appears that the numbers in cranberry beds are sufficiently high that damage may result, carbaryl (Sevin) is registered (7 day PHI). Other products registered on cranberry that can be used include Assail (1 day PHI) and Imidan (14 day PHI). In addition to insecticides, traps are commercially available which, in other situations (such as home gardens) have been adequately effective in reducing rose chafer populations.

Japanese beetle, *Popillia japonica*, is also a type of scarab beetle and the larva is yet another type of white grub, feeding on the roots of grasses and other plants. Japanese beetle is not native to North America but was accidentally introduced into New Jersey in 1916 and has been gradually increasing its range in the United States. It entered Wisconsin some 10-15 years ago and is still increasing its range in our state. The adult beetle is about ½” long, with greenish head and pronotum and reddish wing covers (elytra). They are active during the day and are strong flyers. Like rose chafer, the adults feed on flowers, fruits, and leaves of many types of plants. They can occur for a prolonged period in the summer, especially in July and August, but some individuals will continue to occur until the first hard frost. In Massachusetts and New Jersey it is occasionally a pest of cranberry, so several insecticides are registered including Actara (30 day PHI), Assail (1 day PHI), Pyganic (0 day PHI), and Sevin (7 day PHI). Other acceptable products include Imidan (14 day PHI) and Orthene (75 day PHI). There are also insect traps commercially available for Japanese beetle, but because the lures are so

effective, and because the beetle is such a strong flyer, the traps are known to often attract more insects than they catch. Therefore, if the traps are anywhere near plants that need to be protected, the traps can actually result in higher levels of plant injury.

Gypsy moth, *Lymantria dispar*, is another non-native species; it was accidentally introduced into Massachusetts in about 1869. Like Japanese beetle, it is still expanding its range in the eastern United States. In fact, at the present time, Wisconsin (and spreading into Minnesota and Iowa) is on the leading edge of its range expansion. Most of the eastern half of the state is considered generally infested and no longer managed by state and federal agencies. However, the populations in the central and western part of the state are still becoming established, and state and federal agencies form a team involved in a “slow the spread” effort to knock back the biggest populations westward of the main line of infestation. Gypsy moth is primarily a pest of deciduous trees, but when populations are large it can also attack conifers and various types of shrubs. On the east coast it can be a pest of cranberry, especially during outbreak periods when the larvae strip forests of all their vegetation and then seek other sources of food. The larvae look something like tent caterpillars (but they do not spin silken webs or tents). The larvae get up to about 2” long when fully grown, are noticeably bristly, and the larger larvae have 5 pairs of blue spots followed by 6 pairs of reddish spots in two rows down the back. The male moths are brown and capable of flying; the female moths are whitish and fully winged but incapable of flight. Each female lays all her eggs in one buff-colored egg mass containing 400-800 or more eggs. The following insecticides are registered against gypsy moth on cranberry: Assail (1 day PHI), *Bacillus thuringiensis* (various brands; 0 day PHI), Confirm (30 day PHI), Imidan (14 day PHI), Intrepid (14 day PHI – note endangered species restrictions), Orthene (75 day PHI), Pyganic (0 day PHI), and Sevin (7 day PHI). Other effective products with cranberry registration include Delegate (21 day PHI) and Entrust (21 day PHI – acceptable for certified organic production).

FUTURE CRANBERRY SELECTIONS: WHICH TRAITS MAY BE CRITICAL FOR 2050?

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Although we have been conducting a cranberry genetic improvement and evaluation program for multiple decades now, the 2009 growing season was one of our most enlightening experimental periods for both short and long term decision-making. Not only did the evaluation plots of a number of our selections mature and produce exciting results, but new information became available which highlighted highly visionary but not fully understood factors that may have profound impacts on the future cranberry industry in Wisconsin. We will be exploring three seemingly separate but really highly interrelated themes: (1) performance observations for our new hybrid selections, (2) climate change in Wisconsin's cranberry production region, and (3) presence and potential impacts of bacteria living in cranberry plants. All three of these themes are complex and to undergo a discussion of all of them in one presentation may seem ludicrous, but this is the challenge that we were given and will now attempt.

2010 Performance Update - University of Wisconsin Cranberry Breeding Project

The Cranberry Breeding Program has moved forward on a number of projects in the last year and in particular we are preparing a new cultivar for release. Below is a summary of the philosophies and major activities of the breeding project during the last year.

The general philosophies of the cranberry breeding program at the University of Wisconsin–Madison have been developed for both practical reasons and to reflect grower inputs. They include the following.

1. Utilize “Participatory Plant Breeding,” where stakeholders help direct the research and are involved in the selection process.
2. Meet the needs of the growers of Wisconsin.
3. Not duplicate existing cultivars.
4. Build-in resiliency both to individual cultivar releases and to the program as a whole.
5. Selections released in part for yield will be “proofed.” In other words, before release, high yield results will be obtained from a minimum 0.5 acre bed with conventional harvest; in addition specific, reproducible yield parameter traits (such as return bloom, berry size, berries per upright, etc.) must be present.
6. Test selections at multiple locations in the state; this insures the general applicability of a selection for Wisconsin, striving to serve all the growers of the state.

7. At this time we have determined that both the immediate and long-term needs of the growers of Wisconsin are reproducibly high yields covering the range of the harvest season, increasing both yield and efficiency of grower and handler operations.

We have identified several selections that meet the goal of covering the range of harvest timings. ‘Stevens’ is quite late in Wisconsin and the release of ‘HyRed’ in 2002 has provided the growers with a significantly earlier cultivar. While ‘HyRed’ was released specifically for early, improved fruit color, it was also selected for some improved yield parameter traits, in particular general bud set and return bloom (or “rebud”, a high propensity for bud set on fruiting uprights). This has resulted in some impressive yields, including a farm-record 532 barrels per acre on a four-year-old, 3.5 acre bed in Juneau County (originally planted from only 1500 lbs. of vines for the whole bed). This bed was harvested September 15th, 2009, and had excellent fruit color with very few “blonds” or “pinks” (very low colored fruit). A short video clip can be viewed on the web at <http://www.youtube.com/watch?v=V41XY8U9eUs>, showing the extent of fruit cover on this bed before corraling, and zooming in to show the excellent fruit quality.

A very promising new selection that matures even earlier than ‘HyRed’ is currently under evaluation at two locations, and has demonstrated very favorable yield parameter traits: specifically high rebud, high number of berries per upright and the potential for high upright density. This selection has not been “proofed” yet; however a four acre bed at a third location will be planted in 2010 to accomplish this goal.

Another selection, “WI92-A-X15” (or just ‘A-X15’) has been under evaluation for many years at several sites. Initially, ‘A-X15’ did not meet the breeding goals at the time (good fruit color by September 15th), but its excellent vigor and large berry size warranted further examination. Upon scale-up, ‘A-X15’ has reproducibly demonstrated many desirable yield parameter traits (excellent bud set, large berry size, early and late berry bulking), uniformly good establishment, excellent fertilizer response and fruit maturation before ‘Stevens’ (developing fruit color by late September and early October even in years ‘Stevens’ barely makes color). In 2009, ‘A-X15’ was “proofed” with a conventionally planted, conventionally harvested four-year-old bed which yielded nearly double the farm average for established ‘Stevens’ (Table 1).

It appears likely that fertilizer tolerance and response play a major role in the yield success of ‘A-X15’. ‘Stevens’ is well known for its tendency to make runners if over-fertilized with nitrogen, often at the expense of fruit and/or bud set. ‘A-X15’ does runner well in young plantings, but still sets a lot of uprights and buds. This results in good canopy establishment and good yields in young plantings (Table 1, note nitrogen levels applied). Nitrogen levels that support good results with ‘A-X15’ would cause excessive overgrowth and likely yield losses in ‘Stevens’.

Table 1. 2009 yield results for three- and four-year-old ‘A-X15’ from conventionally planted and harvested beds compared to the farm average for established ‘Stevens’ on a farm in Wood County, WI. Note difference in nitrogen levels applied.

	A-X15 4-yr-old	A-X15 3-yr-old	Established 'Stevens'
Yield (B/a)	476	242	243
Area planted (acres)	0.7	2.2	66
N applied (lbs/acre)	74	74	42

The fertilizer tolerance and response of ‘A-X15’ was especially evident in a well-established planting in Monroe County. Most of a 4000+ square foot plot was “over-fertilized” in an attempt to produce propagation material. This attempt failed as virtually no runners were produced (Fig. 1). Further examination of the effects of extra fertilizer confirmed a higher nitrogen content in the tissue and an estimated 10% increase in yield; but the major difference was a greatly increased level of bud set, particularly rebud (Fig. 2). There was a heavy crop load and the concept of being able to fertilize for the current year’s crop as well as the following year’s (through increased bud set) is very desirable.

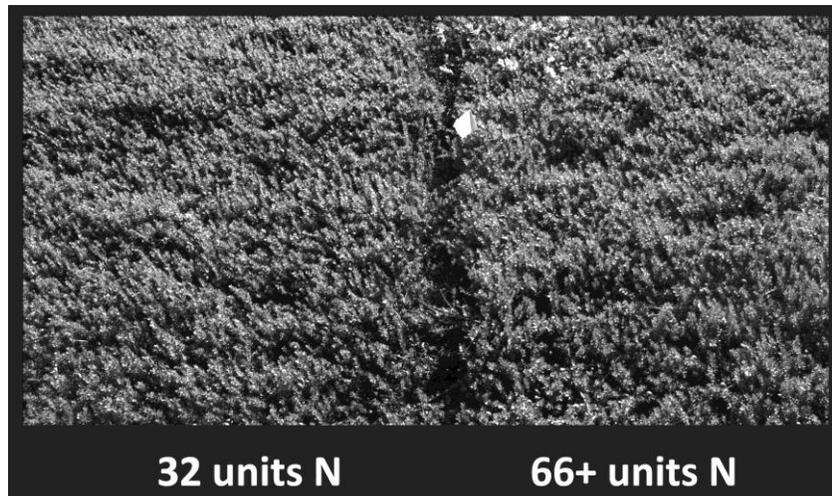


Fig. 1. Fertilizer tolerance of ‘A-X15’ demonstrated in an established plot in Monroe County, WI. The area to the left received 32 units of nitrogen as did the rest of the bed; the area to the right received an extra 34 units of inorganic nitrogen and another 45 units of slow-release organic fertilizer. Virtually no runners were observed at either nitrogen level.



Fig. 2. Fertilizer response on fruiting uprights of 'A-X15' from the plot in Fig 1. The higher nitrogen level greatly increased the rebud (bud set on uprights that fruited in the current year). Bud set overall was much greater at the higher nitrogen level, but average upright size was not different.

With these results we feel confident in releasing 'A-X15' as a new cranberry cultivar. 'A-X15' has been accepted by the Wisconsin Alumni Research Foundation for patenting and ten acres are ready for planting in 2010. 'A-X15' should be commercially available in small quantities in 2011 and in greater supply after that year.

The breeding program is still advancing other promising new selections, particularly to utilize a variety of germplasm sources and avoid a concentrated gene pool that might lead to problems in the future. Despite having a number of selections to work with, a new set of crosses has been performed to specifically address possible effects of climate change currently occurring in Wisconsin and discussed below. Selections from these crosses will seek to maximize resiliency and take advantage of these changes for the benefit of the growers of Wisconsin in the future (Fig. 3).

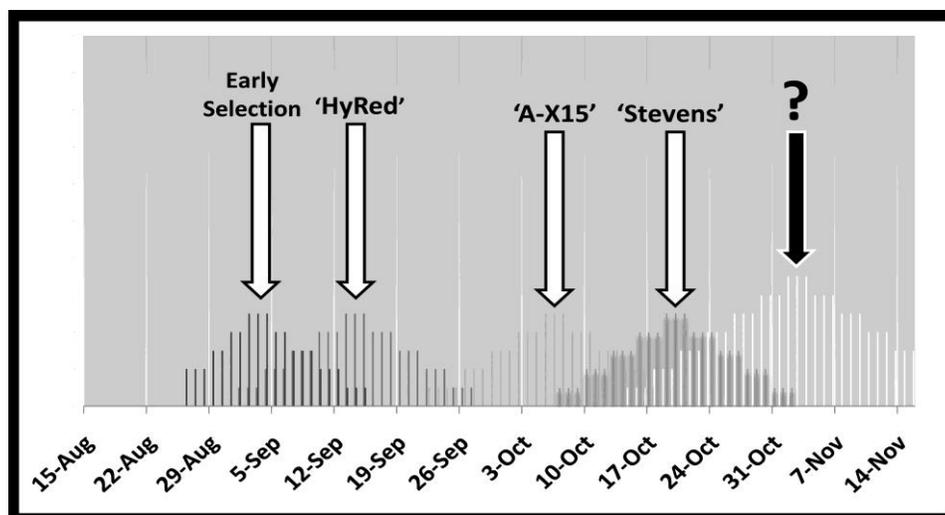


Fig. 3. A theoretical distribution of cultivars covering the range of the harvest season. One potential goal is to take advantage of climate changes that are occurring as indicated by current climatological models. The theoretical late cultivar indicated by a question mark in black may become a reality if early-flowering and late-maturing selections can maximize yields due to better exploitation of the changing growing season in Wisconsin.

Climate Change in Wisconsin’s Cranberry Production Region

We have all heard various scenarios about global warming and climate change and many times it is difficult to bring this discussion ‘down home’ to where we are doing everyday farming. What we want to do today is to make you aware of an extensive array of new information that allows a much more place-specific discussion. This information is not from the work in our research program, but is the result of a large, multi-investigator and multi-agency working taskforce referred to as the Wisconsin Initiative on Climate Change (WICCI, see <http://wicci.wisc.edu/index.htm>). Much of the effort is lead by the Center for Climatic Research at the Nelson Institute for Environmental Studies at UW-Madison, but be assured that agricultural researchers are also involved.

One approach by this group was to collect decades of already existing data from the extensive Weather Station Network in Wisconsin to detail the historical trends in climate in the state. Among the vast amounts of summarized information that is available, several trends, such as the following two, are of particular importance to the state’s cranberry industry.

1. Temperature changes have occurred. The state has generally become warmer, but this has not been uniform around the various regions. Figure 4 shows the change in annual average temperature from 1950-2006 around the state; we have added a map of counties encompassing the principal cranberry production areas in the state. What is apparent is that the most significant increases in climate warming closely match the cranberry production regions.

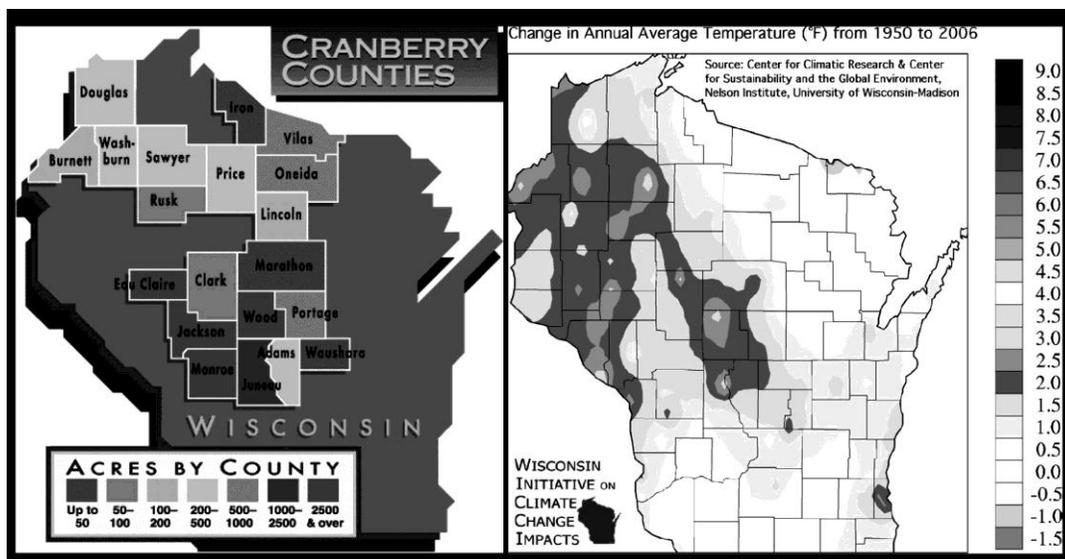


Fig. 4. Cranberry production in Wisconsin by county (left) compared to change in average annual temperature in Wisconsin (right). The areas of the state with the greatest average increase in temperatures coincide with some of the areas with the largest cranberry production.

2. The greatest warming also has varied by season with the most warming occurring in the winter and spring. Why this is particularly important for the cranberry industry is that there has been a significant increase in the length of the growing season. Since the length of the growing season has always been a challenge for Wisconsin growers, this impact of climate change may indeed be beneficial to cranberry production and may have actually contributed to the increasing yields recorded in Wisconsin during the past decade.

Another set of information that is emerging are predictions of what might occur in the next decades - will these changes in our climate continue? Such predictions rely on complex computer-based models and the reliability of such tools is increasing, although the perspective that this is still a prediction is important to maintain. Some of the relevant ideas emerging from the WICCI group include the following.

1. Wisconsin will continue to warm with an increase of another 4 to 9 °F by mid-century predicted.
2. Winter and early spring will be wetter and warmer. Although the longer growing season may improve our yields and fruit quality, if the early parts of the season become warmer and more humid, concerns about increased fruit rot problems will arise.
3. A general trend associated with the warming of the atmosphere is an increase in variability of the weather; that is, the weather patterns during the growing season may take on more occurrences of extreme events and less predictability. As I talk to farmers throughout Wisconsin, this factor is the scariest.

If one sits back and considers how to prepare for such climate changes, a theme that is emerging in such discussions is to maximize ‘resiliency’ of the industry. That is, whether predicted changes actually occur or not, it is probably a good bet to assume they will and thus be as flexible in production and processing practices as possible. How might plant breeding contribute to such resiliency? As was referred to in the breeding program update section, we feel that some approaches are a no-brainer.

1. Maximize diversity of cultivars in plantings. That is, it may be even more important to avoid what is called ‘genetic vulnerability’ by planting as diverse a variety of cranberry cultivars as possible so that the vulnerability of any one of them to climate changes will not be critical. Fortunately, the spectrum of choices of high performing cranberry cultivars has dramatically increased and will undoubtedly continue to expand in the near future.
2. Take a proactive advantage of the longer growing season. One way to do this is to plan to maximize the diversity of fruit maturity timing through the production regions. We anticipate the opportunity to have very early, midseason, and late season harvest periods.
3. Our genetic improvement efforts should place disease and pest resistances at a higher priority. This goal is much easier to discuss than to successfully undertake, however one approach is the idea to more thoroughly understand and exploit the symbiotic associations between microorganisms and the cranberry plant, as is discussed next.

Presence and Potential Impacts of Bacteria Living in Cranberry Plants

As many of you know, over the last three to four decades, we have undertaken and perfected the approaches for growing and genetically manipulating woody crops such as cranberry in sterile, ‘test-tube’ environments, now widely termed ‘microculture’. Interestingly, throughout this time, we have observed occasional emergence of bacteria from what we previously thought were ‘sterile’, microorganism-free plants. Unfortunately, the tools to fully explore this phenomenon was not available until recently and due to a fortunate convergence of separate projects, we have again engaged in studying the association of bacteria living in woody plants. The term commonly used to describe such a critter is an “endophyte.” An endophyte is a microorganism that colonizes living, internal tissues of plants (any part) without causing any immediate overt negative effects on the host plant.

Endophytes have been lightly studied for some time and are now rapidly attracting considerable interest. Here are some things we know.

- All plants surveyed have them.
- Fungi and bacteria are most common.
- Most complex associations may be with long-lived perennials (such as cranberry).
- Implicated in having many effects in an array of crops.
 - Reducing effects of pests (diseases, insects)
 - Modifying plant growth (such as through hormone production)
 - Complex interactions with other associations
 - Mycorrhizae

- Nutrition (e.g. nitrogen fixation)

During the last year, with some exploratory funds provided by Ocean Spray Cranberries, Inc. and a competitive grant through the College of Agricultural and Life Sciences using funds from the Gottschalk Foundation Gift, we have conducted some very preliminary work. The following are some observations.

- Cranberry plants do have bacterial endophytes in leaves/stems.
- We have observed about 120 individual isolates that look different but may not all be separate organisms. Work to identify them is now underway using modern genomic techniques.
- The endophyte population in cranberry plants growing in commercial beds versus native area appears to be significantly different.

So what? Considering what is known about endophytes, these results are not at all surprising. What our work will attempt to focus on is: “do these associations have any demonstrable positive effects on cranberry growth and productivity?” As an example, we conducted several very simple assays using only laboratory based techniques to explore if just one of these endophytes isolated from cranberry might affect the growth of a fungus involved in the field cranberry fruit rot complex. An example of the results is shown in Figure 5 below.

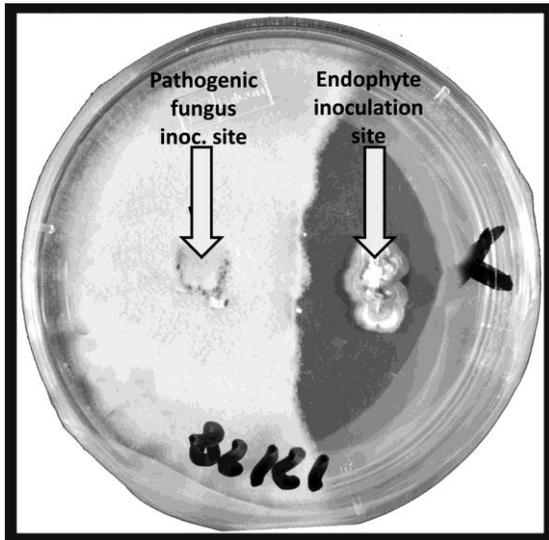


Fig. 5. Antifungal property of a cranberry endophyte. An endophytic bacteria isolated from cranberry was inoculated a few days before a fungus pathogenic to cranberry was, and the results viewed after five days. The fungus normally grows quite well on this medium, as evidenced by the left side of the petri dish. However, it was clearly inhibited by some factor produced by the endophyte on the right side of the dish. Endophytes may help plants with a number of factors, including resistance to pathogens, nutrient availability and tolerance to stress.

So now where do we head with this research?

- By developing endophyte-free cranberry plants and comparing their growth and productivity to cranberry plants with endophytes, will we see any differences?
- How stable and reproducible is the population of endophytes in cranberry fields?
- How important is the endophyte population to the success of new plantings?

- Can the effects of high populations of specific endophytes lead to modified BMPs?

If any of the above responses to the presence of endophytes in cranberry plants can be verified, should and how can this factor be incorporated into a cranberry breeding program? This is a really important question, because some of the past research working with other crops such as corn have shown strong interactions between the specific crop selections and specific endophytes; thus can we breed for the combined benefits of both organisms?

The 2050 Cranberry

So what will the leading cranberry cultivars of 2050 look like? We are betting that the themes of resiliency and positive microorganism associations may well be major factors. Bets anyone????

Thank You

The Cranberry Breeding Project thanks all the participants in the breeding program, including (among others) the Wisconsin Cranberry Board, Inc., Ocean Spray Cranberries, Inc., the Wisconsin State Cranberry Growers Association, the Wisconsin Alumni Research Foundation and in particular the cranberry growers of Wisconsin: without their major contributions both as collaborators and advisors, we would have been unable to be successful in our efforts to genetically improve cranberry.

2009 CRANBERRY FIELD PESTICIDE TESTING: SUMMARY REPORT

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Abstract

The mission of the 2009 program was to investigate fungicides, insecticides and herbicides for uses in Wisconsin cranberry production. Objectives were twofold:

- 1) investigate pesticides currently registered for use in cranberries to refine their use patterns and to further identify their spectrums of pests controlled, and
- 2) investigate pesticides not currently registered for uses in cranberries for their potential to address existing pest problems.

Thirty-nine field trials were conducted on fifteen Wisconsin marshes: 7 fungicide trials, 21 insecticide trials and 11 herbicide trials.

Fungicide Trials

In 2007 and 2008 late season *fruit rots* caused significant problems in Wisconsin cranberry production; in some marshes 30% of the harvested crop was lost to fruit rot. This disease complex generally affects mature beds that are in full production. In 2008 isolated incidents of *early rot* were consequential problems; losses of 50 – 100% of the crop were experienced. This disease complex and these losses generally occurred in 2–3 year old beds.

Fruit Rot

Five trials were conducted on three marshes that have experienced significant fruit rot problems in recent years. LaMunyon, Stevens and Ben Lear were the subject varieties. Fourteen treatments were evaluated. Treatments included various timings of applications of the registered products Bravo, Abound and Indar. Three non-registered products were also included. Disease pressure was heavy in the LaMunyon site, moderate in two of the Stevens sites and light in another Stevens site and in the Ben Lear site.

Bravo and Abound were the most efficacious products. Indar was less effective. The current recommendation is for two applications of a fungicide: at 50% bloom and at early post bloom. Additional applications at post-bloom or late berry set did not contribute significantly to enhancing disease control. None of the three candidate fungicides was significantly efficacious.

Early Rot

Two trials were conducted on two marshes that experienced significant early rot problems in 2008. Gryglesky GH-1 was the subject variety. Eight treatments were

evaluated. Treatments included three applications of the registered products Bravo, Abound and Indar and one non-registered product. Each product was applied on two different application schedules.

Neither trial was productive as early rot disease did not occur. Although this was not the preferred outcome it might have been anticipated as this disease lessens in intensity with bed maturity. Weather conditions unfavorable to disease development were also a likely factor.

Insecticide Trials

Cranberry fruitworm, Sparganothis fruitworm, and blackheaded fireworm are the primary insect pests in Wisconsin cranberries. Most acres are treated at least once per season for one or more of these pests. Tipworm, loopers/spanworms and flea beetles are secondary pests; in any given season some acres are treated for these pests. Cranberry girdler and white grubs are also occasional pests; there are no efficacious insecticides for these pests.

Twenty-one insecticide trials were conducted in 2009: four for cranberry fruitworms, four for Sparganothis fruitworms, two for fireworms, two for loopers, six for tipworms, one for flea beetle, one for leafhoppers and one for white grubs. The number of treatments evaluated varied with the pest and the trial site. The recently registered insecticides Assail, Knack, Delegate, and Intrepid, the older standards Imidan, diazinon, Orthene, and Lorsban, and several unregistered products were evaluated both alone and in tank-mix combinations.

Since trial sites were selected based on existing or developing insect pest populations; all trials had moderate to heavy testable pest pressures.

All of the registered products performed much as expected. The older organophosphate products were broad-spectrum across most test pests and were generally efficacious as long as the pest was present at the time of the application. Efficacies ranged from acceptable to excellent. The newly registered products, particularly the insect growth regulator-types, were more pest-type specific. Lepidoperan pests were controlled well, tipworm less so and the other pests mostly not controlled. Although all of the newer products were generally equally efficacious, the timing of applications with these products was critical to performance. Late egg to early instar applications were efficacious whereas applications to later instars were significantly less effective; this is to be expected with these types of insecticides. Tank mixes of the newer products with the organophosphates lessened the necessity for precise timings of applications. One of the candidate insecticides was a stellar product.

Of special interest was a single trial conducted in a cranberry-abandoned site. Because of the heavy infestation of weeds, primarily grass-types, a heavy infestation of white grubs was present. The site received occasional irrigation but was not flooded. Granular formulations of diazinon, Lorsban, Imidan, Admire and two experimental turf grass products were evaluated. One of the tested products provided excellent control of

grubs. Granular formulations of diazinon and Lorsban provided respectable suppression (ca. 70%) of grubs. Liquid formulations of diazinon, Lorsban and one of the experimental products were significantly less efficacious than their respective counterpart granular formulations. Admire and Imidan were not efficacious.

Herbicide Trials

The purposes of the 2009 herbicide trials were threefold:

- 1) investigate new post-applied products for possible uses in cranberries,
- 2) stay current with use patterns for Callisto (mesotrione) and
- 3) continue to investigate an unregistered product for dodder control.

New Post Product Trials

There are few new post applied products coming from industry. Most of the existing potential products have been investigated by us in previous years. Of those products, five have shown the greatest potential for uses in Wisconsin cranberries.

In our 2009 trials, two of the candidate herbicides caused discernable crop responses. With one, the crop response was detectable season long. With the other, the crop response was less long lasting but still unacceptable. Although the crop responses induced by either product did not result in significant yield reductions the visual responses were unacceptable. The visual crop response induced by a third candidate product was minor, however several tested treatments of this product resulted in significant crop reductions.

Two of the candidate products demonstrated good promise for use in Wisconsin cranberries. The weeds-controlled spectrums of both of these products would make these great companion products for Callisto as they provide good control of weeds that are weaknesses with Callisto. Neither of these products induced detectable crop response or negative effects on yields. One provided good control of St. Johnswort, a weed not controlled by Callisto, and yellow loosestrife.

Callisto Use Patterns

Commercial use patterns of Callisto were evaluated in small plot trials and monitored in commercial production situations. Observations are as follows.

- 1) Two applications of Callisto at 8 oz/acre may be excessive (\$\$). After several seasons of Callisto use, and once acceptable weed maintenance control has been achieved, 4–6 oz early followed by a second application, if needed, is appropriate.
- 2) Callisto is most efficacious when weeds first appear in the cranberry canopy. Later applications after the weeds are 6-8" tall are less efficacious.
- 3) Crop responses from Callisto applications can happen. Usually these responses are associated with cranberries under stress – cool temperatures, lack of moisture, etc. These responses are temporary and do not affect yields.

Some weeds that are not adequately controlled by Callisto, notably St. Johnswort, are beginning to be of concern. In recent years, pre-applications of Casoron, Devrinol

and Evital have been deemphasized because of the effectiveness of Callisto. Growers need to keep in mind these products for the control of weeds not controlled by Callisto.

Dodder Trials

In 2008 we had successes with a candidate herbicide for the control of dodder. This product is pending registration for uses in cranberries. Although few marshes in Wisconsin are plagued with heavy dodder infestations, those that do have the problem are in dire need of help for the control of this parasite. In 2009 seven trials were conducted in two marshes to investigate use patterns of the candidate herbicide (rates, timings of applications, tank mixes) for dodder control. Four of these trials at City Point, WI had heavy dodder infestations and valid trials were conducted. Because of efficacious maintenance applications of Casoron, the three trials conducted at the Tomah marsh did not have testable dodder infestations.

The candidate product continued to be highly efficacious for dodder control; timing of applications is critical to good control. Applications need to be made when the dodder strands first begin to appear in the cranberry canopy. It is likely that this timing coincides with dodder seed germination or just before the vines abscise from the seeds. Later applications inhibited vines but did not prevent vine matting. The 8 oz/acre rate is more effective than the 5.3 oz rate; both rates represent the rate range on the proposed cranberry label. Callisto caused temporary chlorosis in the dodder but did not provide control. Combinations of the candidate product + Callisto did not provide control enhancements over comparable rates of the product alone. Neither of two other candidate products provided control of dodder.

Season Summary

The 2009 field testing season was productive. We have a greater understanding of how the registered pesticides perform, how to make them the most efficacious and what new products have potential for use in cranberries.

HOW MUCH POTASSIUM IS NEEDED?

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Potassium application to cranberries in Wisconsin is highly variable with some growers making many and large applications while others apply relatively less. Purported benefits of potassium (K) applications include increased yield, increased fruit size, improved fruit color, and improved winter hardiness. Long held practice is that cranberry vines are sensitive to chloride, so potassium should be applied in the more expensive sulfate rather than the less expensive chloride form. This research was undertaken to validate or invalidate these claims.

Objectives

1. To conduct small plot experiments where different rates of potassium fertilizer are applied with various timing schemes. A four week timing was compared to a two week timing.
2. To compare large late season K applications to a control.
3. To compare chloride and sulfate forms of potassium fertilizers at two rates.

Plots were established in commercial cranberry beds of 'Stevens' in central Wisconsin. One farm was upland and sand based and the other farm was wetland and peat based, but with a substantial sand lift. Plot size was 10 x 16 feet and treatments were replicated eight times. Fertilizer was pre-weighed and was applied by hand to individual plots. Plots received uniform rates of nitrogen (30 lbs/a) and phosphorus (45 lbs P₂O₅/a) in three split applications. Potassium was applied at various rates and timings as shown in Table 1. Tissue samples and soil samples were collected in late August and were submitted to the UW Soil and Plant Analysis lab for analysis. In September prior to commercial harvest square foot samples were collected for determining yield and fruit count. Fruit were collected for color analysis in late September. Total anthocyanin in 100 gram samples was measured by extracting the fruit in 0.2 N HCl using the standard industry protocol.

Table 1. Rates and timings of potassium fertilizer applied to plots in 'Stevens' cranberries in central Wisconsin during 2006. Rate is given as pounds of K₂O per acre.

Treatment number	Rate	Form	Timing
1	0	Sulfate	RN, BL, FS, August
2	50	Sulfate	RN, BL, FS, August
3	100	Sulfate	RN, BL, FS, August
4	200	Sulfate	RN, BL, FS, August
5	200	Chloride	RN, BL, FS, August
6	200	Sulfate	2 week schedule beginning at RN
7	400	Sulfate	RN, BL, FS, August
8	400	Chloride	RN, BL, FS, August
9	800	Sulfate	RN, BL, FS, Early Aug, Mid Aug, Sept.

RN = Roughneck, BL = Bloom, FS = Fruit Set

Results

Higher rates of potassium fertilizer application led to tissue K values that generally trended upwards with application rate. However, significant differences were found the first year in both locations and at the upland location for 2008 (Tables 2, 4). Even after three years of no application of K fertilizer the control plots were still within the sufficient range for tissue K.

Soil test K typically trended upwards with application rate (Tables 2, 4). For 2008 there were no differences in soil test at either location except that our 800 pound rate was higher than the remainder. It is likely this is a function of high amounts of K remaining in the soil following the large late season application, just prior to collecting our soil samples. At the highest application rate, soil test K exceeded what would generally be recommended for cranberry soil K. It is interesting that there is no clear relationship between soil test K and tissue K.

There were no significant differences in yield, count or size at either location across three years of research (Tables 3, 5). This is not surprising since we did not find significant differences in tissue K and since none of the samples were in the deficient range. In fact, all tissue samples are still in the mid-sufficiency range and in this range we would not anticipate finding treatment differences. This should provide very strong evidence for the cranberry grower community that yield and potassium fertilizer application are not correlated. I should also point out that yield and fruit count at the highest application rate is generally numerically lower than lower rates. Low replication and high variability did not allow us to fully support this statement. However, data from growers clearly showed a negative relationship between potassium application rate and yield.

Varying rates and timing of K fertilizer had no effect on fruit color in 2006 or 2007 (Table 6). Treatment and farm effects were not significant and there was no treatment by farm interaction. Thus, rates of potassium were not correlated with achievement of fruit color.

For all three years we did not find any difference in plant or soil response to application of potassium in either the sulfate or the chloride form. At the rates utilized (200 and 400 pounds K₂O per acre) we did not find that chloride posed any problems. We did not note any visual differences between the chloride and sulfate plots. Further, the 400 pound rate is higher than most growers apply, thus we believe that either form of potassium fertilizer is suitable for cranberry production if applied in split applications.

Conclusions from the Data

1. Fruit yield, fruit size, and fruit number were not affected by potassium fertilizer application over three years at 2 locations (six location/years). Applications of potassium fertilizer above maintenance doses does not appear warranted.
2. There was no effect of potassium rate or form on fruit anthocyanin concentration. Thus, adding potassium fertilizer does not improve fruit color.
3. At the rates we tested, there was no difference in response to fertilizer added as either the chloride or sulfate form. At reasonable rates either form appears suitable. Growers can save a considerable expense by purchasing the chloride (0-0-60) form.
4. Large applications of K fertilizer will typically increase tissue K.

Results similar to these were obtained in Massachusetts from a sister study.

Table 2. Effect of various rates, timings, and sources of potassium application to cranberry vines growing in a sand based upland bed in Wisconsin. n=8

Trt #	Treatment*	Tissue K			Soil K		
		% dw			ppm		
		2006	2007	2008	2006	2007	2008
1	Control	0.655 cd	0.633	0.46 a	47.9	112.5	30.5 a
2	50 # sulfate	0.740 bcd	0.70	0.51ab	50.4	82.5	32.5 a
3	100 # sulfate	0.615 d	0.70	0.52 ab	62.9	55.75	45.0 ab
4	200# sulfate	0.710 bcd	0.78	0.56 cd	77.4	54.25	52.5 abc
5	200# chloride	0.680 bcd	0.76	0.53 abc	73.4	74.0	57.8 bc
6	200# sulfate biweekly	0.678 cd	0.86	0.54 abc	85.0	50.5	59 bc
7	400# sulfate	0.840 ab	0.85	0.62 cd	101.4	43.3	71.0 c
8	400# chloride	0.783 bc	0.78	0.56 cd	98.3	65.3	76.0 c
9	800# sulfate	0.945a	0.96	0.68 d	210.4	103.0	130.3 d
	Significance	**	ns	**	***	ns	***

* Treatments are given as pounds of K₂O per acre. Fertilizer was supplied as either potassium sulfate or potassium chloride.

Table 3. Effect of various potassium treatments on yield, count, and fruit size of cranberries growing in a sand based upland bed in Wisconsin. n=8.

Trt #	Treatment*	Yield			Count			Size		
		g/ft ²			number			grams		
		2006	2007	2008	2006	2007	2008	2006	2007	2008
1	Control	183	149	267	118	98	159	0.645	1.52	1.63
2	50 # sulfate	193	181	248	125	111	179	0.647	1.60	1.37
3	100 # sulfate	227	174	204	141	111	156	0.620	1.56	1.31
4	200# sulfate	202	185	202	128	117	153	0.631	1.57	1.27
5	200# chloride	233	184	234	152	115	164	0.660	1.58	1.41
6	200# sulfate biweekly	200	166	224	128	106	166	0.640	1.55	1.35
7	400# sulfate	220	157	175	140	99	130	0.638	1.57	1.31
8	400# chloride	191	164	192	121	101	144	0.629	1.61	1.32
9	800# sulfate	222	135	171	142	91	131	0.638	1.49	1.26
	Significance	ns	ns	ns	ns	ns	ns	ns	ns	ns

* Treatments are given as pounds of K₂O per acre. Fertilizer was supplied as either potassium sulfate or potassium chloride.

Table 4. Effect of various rates of phosphorus application to cranberry vines growing in a peat based wetland bed in Wisconsin. n=8.

Trt #	Treatment*	Tissue K			Soil K		
		% dw			ppm		
		2006	2007	2008	2006	2007	2008
1	Control	0.513 d	0.765	0.57	33.9	72	47 a
2	50 # sulfate	0.530 cd	0.590	0.61	46.3	70	45 a
3	100 # sulfate	0.648 bcd	0.658	0.62	46.3	54	42 a
4	200# sulfate	0.638 bcd	0.76	0.67	60.3	53	54 a
5	200# chloride	0.578 cd	0.59	0.63	57.3	51	52 a
6	200# sulfate biweekly	0.645 bcd	0.62	0.66	61.6	68	46 a
7	400# sulfate	0.735 b	0.66	0.75	84.9	44	51 a
8	400# chloride	0.655 bc	0.68	0.72	83.0	61	54 a
9	800# sulfate	1.040 a	0.76	0.66	131.3	73	121 b
	<i>Significance</i>	***	ns	ns	***	ns	***

* Treatments are given as pounds of K₂O per acre. Fertilizer was supplied as either potassium sulfate or potassium chloride.

Table 5. Effect of various potassium treatments on yield, count, and fruit size of cranberries growing in a peat based wetland bed in Wisconsin.

Trt #	Treatment*	Yield			Count			Size		
		g/ft ²			number			grams		
		2006	2007	2008	2006	2007	2008	2006	2007	2008
1	Control	193	98.1	166	131	61.6	115	0.68	1.60	1.45
2	50 # sulfate	199	78.6	163	133	50.9	112	0.67	1.56	1.46
3	100 # sulfate	180	108.9	139	119	69.4	93	0.66	1.58	1.49
4	200# sulfate	163	69.4	186	109	45.3	127	0.67	1.54	1.46
5	200# chloride	219	99.0	198	146	63.0	138	0.66	1.58	1.43
6	200# sulfate biweekly	150	77.7	186	104	50.4	132	0.69	1.55	1.41
7	400# sulfate	195	54.8	179	128	35.0	126	0.66	1.56	1.43
8	400# chloride	205	96.5	145	134	63.5	102	0.67	1.51	1.36
9	800# sulfate	181	79.4	180	130	55.1	121	0.71	1.46	1.48
	<i>Significance</i>	ns	ns	ns	ns	ns	ns	ns	ns	ns

* Treatments are given as pounds of K₂O per acre. Fertilizer was supplied as either potassium sulfate or potassium chloride.

Table 6. Effect of rate of potassium fertilizer on total anthocyanin concentration in cranberry fruit at harvest. n=8.

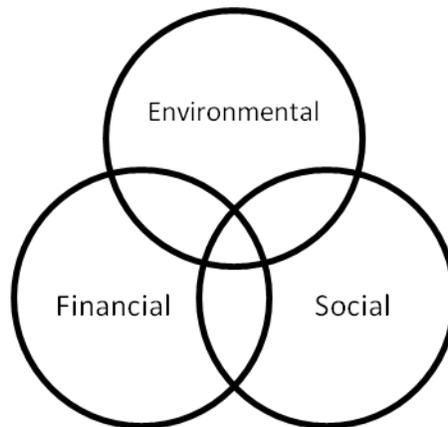
Treatment	Sand bed		Peat bed	
	2006	2007	2006	2007
Control	30.6	34	31.5	30.4
200 lbs K ₂ SO ₄	30.6	32.4	29.3	31.3
400 lbs K ₂ SO ₄	32.2	32.6	28.0	31.1
800 lbs K ₂ SO ₄	32.2	31	28.9	29.3
<i>Significance</i>	ns	ns	ns	ns

SUSTAINABLE CRANBERRY NUTRITION

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Sustainability has at its very core that future generations will be able to enjoy and utilize the systems and resources that we currently use. Further, decisions informed by sustainability look longer term than just the immediate future. Sustainable decisions look at least decades, if not centuries, into the future.

Sustainable cranberry production shares basic principles with broader sustainable agriculture. While some look broader than I will here, sustainability usually embraces at least three core principles: Environmentally sustainable, Financially sustainable, and Socially sustainable. These three core principles do not stand independently, but are interrelated as illustrated with a simple Venn diagram.



Environmentally Sustainable.

Cranberry nutrition that is environmentally sustainable does not pollute the environment, nor does it unduly deplete finite natural resources like rock phosphate, natural gas, and petroleum reserves. In this regard, nutrients that are required by a cranberry planting to ensure a full yield are provided in a timely manner and in a form so they can be utilized by cranberry vines. Nutrition is matched to vine genetics and known problems with a given bed. Sufficient nutrients are provided so that nutrient concentrations determined by fall tissue testing are in the sufficient range. Doing so ensures that mineral nutrients are not limiting yield. “Insurance applications” of fertilizer are not sustainable. Applying nutrients or other products that are not necessary (like gypsum) is not sustainable.

Financially Sustainable.

Practices that render a farming system unprofitable are not sustainable. Often these are considered more in terms of government regulations that require resources to meet. However, unnecessary applications of fertilizers reduce the profitability of the farming operation. Too often growers consider only the cost of the material to be applied and don’t consider the very real

cost of application. In many, if not most, cases the cost of application exceeds the cost of the fertilizer material. About 10 years ago an ag economist estimated the cost of fertilizer application using a cantilevered boom at \$25/acre. Since that time the cost of labor, fuel, lubricants, and depreciation have increased. I would not be surprised if the current cost were around \$35/acre.

Fertilizer prices are intimately tied to the cost of petroleum and natural gas. As natural gas prices fluctuate so does the cost of fertilizer. We've seen tremendous increases in the cost of fertilizer in the last three to five years. I don't see this moderating in the near future.

Coffee shop talk in the fall centers around who had the highest yield per acre. This emphasizes the wrong metric. The question should be who had the highest net profit per acre. Of course, we are much less prone to share that kind of detail. The cost of squeezing that last barrel per acre out of cranberry vines costs substantially more than the first barrel or even the first 200 barrels. Thus your income per barrel declines at some point as more inputs are devoted to create high yields. This is not sustainable.

Socially Sustainable.

We live and work in communities with other people. Sometimes those people are negatively affected by the things we do. If we are careless with an insecticide and kill wildlife it affects our neighbors and we receive a fine for our carelessness. If we are careless and apply nutrients either where they don't belong or at rates higher than are justified we are polluting the environment. Phosphorus is a particularly good example. Excess phosphorus in fresh water leads to algae growth, reductions in oxygen in the water, which in turn leads to eutrophication of lakes, ponds, and streams. This is not being a good neighbor. Conspicuous consumption and flaunting our good fortune as growers also leads to increased scrutiny from the larger community.

Social sustainability usually requires that we treat our employees fairly and pay them a living wage and provide at least some benefits. Hiring excellent employees usually makes that easier to justify. Further, profits should be commensurate with the work and risk of growing a crop.

Increasingly the larger society wants to have a voice, and will have a voice, in how we manage our farms. Growers don't like this. They believe they take the risk and have made the investment and they should be able to manage their businesses as they see fit. Society sees that they are also at risk. Irresponsible management can pollute the environment in both the long and short term and society may bear the cost of cleanup. Society bears external costs such as resource depletion.

How to Manage Cranberry Nutrition Sustainably

The basics of sustainable cranberry nutrition are contained in the nutrient management plans that are currently being championed by the USDA-NRCS in cooperation with UW-Extension and WSCGA. The principles are as follows.

- Develop a plan that describes how fertility will be managed to ensure that mineral nutrients are never the limiting factor, but so that excess nutrients are not applied (whether or not they may ever leave the property).
- This plan is always based on tissue testing in the late summer to early fall. This is the primary source of data that justifies the need for fertilizer and provides a report card that previous applications were efficacious.
- The plan will set forth what fertilizer will be applied, how it will be applied, when it will be applied, and why it will be applied. It will also establish criteria that allow for deviations from the plan.
- The plan must be reviewed by an external group that does not stand to benefit from the plan (i.e. salespeople). Currently NRCS is providing that review.
- Follow the plan. If deviations from the plan are required those must be documented.
- Examine the data you have and fine tune the plan for subsequent years.

It is critical that this plan is data driven and that it generates data that continues to justify application of nutrients. These data protect you! You can also use these data to improve your operation if you will take the time to learn from it.

Current notions and practices that are not sustainable

1. *“Whatever actions I may take on my marsh are protected by the Wisconsin Cranberry Laws.”*

Wisconsin’s Cranberry Laws certainly protect your access to water, but they don’t allow you to pollute at will. Cranberry growers are still subject to the provisions of the federal Clean Water Act. A recent lawsuit showed that cranberry growers can be subject to litigation. While the industry prevailed in this suit, it was not a resounding victory. Simply having fertilizer application records could have led to dismissal of the suit. In the absence of real data courts will accept reasonable proxy data. This lawsuit was a “near disaster” for the industry. If environmental litigation of cranberry growers becomes commonplace your liability insurance rates will skyrocket.

2. *“As I apply more fertilizer, yield will increase. Fertilizer is the primary limiting factor for yield. If I apply more fertilizer the concentration of the elements I apply will increase in the vines.”*

None of these preceding statements is always true! Yield is influenced and limited by many factors that are not even distantly related to fertilizer. These include pest management, weather, water management, and genetics.

3. *“It is better to apply something than to do nothing.”*

This notion leads growers to apply fertilizer and other products that are either not needed or useless. Gypsum is the best example. Gypsum will not reduce soil pH. Gypsum will not improve drainage of cranberry beds. Gypsum will provide calcium, but cranberries are not heavy calcium feeders. Gypsum is effective in the treatment of sodic soils, but Wisconsin has no sodic soils and is 1,000 miles away from substantial salt sources (seawater). Applying gypsum makes fertilizer salespeople rich and reduces the profitability of cranberry farms, not to mention the fuel and labor wasted to source and apply gypsum. Ask for efficacy data from your supplier. Testimony is insufficient justification.

4. *“Designing an effective nutrition program for cranberries is difficult, therefore, a consultant is required to ensure the fertilizer program works.”*

Bunk. Fertilizing cranberry vines is not conceptually difficult. The principles are simple:

- apply enough fertilizer to ensure that mineral concentrations in tissue samples are in the sufficient range;
- make several small applications as opposed to a single large application;
- spread the nutrients uniformly over the bed surface and water them into the soil;
- watch the size of the crop and the amount of upright growth you get in the spring and adjust nitrogen to get the correct amount of growth.

5. *“Micronutrients are the key to high yields.”*

This is also unsubstantiated by data. Cranberry vines require micronutrients in micro amounts. As long as the nutrients are in the sufficient range in tissue tests they will not be limiting. Micronutrients can become toxic when tissue concentrations are extremely high. I have seen boron toxicity in Wisconsin cranberry vines. This was a result of very poor advice provided by a consultant. In this case the nutrient application actually reduced rather than enhanced yield.

In Conclusion

Cranberry nutrition practices can be sustainable. However, to become so growers will have to rely on data and make data driven decisions. Thinking long term and not only for the current year will assist in making good decisions. For good or bad, society increasingly wishes to influence how agriculture is conducted. To some extent this can be pre-empted by setting some sort of standard agricultural practices and then having the proposed practices for individual marshes reviewed by an industry advisory committee with membership beyond the industry. This sort of “arms length” review will provide credibility to the larger community and should help prevent criticism and ultimately litigation.

The best measure of sustainability is to question if a practice will allow your children, grandchildren, and great-grandchildren to raise cranberries on your land if they wish. That is a metric that is easy to use and one that is almost infallible.

UNDERSTANDING HOW SOIL pH AND OTHER SOIL CHARACTERISTICS IMPACT NUTRIENT AVAILABILITY

Matt Ruark
Department of Soil Science
University of Wisconsin – Madison

In soil science, pH is referred to as the master variable, as it controls many of the chemical and biological processes in the soil system. This is especially true when it comes to nutrient availability. Other soil properties, such as soil moisture and soil texture, also affect nutrient availability. It is important to understand the relationship between pH, soil properties and nutrient availability when developing or evaluating a nutrient management program for cranberry production. This paper provides an overview of these concepts.

How Plants Take Up Nutrients

Nutrients exist in soils as ions in the soil solution; bound to exchange sites on clay and organic matter; or as part of organic matter, microbial biomass, and minerals. Plants primarily take up nutrients available as ions in the soil solution, as they are easier to extract than are nutrients held tightly to soil exchange sites or attached to organic matter. Nutrients are often present in low concentrations in the soil solution; however, in natural systems, the soil nutrient pool is typically large enough to easily replace nutrients in solution when they are removed. In agricultural production systems, supplemental nutrient applications are required to maintain nutrient levels.

There are three ways that plants take up nutrients from the soil solution: (1) root interception, (2) mass flow and (3) diffusion.

- 1) *Root interception* occurs when the root grows toward and intercepts the nutrient. Roots come into contact with less than 1% of the soil volume, so root interception is not the primary uptake mechanism for most nutrients.
- 2) *Mass flow* occurs when the nutrient is brought to the root via movement or flow of water.
- 3) *Diffusion* occurs when nutrients move from areas of high concentration to areas of low concentration.

The relative contribution of each process varies from nutrient to nutrient (Table 1). The process that is most important for the transfer of the majority of plant nutrients is mass flow; however, diffusion is the most important process for macronutrients such as P and K.

Soil Moisture and Nutrient Availability

Soil moisture affects root interception, mass flow and diffusion. Low soil moisture can inhibit plant growth, leading to lower root biomass, and thus, lower ability for root interception to occur. Low soil moisture can also result in a breakdown of the diffusion pathway between the nutrient and the root. The diffusion process requires the plant and nutrient be connected by a

water pathway. As the soil dries, more of the pathways are filled with air instead of water, resulting in the nutrient being cut off from the root or having to take a longer pathway to reach the root. A commonly cited statistic is that increasing the soil moisture from 10 to 28% increases the total K transport by 175%. Thus, it is important to consider your soil water management as it can heavily impact P and K uptake.

Table 1. Relative contribution of uptake/transport mechanism of macro- and micro-nutrients. [Adapted from Barber, Soil Bionutrient Availability (1984).]

Nutrient	Percentage supplied by		
	Root Interception	Mass Flow	Diffusion
	----- % -----		
N	1	99	0
P	3	6	94
K	2	20	78
Ca	100+	100+	0
Mg	38	100+	0
S	5	95	0
Cu	10	100+	0
Zn	33	33	33
B	10	100+	0
Fe	11	53	37
Mn	33	100+	0
Mo	10	100+	0

Soil pH and Nutrient Availability

Low soil pH (acidification) occurs for a variety of reasons, including: acidic parent material, leaching of cations, plant removal of cations, addition of fertilizer and secretion of organic acids by plant roots. Low pH soils, while ideal for cranberry production, can limit the availability of some nutrients (Fig. 1). For example, phosphorus (P) is most available in a pH range of 5.5 to 7.0. Below pH 5.5, P gets “tied-up” with iron and aluminum oxides into forms of P that are not available to plants.

Nitrogen uptake can also be limited in low pH soils; however, this is not an issue for cranberry production. Low pH hinders the nitrification process (the conversion of ammonium to nitrate by microorganisms). In soils used for cranberry production, available nitrogen exists primarily as ammonium (as opposed to nitrate). Cranberries are well adapted to growing in low pH soils and actually prefer to take up nitrogen in the ammonium form. It is interesting to note that the nitrification process is an acidifying process. The microbial oxidation of ammonium releases H⁺ ions into soil solution, causing a decrease in pH. Nitrifying bacteria create an environment that inhibits their own productivity.

Soil pH also affects the amount of base cations (Ca²⁺, Mg²⁺, K⁺) that are retained on soil exchange sites. At a lower pH, Al³⁺ and H⁺ ions are preferentially absorbed on exchange sites so the soil has less affinity to hold onto the cations that are important crop nutrients.

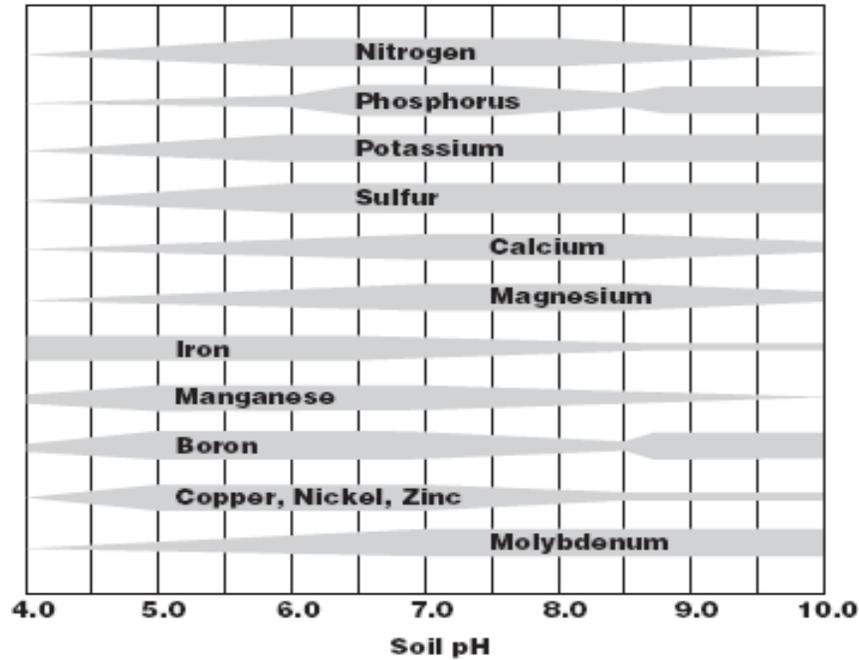


Figure 1. Conceptual diagram of the relative availability of crop nutrients across a pH gradient. A wider bar indicates greater availability. (From: Schulte et al. 2005. Management of Wisconsin Soils, UWEX A3588)

Soil Texture and Nutrient Availability

In general, soils with more organic matter or clay content are more “buffered” or resistant to pH change as compared to soils with low organic matter or sandy soils. The pH that is measured by a routine soil pH test is a measure of the active acidity; however, when we want to adjust the pH we also have to consider the reserve acidity. The diagram in Fig. 2 illustrates the relative reserve acidity in three different types of soil (organic, mineral, and sandy) with the same active pH. It will take more liming material to adjust to the desired pH in high organic matter soils as compared to mineral or sandy soils because of the additional reserve acidity. Table 2 illustrates that more elemental sulfur (S) would need to be applied to adjust soil pH as the organic matter content of a soil increases.

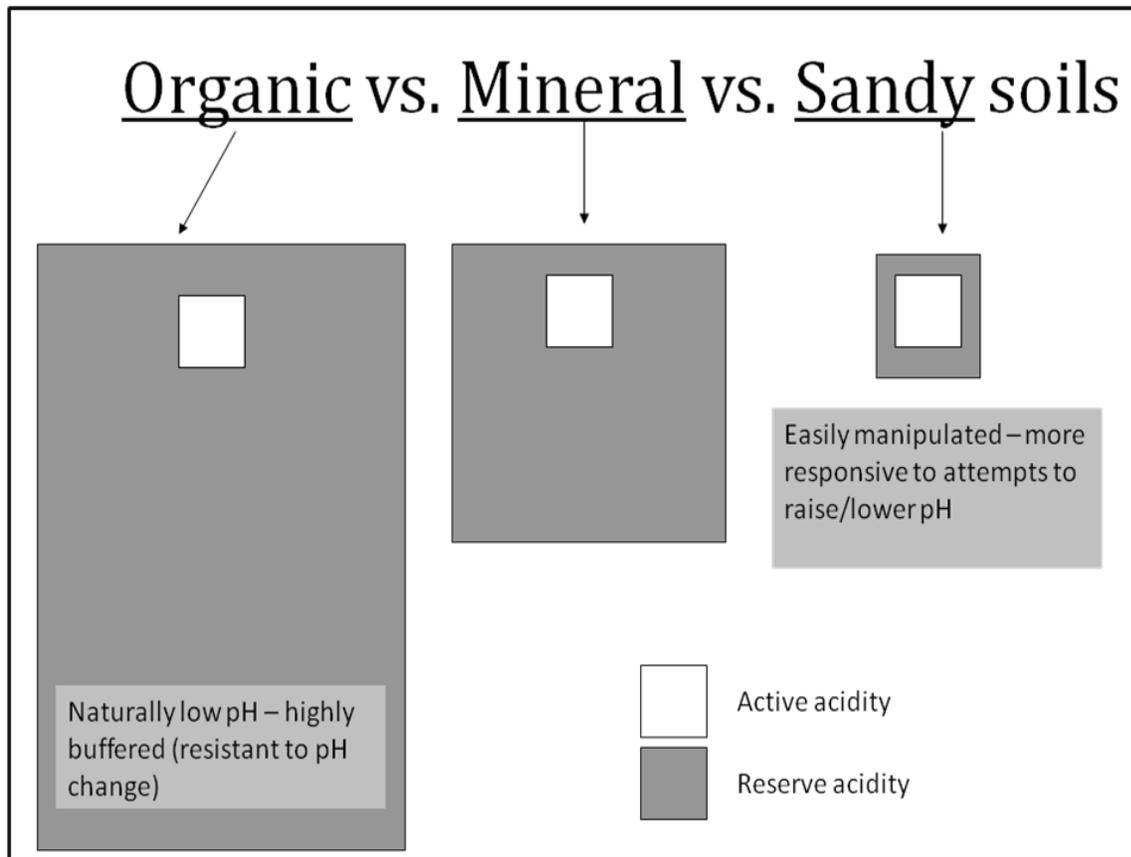


Figure 2. Example of the relative reserve acidity in organic soils (e.g. muck, peat), mineral soils (e.g. clay loams), and sandy soils.

Table 2. Amount of finely ground elemental sulfur needed to lower soil pH (adapted from Laboski et al. 2006. Nutrient application guidelines for field, vegetable, and fruit crops in Wisconsin. UWEX-A2809)

Reduction in pH	Soil organic matter content (%)					
	0.5-2	2-4	4-6	6-8	8-10	>10
	----- lb S/1000 sq.ft.-----					
0.25	6	18	28*	40*	53*	62*
0.50	12	35*	56*	80*	106*	125*
1.00	24*	70*	112*	120*	212*	250*

*Do not apply more than 20 lb of S per 1,000 sq.ft. per year; retest between applications

Cation Exchange Capacity

Cation exchange capacity (CEC) is a measure of the soil’s ability to retain cations (e.g. Al³⁺, H⁺, Ca²⁺, Mg²⁺, K⁺, NH₄⁺, Na⁺). The CEC is a natural soil characteristic that can affect nutrient retention and nutrient availability. A soil’s CEC is affected by the organic matter and clay content of the soil. As the organic matter and clay content of a soil increase, so does the CEC (Table 3). While CEC provides interesting information about the chemical and physical nature of the soil, it is not useful as a management tool.

Table 3. Examples of cation exchange capacity values across a range of soil textures.

Soil type	CEC (meq/100g)
Light color sands	3-5
Dark color sands	10-20
Loams	10-15
Silt loams	15-25
Clays and clay loams	20-50
Organic soils	50-100

Summary

- Managing soils to maintain water holding capacity and soil moisture will improve nutrient uptake (e.g. reduced compaction, timely irrigation), especially for those nutrients that rely on diffusion for plant uptake (e.g. P and K).
- In cranberry systems, maintaining a low soil pH is important for ensuring nitrogen is available in the plant-preferred ammonium form.
- A measure of soil organic matter content is required for proper elemental S application when attempting to maintain low pH levels.
- If nutrient deficiencies occur on your farm, it is important to know the soil pH and the soil organic matter content.

ASSESSING BIOLOGICAL IMPACTS OF IPM ADOPTION BY THE WISCONSIN CRANBERRY INDUSTRY: A PROGRESS REPORT

Merritt Singleton and Daniel Mahr
Department of Entomology
University of Wisconsin – Madison

Background

Since the initiation of the university's pilot Integrated Pest Management program in the 1980s, the Wisconsin cranberry industry has become a national leader in the implementation of IPM. Initially, IPM adoption meant using pest monitoring to make economically justifiable decisions on the need for controlling pests at any given time. Using this approach, growers substantially decreased the usage of broad spectrum insecticides. In more recent years, with the availability of more selective types of insecticides, many growers are going this additional step to reduce potential negative impacts associated with older broad spectrum materials. Overall, the adoption of these IPM practices has been beneficial to the industry. When reducing the use of broad spectrum insecticides, one of the expected benefits is the increase in beneficial natural enemies (such as predaceous and parasitic insects and spiders) that are important in biological control of pests.

Although the economic, environmental, and human health benefits of IPM are substantial and well documented in many types of crops, IPM adoption is not totally without risk. One occasional side effect resulting from significant reduction in broad spectrum pesticide use is the increase in numbers of "secondary" or "occasional" pests that had previously been inadvertently controlled. When such cases happen, the pest management program has to be modified to compensate. One possible example of such a situation is the recent reported increase in Massachusetts and New Jersey of bluntnosed leafhopper, a vector of the pathogen causing cranberry false blossom disease.

This progress report summarizes research that is assessing impacts of IPM adoption in Wisconsin cranberry production on populations of beneficial natural enemies. It also reports on a survey to detect the presence of bluntnosed leafhopper.

Methods

To assess the biological impacts of IPM adoption, 14 cranberry farms have been sampled during each of two field seasons (2008 & 2009) (1) to determine the abundance of natural enemies present and (2) to survey for the potential presence of bluntnosed leafhopper. Four of the farms were producing for the certified organic market and 10 were conventional farms. The conventional farms were spread along a continuum of degree of IPM adoption. Three sampling methods were used: (1) sweep sampling for insects and spiders within the cranberry canopy, (2) yellow sticky traps to sample insects flying just above the cranberry vines, and (3) pitfall traps to sample insects and spiders on the soil surface beneath the cranberry canopy. Sweep sampling was done every 1-2 weeks until onset of flowering; sticky trap and pitfall sampling was done season-long.

Growers provided their pesticide use records. Cornell University's Pesticide Environmental Impact Quotient program was used to assess "Natural Enemy Toxicity" scores (NETs) for each farm. Basically, the EIQ uses published research data to assess potential pesticide impacts vs. a diversity of study targets. One target group consists of beneficial natural enemies that are present in agriculture and that help control pest populations. Table 1 is an example of individual pesticide toxicity scores vs. beneficial natural enemies.

Table 1. Examples of pesticide toxicity scores to beneficial natural enemies.

Trade Name	Active Ingredient	Toxicity to Beneficials
Confirm	tebufenozide	12.2
Entrust	spinosad	14.9
Guthion	azinphos-methyl	44.8
Diazinon	diazinon	47.5

Individual toxicity scores for each pesticide for each farm are calculated based upon rates and frequencies of use, then all individual toxicity scores are grouped together to determine a seasonal total NETs for that farm. Total toxicity scores for all 14 farms for 2008 are shown in Table 2. Scores for 2009 are also shown for those farms that have reported and have had their data summarized. Scores were arbitrarily grouped into "Low", "Medium", and "High" categories for data analysis.

Table 2. Season-long insecticide natural enemy toxicity (NET) scores for each of the 14 farms. Organic farms are shaded in gray.

Year	Low						Medium				High			
2008	4	4	4.6	13	22	33	55	82	103	129	188	233	256	309
2009	NA	NA	NA	NA	39	30	31	NA	95	245	282	226	NA	NA

Results

Results to Date – Natural Enemies.

Natural enemy numbers for 2008, for each of the three sampling methods are summarized in Table 3.

Table 3. Seasonal total natural enemies, all three sampling methods combined, by farm, 2008.

	Conventional Farms										Organic Farms			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Sweep samples	12	41	36	16	6	15	31	44	24	37	49	65	37	54
Yellow sticky traps	1856	1121	1168	645	1035	1341	1011	1217	1033	975	831	1421	1235	998
Pitfall traps	437	670	154	110	97	492	215	303	278	122	119	780	595	1204
Total, all samples	2305	1832	1358	771	1138	1848	1257	1564	1335	1134	999	2266	1867	2256

For conventional farms, natural enemy numbers ranged from a low of 771 to a high of 2305 with an average of 1454. For organic farms, natural enemy numbers ranged

from a low of 999 to a high of 2266 with an average of 1847. Organic farms averaged 27% more natural enemies than conventional farms.

Figure 1 shows the 2008 seasonal natural enemy totals collected per farm for each of the three toxicity categories (1=low, 2=medium, 3=high). The tops and bottoms of each of the three bars are the high and low farms, respectively, and the bold horizontal line is the average for all farms in the category.

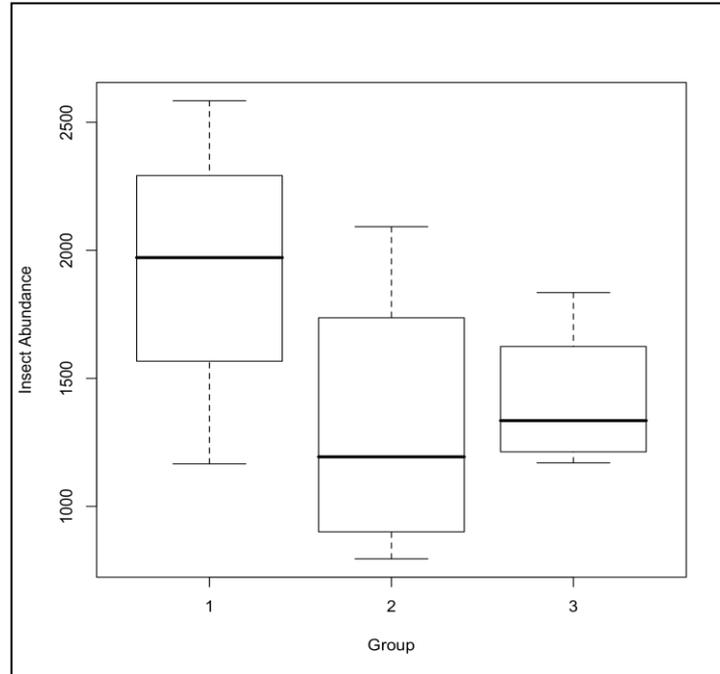


Fig. 1. Beneficial natural enemy abundance in 2008 on farms with low (1), medium (2), and (3) high natural enemy toxicity scores.

Although there is a trend for low toxicity farms to have more natural enemies than medium and high toxicity farms, statistically, there were no significant differences for the 2008 season. Therefore, sampling intensity was increased in 2009, and the counts are presented in Table 4.

Table 4. Seasonal total natural enemies, all three sampling methods combined, by farm, 2009.

	Conventional Farms										Organic Farms			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Sweep samples	26	2	24	19	37	53	19	19	19	33	12	45	38	66
Yellow sticky traps	3972	4447	4666	6164	4194	3998	4423	5456	3461	5066	3534	7034	6950	5915
Pitfall traps	605	405	396	837	3578	501	1209	554	1453	734	611	3259	2098	2966
Total, all samples	4603	4854	5086	7020	7809	4552	5651	6029	4933	5833	4157	10338	9086	8947

Data analysis has not been completed for 2009 data. But to summarize, for conventional farms, natural enemy numbers ranged from a low of 4552 to a high of 7809 with an average of 5637. For organic farms, natural enemy numbers ranged from a low of 4157 to a high of 10,338 with an average of 8132. Again, it is interesting to note that organic farms had significantly more natural enemies than conventional, 45% more in 2009.

Results to Date – Leafhoppers.

Leafhopper samples for 2008 are summarized in Table 5. The most effective sampling method was yellow sticky traps but pitfall trap data are also presented. Most of the leafhoppers sampled were either potato leafhopper or aster leafhopper, both of which have a very broad host range. It is important to note that no bluntnosed leafhoppers, the vector of false blossom, were collected from any farm. Organic farms averaged higher numbers of leafhoppers (153) vs. conventional farms (122); this is to be expected with less reliance on broad spectrum insecticides.

Table 5. 2008 season total leafhopper counts from yellow sticky cards and pitfall traps, all species combined.

Conventional Farms										Organic Farms			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
84	148	253	18	78	98	141	181	124	98	98	190	250+	76
Ave - 122										Ave - 153			

In 2009, a total of 12,308 leafhoppers were collected; none were bluntnosed leafhopper.

Summary

Data from 2008 showed a trend suggesting that more beneficial natural enemies are on farms with lower Natural Enemy Toxicity scores, but statistically the trends were not significant. Therefore, a greater sampling intensity was used in 2009; data analysis is not yet complete.

For both years combined, over 13,000 leafhoppers were collected from sticky traps placed in cranberry beds; none of these were bluntnosed leafhopper, the vector of the pathogen that causes false blossom disease.



F O U N D E D 1 8 8 7

**2010
Winter Meeting
January 12, 2010**

**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 12, 2010

Holiday Inn Hotel
& Convention Center
Stevens Point, WI

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**Wisconsin State Cranberry
Growers Association**

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Welcome

The WSCGA Board of Directors, Staff and Committees would like to welcome you to the 2010 Winter Meeting and Trade Show. We have combined our events with the Wisconsin Cranberry School to provide you with a one stop for information and training that you and your employees need to be successful in farming the state's largest fruit crop. Our meeting this year is focused on sustainable cranberry production. Our business meeting will discuss water issues and opportunities for environmental conservation. The Trade Show is designed to provide you with the latest in goods, services and technologies.

We have an important agenda for the Business Meeting of the WSCGA. We will be focusing on water use and quality issues that all of agriculture and in particular cranberry farmers face. Your association has and will continue to take a leadership role on these issues. We also will announce our efforts on the Cranberry Energy Conservation Program. These make for challenging and exciting times.

This book is to serve as both a report on our activities for the past year and to lay out our program plans for the future. The year has been a successful one for the organization. We plan to continue our success in meeting the mission of the organization to allow you to prosper through the provision of high quality programs.

Again Welcome!

Program

Trade Show

The Trade Show runs concurrent with the Wisconsin Cranberry School on Tuesday, January 12. 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 1 of the Expo Center.

Social Hour

A social hour will be held on Tuesday, January 12th 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 12. 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

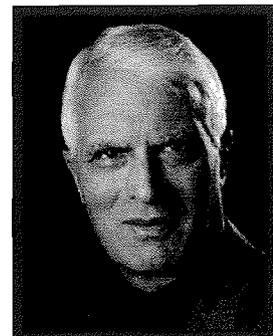
The school begins on January 12 at 9:30 AM with a general session and continues throughout the day, Tuesday and Wednesday, adjourning on January 13th at 3:30 PM. A detailed grid is included in your school registration materials. We ask that you wear, or present your name badges as you enter the school sessions as they will be required for admission.

WSCGA Winter Business Meeting

The business meeting will be held concurrent with the Wisconsin Cranberry School and will begin at 1:00 PM on Tuesday, January 12th. Elections will be held for the WSCGA Board of Directors. Grower members should pick up their ballots at registration. The session will focus on issues facing the industry in 2010 and strategies to address those challenges.

Ronald W. Kuehn

Ron Kuehn is a senior government consultant and attorney whose law practice focuses primarily on government relations, administrative law and corporate law. He has served as Legislative Counsel for the WSCGA since 1989. During that time he has assisted the state's cranberry growers develop and implement strategies to deal with a



wide variety of legislation and regulation.

Clients seek Mr. Kuehn to represent their interests before state and federal administrative agencies, as well as the Wisconsin Legislature and U. S. Congress. Industries and issues that Mr. Kuehn has represented are diverse and include agri-business, biotechnology and medical devices, insurance, environmental issues, taxation, and transportation. His well regarded negotiating skills have been tapped for everything from developing a state administrative rule for right-of-way access for telecoms and other utilities, to establishing environmental regulatory structures. Due to his work, Mr. Kuehn has been included in *Madison Magazine's* list of the area's "Top Lawyers."

Active in several civic and professional organizations, Mr. Kuehn has served on the InvestWisconsin Advisory Board of the Wisconsin Department of Financial Institutions, and on the board of Forward Wisconsin, under auspices of the Wisconsin Department of Commerce.

A former U.W. athlete, Mr. Kuehn is active in the University of Wisconsin Athletic Department's National "W Club." Mr. Kuehn's hobbies include hunting, fishing (with three fly fishing world records), and water and snow skiing.



Jordan Lamb

Jordan Lamb is an attorney whose law practice focuses on government relations, environmental and administrative law. She concentrates on legislative drafting, legislative research, and facilitating communication between clients and state government including administrative agencies and the State Legislature. She represented the WSCGA for three years prior to attending law school and then since joining the Dewitt, Ross and Stevens firm in 2002.

Due to her work, Ms. Lamb has been named on *Madison Magazine's* list of "Top Lawyers". To read the most recent article about top lawyers. The national publication *Law & Politics* also recognized Ms. Lamb as a "Rising Star" (Super Lawyers) in 2008 and 2009. She has also been named in *Best Lawyers in America* for her work in government relations law.

Ms. Lamb was a lobbyist for three years prior to law school. An excellent student, Ms. Lamb earned an undergraduate degree in English with distinction and was named to Phi Beta Kappa. She graduated from the University of Wisconsin Law School in the top ten percent of her class, and was recognized with the Order of the Coif.

Active in several professional associations, Ms. Lamb is the past president of the agricultural and agribusiness law section of the State Bar of Wisconsin. She also is an active volunteer with HospiceCare, Inc. and served as Chair of HospiceCare's 30th Anniversary Gala.

From Your
President

Ed
Sabey

Welcome to the 2010 WSCGA Winter meeting and Trade Show. Traditionally, this is a great time of year to recap the past season and to look forward to the next. The WSCGA always keeps its members in mind when it comes to deciding how best to accommodate meetings, educational materials, and location of services. The WSCGA is fortunate that we have a great reputation and we are continually welcomed back to facilities as this one. The Holiday Inn Hotel & Convention Center has been very gracious to our association and we appreciate it.

Thank-You is always in order for those who make activities like this possible. Please take the time to thank the Education Committee, Associate members, and our executive staff for all of their efforts. I would say that this year will be another successful show just like those in the past.

The WSCGA has been busy this year on your behalf with many issues. You will hear about what the board and association has done and we also want to tell you where we are headed. There is never a dull moment when it comes to this business and just when you think what could possibly be next there it is. Don't fear, the board members that you have elected and the WSCGA are well equipped to represent and advocate on behalf of its members.

The Association has again been blessed with a capacity crowd. There is an overflow of booths to visit and record number of registrations. I believe this is the biggest concentration of cranberry knowledge under one roof in the world at one time. If there is something to be learned about cranberries here and now is the time. I hope you take something home with you to make your operation successful and you will be asked if you didn't or what you think was missing. Please take the time to fill out the evaluation and let us know.

Thank you for allowing me to serve you this past year and I look forward to another year of challenges and opportunities.

From Your
Executive
Director

Tom Lochner

This past year has been a successful one for your Wisconsin State Cranberry Growers Association. As is reported in the pages that follow your association was proactively engaged in education, communication, public relations and advocacy programs on behalf of its members. We also completed a comprehensive program evaluation and planning process with the membership. The ongoing programs were implemented with the mission of the organization in mind. The evaluation and planning process made sure that WSCGA will continue to be well positioned to meet the mission in the future.

We began our program year with a strong turnout at the WSCGA Winter Meeting Trade Show and Wisconsin Cranberry School in January, 2009. Growers participated at high levels in the Strategic Planning process in February and March. At the same time the advocacy program of the association was working on

critical issues such as water access and water quality protection. The WSCGA/NRCS Cranberry Conservation Program continued to link growers with resource conservation funding through EQIP and use of a congressional earmark. The project sponsored on marsh workshops to demonstrate new technologies for water conservation.

In the summer WSCGA worked with the USGS to document the use of cranberry farms as nesting sites by loons. The study documented the populations and breeding success. The association also then worked to provide media the opportunity to participate in the study efforts and to promote the resource stewardship of the industry. The Summer Meeting Field Day and Trade Show was one of the largest on record.

As the harvest season approached WSCGA worked with USDA CMC to provide the international trade representatives with a tour of the Wisconsin cranberry harvest. There was great media interest in the effort which led to international stories on the Wisconsin cranberry harvest.

The association was able to secure funding of \$1.25 million dollars for USDA the Agricultural Research Service to create three new cranberry research programs, two in Wisconsin and one in Massachusetts. These will be ongoing programs which will focus exclusively on cranberry research needs. WSCGA also remains committed to the securing of funding for a cranberry research station in Wisconsin.

The members have told us they want to see increased efforts on advocacy and communications. The board has approved efforts to meet the vision expressed by the members.

As we move ahead into 2010 and beyond we will face the immediate challenge of the proposed revisions to NR151, the state rules regulating runoff from farm fields. There will also be efforts to restrict access to water by cranberry growers. WSCGA will also continue to advocate on behalf of its members to reform the wetland permitting process.

You will also see increased efforts to demonstrate the conservation that is practiced by cranberry growers. A new study will be released this spring that will demonstrate how cranberry growers' practices are sustainable from economic, environmental and social aspects.

The board of directors has also authorized a program to help grower members develop their understanding of the WSCGA and to improve their leadership skills.

Our success is, as always, dependent upon your continued support and participation. I am confident that as long as we have your support we will be able to live up to your expectations and to the confidence you have shown in us.

Agenda

**Tuesday
January 12, 2010**

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

1:00 PM

2010 WSCGA Business Meeting

1:00 PM Call to Order

Minutes From 2009 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

Legislative Report

- **Water Use by Agriculture – The Issue for the New Decade and How Cranberry Growers Will Address Sustainable Use of the Resource”**
 - *Ron Kuehn*

2:30 PM Adjourn

WSCGA
Summer
Meeting

August 12, 2009

*Gardner Cranberry &
Gardner Cold Storage
Pittsville, WI*

Minutes

The 2009 Wisconsin State Cranberry Growers Association Summer Meeting was called to order by President Ed Sabey on August 12, 2009 at 1:15 PM at Gardner Cranberry and Gardner Cold Storage, Pittsville, Wisconsin. Hosts for the event were Wayne & Tom Gardner family. A recognition plaque was presented to the Gardners for hosting the event, and providing the marsh and plant tours. The hosts expressed their pleasure to have everyone here for the event.

Secretary's Report: Nodji Van Wychen moved and Nicole Hansen seconded a motion to waive the reading of the minutes from the January 20, 2009 Winter Meeting and to approve the minutes as printed. Motion carried. The WSCGA Board of Directors were introduced and thanked for the work.

Special guests were introduced: Warrens Cranberry Festival Queen, Rachel Reeck, Princesses Lauryn Patterson & Chelsie Popp. Each remarked about their activities during the year and invited everyone to the Warrens Cranberry Festival to be held September 25-27, 2009.

Executive Director, Tom Lochner extended his thanks to the hosts of this year's event and to Administrative Assistant Jane Anderson & Bruce Anderson for their extra efforts in organizing and set up for this year's Field Day. This is one of the largest summer field days in history (100 exhibitors and over 900 meals). Thanks were also extended to the Pleasant Corners 4-H Club, Pittsville FFA & Pittsville Lions Club for their help. Updates were provided on the strategic planning process which received excellent participation from growers, national research and enhancement, funding for ARS scientist positions, sustainability in cranberry production, research station, and association membership.

Old Business: None

New Business: Dr. Rebecca Harbut has been selected by the UW-Madison Department of Horticulture to fill the Extension Fruit Crop Specialist position. Dr. Harbut is scheduled begin her position November.

Wisconsin Cranberry Discovery Center Business Manager Barb Hendricks was introduced and invited everyone to participate in the fundraising events underway for the Discovery Center.

Announcements: Funeral for Stephany Scott of Warrens; Sporting Clay Shoot event August 19 at Woods & Meadows Hunting Preserve in Warrens, WSCGA Winter Meeting January 12-13, 2010 at the Holiday Inn Hotel & Convention Center in Stevens Point.

Mary Brazeau Brown moved and David Amundson seconded a motion to adjourn the annual meeting of the Wisconsin State Cranberry Growers Association. Motion carried.

Respectfully submitted,

*Secretary WSCGA
James Van Wychen*

SERVICE TO INDUSTRY AWARD

GARY DEMPZE

JERE DOWNING

Recipients of the WSCGA Service to Industry Award

2010	Gary Dempze Jere Downing
2009	Dr. Brent McCown Edward J. Grygleski
2008	LaVerne "Joe" Heuer Wisconsin Farm Bureau Federation
2007	Fran Podvin June Potter
2006	Gordon Dempze Newell Jaspersen
2005	Jim & Nodji Van Wychen
2004	Herb Kohl David Obey
2003	Daniel L. Mahr
2002	Gerald Brockman Clinton & Ellen Potter Family
2001	Donald M. Boone Malcolm N. Dana George C. Klingbeil Elden J. Stang
2000	George Rezin
1999	Craige Scott
1998	Tod D. Planer
1997	Teryl R. Roper
1996	Will Lee
1995	Frank & Betty Koller
1994	Frost Reporters: Randy Bennett Kay A. Finch Richard D. Indermuehle Chuck Lewis Quinn Strozewski
1993	Jim Peterson
1992	Dr. Steven N. Jeffers
1991	Robert & Helen Gottschalk

This year the Board has selected two recipients for the Service to Industry Award.

Gary Dempze

Gary started his passion for cranberries as a young boy, growing up in Biron, working alongside his father, Gordon Dempze, on the Dempze Cranberry Co. marsh. After pursuing education and business experience, Gary returned to the marsh full time and continued his life long career and way of life; growing cranberries. Gary has continued the Gaynor marsh and Dempze family tradition of collaborating with growers and supporting our industry.

His efforts to support the cranberry industry started in the mid 1980s, when he served for the next 10 years as a WSCGA Board member, Treasurer, Vice President and President. In the early 1990s, Gary also served on the Wisconsin Cranberry Board. In addition to supporting the Wisconsin cranberry industry, Gary was also elected to serve the industry through the extended arm of the Ocean Spray Coop. He started out on the Advisory Committee in the late 1980s and served on the Ocean Spray Board of Directors for 15 years between 1991-2008.

His accomplishments over the years have impacted our industry in many positive ways. Gary was on the WSCGA Search Committee, a team who determined the need and qualifications for a full time Executive Director. Their early vision for the future of Wisconsin's cranberry industry influenced the Board's decision to take the Grower's Association to a whole new level of operation and effectiveness. Gary has participated in a variety of strategic planning sessions that have also aided our industry and its success. Lastly, Gary strongly supports cranberry education and research. He has had a long standing interest in Wisconsin's Cranberry Research Station, the UW cranberry research programs, and has worked with our legislators to develop strong relationships with our industry. Gary with his wife, Sue, also planted the seed for the first WSCGA's educational fundraiser. It's with great pride today, that the WSCGA continues to support educational scholarships through its member fundraiser events.

As Gary proudly represented our cranberries in a variety of local, regional and national endeavors, he is honored to receive the WSCGA's highest award of acknowledgement for serving our industry. Gary accepts this award in spirit of the teams of growers and leaders he has worked with to accomplish the successes he's being awarded for.

SERVICE TO INDUSTRY AWARD

Jere Downing

Jere Downing has served as Executive Director of the Cranberry Institute since 1991. The Cranberry Institute is a not-for-profit organization founded in 1951 to further the success of cranberry growers and the industry in the Americas through health, agricultural and environmental stewardship research as well as cranberry promotion and education. Prior to joining CI he was with Ocean Spray Cranberries, Inc. working in their Agricultural Research group. In his capacity at Ocean Spray, Downing worked on numerous issues related to pesticide use and registrations.

In his capacity as Executive Director of the CI Downing has led the organization through a transition to a full time and fully staffed organization. Initially CI focused on environmental issues including water quality and wetland conservation. CI also took on the major role to

coordinate crop research efforts across the country. A major emphasis of the CI is the identification and registration of new compounds for use by growers. In his tenure CI became a Pesticide Environmental Stewardship Program partner with the US Environmental Protection Agency. Through this partnership the cranberry industry committed to the wise use of pesticides and the EPA recognized the industry for its efforts in this area.

Downing has developed a strong reputation as an effective advocate for the industry with regulatory agencies. His leadership has helped to register a number of new compounds for growers and especially helped in the implementation of the Food Quality Protection Act in a manner to minimize negative impacts on the industry. National efforts to coordinate IR4 Registrations and national pesticide screening projects have been developed and improved as a result of Downing's work.

In 1999 Downing lead the expansion of the CI to take on the role of coordinating the funding and communication of the health benefits of cranberry consumption. Through these efforts CI now coordinates the health research program for the industry that includes the Wisconsin Cranberry Board, Inc., the New Jersey Growers and the Canadian Cranberry Growers Coalition. The CI also has coordinated the communication of these health benefits to health care professionals and the general public.

Throughout his career at CI Downing has insisted that CI serve as the industry resource to conduct "good science" on any issues that the industry may face. This basic tenant has made the CI the source of highly credible and useful information for the industry. He has also served well as an advocate for the needs of the industry be they related to crop production, health benefits or regulatory matters. For these reasons and a life time of dedicated service to the industry WSCGA is pleased to present the 2010 WSCGA Service to Industry Award to Jere Downing.

Whole Farm Conservation Planning

**Tod Planer, Coordinator
Whole Farm Planning Program**

WSCGA Announces New Cranberry Farm Energy Conservation Initiative

WSCGA has been successful in obtaining a USDA Specialty Crop Block Grant administered by the Wisconsin Department of Agriculture, Trade and Consumer Protection. The grant will be used to investigate various energy conservation programs that can benefit growers. The WSCGA Board of Directors has approved the establishment of a Steering Committee to coordinate the project, as well as educational sessions for growers. These funds will be used to augment energy conservation funds provided to the USDA NRCS as part of the Cranberry Conservation Program.

The first phase of the project is to set up several Pilot Studies to test various energy conservation efforts including energy audits and site assessment for potential alternative energy such as solar

and wind. WSCGA will work in cooperation with the "Focus-On-Energy" program in January thru April to conduct energy audits at a select few cooperator cranberry farms. The pilot projects will be used to identify the strengths and shortcomings of the audit and conservation programs and their applicability to cranberry farms. Data from the pilot projects will be used to craft a program especially designed for cranberry farms. Following the pilot projects the Steering Committee will be setting up area informational sessions to provide more information on the program.

As the efforts move forward, additional cooperators will be sought to examine various energy saving opportunities for cranberry marsh operations. Along with these efforts WSCGA and Focus on Energy will conduct energy audits on additional cranberry farms utilizing information gained from the first phase of the project. Any grower wishing to have an audit of energy use done on their operation can do so by contacting WSCGA.

Audits will be completed by the Focus-On-Energy staff with no cost to the grower. As part of the audit process suggestions will be given to growers to make improvements that will result in energy conservation and savings. In many instances, grant funds or program assistance funds may be available to growers for installing energy saving practices such as new energy efficient lighting systems or upgrades to wiring if needed for these systems, etc. The project will also provide interested growers with an analysis of their farms for potential for alternative energy sources such as solar and wind.

Many statewide energy providers also have energy saving incentive programs. Some electrical cooperatives offer support for upgrades required to install some new lighting systems for your shop. Some provide assistance for energy savings with irrigation pumps. Each site of-course will be an individual evaluation and consideration.

There is a great deal of information available for farmers on energy conservation. The WSCGA program is designed to develop information on what is available and make it adaptable to cranberry farming practices. The end result will be a set of materials specifically developed to help cranberry farms save energy and in some cases generate energy from renewable resources.



Julie Ammel
Resource Conservationist

Cranberries & Conservation

Environmental Quality Incentives Program (EQIP) contracts include:

- 2,100 acres of nutrient management practices.
- 1,800 acres of pest management practices
- 710 acres of irrigation water management
- 12 tailwater recovery systems
- 677 acres of high uniformity irrigation systems
- 8.6 miles of buried irrigation mainline

Conservation Accomplishments

In 2004, few if any of Wisconsin's 250 cranberry growers followed structured nutrient management plan. By 2009, over 55 percent of the cranberry producing acreage in the state, 10,000 acres out of approximately 18,000 acres, have implemented nutrient management plans.

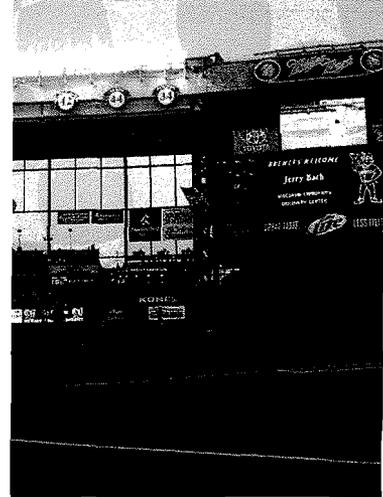
Cranberry growers continue to adopt conservation practices to meet the unique needs of their specialty crop. Conservation systems are spreading throughout Wisconsin cranberry marshes as a result of the cooperative agreement between the U.S. Department of Agriculture's natural Resources Conservation Service (NRCS) and the Wisconsin State Cranberry Growers Association (WSCGA). In 2009, nine new EQIP contracts were signed with Wisconsin cranberry growers, bringing the total to 51 contracts totaling more than \$1.97 million allocated for resource conservation during the six year 2004-2009 period.

The WSCGA launched its own conservation program in 2007 to supplement work left unfunded through EQIP and continues to offer the cost-share program through 2009. The program is called the Whole Farm Planning Program (WFPIP) and 67 contracts have been signed so far, including nine soil moisture monitoring projects, for a total of \$376,472. Over 7,500 acres have been contracted for nutrient management and over 1,000 acres were contracted for irrigation water management. The WFPIP program also funded 109 acres of high uniformity irrigation systems along with 12,000 feet of new buried mainline. Approximately 900 additional acres of nutrient management, 500 acres of pest management and 2,000 acres of irrigation water management were implemented without cost-share from either program.

NRCS, in cooperation with the WSCGA, expects to add new practices to the cost-share list in future years. The new practices that could potentially be offered will focus on energy and water conservation.

Cranberry Night at Miller Park

On September 18th 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 Cory Provis



Jerry Bach threw out the first pitch. Bach 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 7 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 \$23,500

The WSCGA held two fundraisers during the year conducted by the Development Committee of the organization. The Sporting Clay Shoot held August 19th and the WSCGA Cranberry Open Golf Outing held June 24th raised a total of over \$23,500.

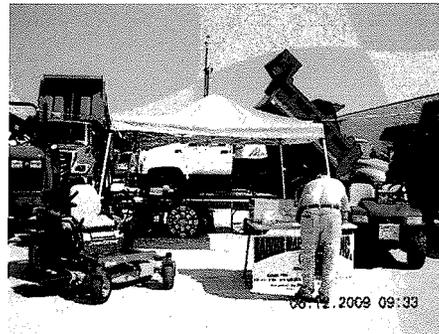
The proceeds of the events were used to enhance a new undergraduate Scholarship Fund at the UW River Falls Foundation, to provide equipment in support of the on-going mission of the Wisconsin Cranberry Discovery Center and the efforts to develop an Experiment Station for Cranberries in Wisconsin. Thanks 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.



2009 WSCGA Summer Meeting, Field Day and Trade Show

In August more than 1,000 people descended on the Village of Pittsville for the largest grower program of the association. The annual event was hosted by Gardner Cranberry & Cold Storage. Tours of the marsh and processing plant were available throughout the day.

One hundred exhibitors took part in the trade show. There were mini sessions for growers on use of Intrepid and energy conservation. At the business meeting President Ed Sabey provided recognition to the hosts for the meeting.



2009 WSCGA Winter Meeting, Trade Show and Wisconsin Cranberry School

2009 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 450 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. Jim VanWycken, Carl Salzwedel and Nicole Hansen were elected to seats vacated by retiring Board members.

The Association presented recognition to a number of individuals at the recent Wisconsin Cranberry School. The awards were presented in appreciation for their efforts in support of the industry and Association.

AgriView Agri Communicator

R J Habelman was presented with this year's award by Jane Fyksen a regional editor for Agri View, a statewide farm paper. Habelman was recognized for his work with WSCGA in hosting numerous media events and cooperating with the WSCGA as it put together its fall harvest communication efforts.

WSCGA Board of Directors

This year three members of the Board of Directors retired. They represent the past decade of leadership as the three immediate past Presidents of the WSCGA. In recognition of their service the membership presented them with a desk set as a token of appreciation for their service.

Scott Schultz served on the board from 1999 to 2008. He also served as President from 2005 through 2007. Dan Brockman has served from 2001 to 2008, serving as President from 2002-2005. Bill Hatch served from 1999-2008 including a term as president from 2000-2001

WSCGA Summer Meeting

The 2008 Summer Meeting Field Day and Trade Show was co hosted by the Wisconsin Cranberry Discovery Center, the Warrens Cranberry Festival and Spring Valley Cranberry. Each was presented with an aerial photo taken the day of the event.

WSCGA President's Award

The President's Award is presented to a member who has provided service to the WSCGA over the course of the past year. Bill Hatch was presented with the honor by President Ed Sabey. Bill has served as a member of the Board of Directors for 9 years in addition to providing support for a variety of programs throughout the year.

WSCGA Service to Industry

Dr. Brent McCown and Edward J Grygleski were awarded the Service to Industry Award for their lifetime contributions to the Wisconsin Cranberry Industry. The service to Industry Award is the highest recognition that the association provides.

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

2009 Committee:

Ken Schwab - Chair
Tom Altmann
Brian Ashbeck
Gary Fehrman
Joel Hoag
Randy Miller
Angie Paulsen
Paul Roberts
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 become 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 2009 the WSCGA had a record 182 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.

Revue from trade shows helps to cover the costs of the summer and winter meetings. 90 exhibitors participated in the 2009 Winter Trade Show at the Holiday Inn Hotel & Convention Center in Stevens Point and 100 displayed at the 2009 Summer Trade Show at in Pittsville, 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

2009 Committee:

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

Administration Committee

2009 Committee

Heidi Dobbs, Chair
Bob Duckart
Greg Fanning
Bill Hatch
Fran Podvin
Russ Rifleman
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 \$190,000 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 19th Annual Cranberry Open was held on June 24, 2009 at the Lake Arrowhead Golf Course in Rome, WI. One hundred sixty golfers participated in the best ball scramble and attended the post outing social.

The committee also sponsored the eleventh annual WSCGA Sporting Clay Shoot on August 19, 2009 at the Woods and Meadows Game Farm in Warrens. The shoot had a total of 145 shooters participating.

The 2010 Cranberry Open is planned for June 22nd at Bull's Eye Country Club in Wisconsin Rapids, 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 \$23,500 to be used to enhance the 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 2009-10 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
Bob Evsich
Steve Hahn
Nicole Hansen
Jason Hatch
Matt Lippert
Diane Moss
Tod Planer
Jayne Sojka
Pam 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 2009 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 2009 School.

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, re-printed twice in 2009 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 12 in Pittsville, WI. In addition to the marsh tours and exhibits at the trade show the WSCGA sponsored two mini sessions. The sessions grower's experience with Intrepid and energy conservation programs.

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

2009 Committee

Nodji Van Wychen - Chair
Mike Gnewikow
Kathy Henkel
Sue Indermuehle
Amy Nemitz
Jim Peterson
Rusty Schultz
Ben Tilberg
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.

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.

WSCGA also completed the second, third and fourth segments of the Into the Outdoors program on cranberries. These two episodes focused on winter flooding and sanding, planting and spring migration and pollination and bloom.

When the USGS approached WSCGA to participate in a project to document the use of cranberry farms by common loons it presented an opportunity to tell the story of the great habitat that cranberry farms provide for wildlife. WSCGA took advantage of that opportunity with news releases, contacts with reporters who participated in banding loon chicks and numerous stories on the project.

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.



In October the USDA Cranberry Marketing Committee held their annual conference for the international trade representatives in Chicago. As part of the program CMC and WSCGA cooperated to set up a fall harvest tour in Wisconsin. The tour was held on Gottschalk Cranberry in the Town of Cranmoor. DATCP Secretary Rod Nilsestuen and Department of Commerce Secretary Dick Leinenkugel welcomed the representatives from 12 different countries to Wisconsin. WSCGA used the event to secure media coverage that resulted in national and international wire stories about the industry and its efforts to expand sales internationally.

WSCGA also made arrangements for a California based Public Television Children's Program "Curiosity Quest" to film for a cranberry harvest segment two days in Wisconsin. The program featured both fresh and processed harvest with a visit to the Wisconsin Cranberry Discovery Center. There were also numerous stories about growers placed in regional and national publications.

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.

As part of the focus for the future programs members have asked that the WSCGA place more emphasis on communication efforts. As a result the board of directors has directed additional resources to develop a year round program on sustainable cranberry production. The committee will play a key role in the expansion of the communication efforts.

Research Committee

2009 Committee:

Nicole Hansen – Chair
Suzanne Arendt
Stephen Brown
Tim Dittl
Kay Finch
Guy Gottschalk
Edward A. Grygleski
Jeff Habelman
Mike Moss
Scott Schultz
Jayne Sojka
Pam Sojka
Chris Utke

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 provides direction and input to the WSCGA Weather Forecasting Service. In 2009 the committee made a recommendation to change providers of the service. After selecting Great Lakes Weather Service the committee worked with the new provider to identify the needs of growers in a forecasting service beyond the usual frost forecast. The committee also assisted in the transition and fine tuning the forecasts for accuracy.

The WSCGA participates in the Cranberry Institute Horticulture and Environmental Working Group 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.

Efforts to address labeling problems associated with endangered species concerns with the Karner Blue Butterfly and the use of Intrepid were finalized and growers were allowed to use the product without the onerous restriction.

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 2010.

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

2009 Committee:

Bill Hatch - Chair
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
Andy Reitz
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

A group of legislators met in 2009 to develop legislation to further regulate groundwater quality and use. They plan to introduce legislation that would regulate high capacity wells in addition to the new regulations that were adopted in 2006. The bill could also change the definition of a spring and link ground and surface water in such a manner that ground water would be subject to the public trust doctrine. WSCGA closely monitored the work of this group and any legislation that would be drafted. It is anticipated that a bill could be the subject of activity in the 2010 session of the Legislature. WSCGA will be working to protect grower access to water.

Surface Water Withdrawals

As part of the Great Lakes Compact Ratification and enabling legislation passed in the last session of the legislature, DNR has been required to collect data on surface water withdrawals. The reporting requirements are for withdrawals of more than 100,000 gallons per day for 30 days. WSCGA has been working to make sure that any reporting requirements for growers will not be used inappropriately or be onerous to comply with.

Wetland Permitting

In late 2008 and early 2009 the WSCGA, DNR and Corp of Engineers worked on modifications to the wetland permitting process. This included the re issuance of GP014 for cranberry operations. WSCGA convened a meeting of wetland consultants to conduct a review and evaluation of the process. The consensus was that the new process was not working as envisioned by WSCGA and as DNR had indicated they felt it should. WSCGA will continue to work with DNR and the COE to address areas of concern about the permitting process.

Water Quality Issues

The association continued its work on important water quality issues for the industry in 2009. These efforts included support of individual grower cases, regional and statewide water quality issues.

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) administers 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 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 continue to be field tested with growers as they are being adopted. Training workshops were held for growers. Over 10,000 acres of cranberries are now covered by an approved plan.

Continued

Public Policy & Environmental Affairs Committee

Cranberry growers, like all of agriculture, are under increasing scrutiny with respect to water quality and water use. The WSCGA has taken a number of proactive steps to address these issues. These include efforts with USDA NRCS to develop nutrient management plans for growers, evaluation and upgrades to irrigation systems, cost share programs for tail water recovery systems, etc. While these efforts have been seen in a positive light by the Wisconsin DATCP and DNR cranberry farmers will be facing increasing scrutiny and regulation. The potential for regulation is not imminent but the industry needs to be prepared to deal with the issues in the next 3-5 years.

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.

WSCGA initiated a meeting with lake owners to explore opportunities to find common ground to address environmental concerns. The association is also working with the grower and an engineering firm to modify water management on the farm to protect water quality.

Wetland Issues

The federal Clean Water Act (CWA) requires the states to identify and designate waters that are impaired. DNR manages waters that are on the Impaired Waters List by using an analysis known as a "Total Maximum Daily Load" or TMDL. TMDLs are required for impaired water bodies by the federal Clean Water Act. A TMDL is the amount of a pollutant a water body can receive and still meet water quality standards. The TMDL establishes the amount of pollutant reduction needed from each source to meet water quality goals. Federal and State efforts are underway to implement TMDLs for water bodies in the state including some that may include cranberry operations. WSCGA is committed to development of tools to allow growers to meet and new regulation on their operations in a manner which allows the industry to continue to farm in an economically sustainable manner.

The DNR released its proposed revisions to Wis. Admin. Code § NR 151, which establish the performance standards for Wisconsin's nonpoint source pollution program. The proposed rules will be the subject of hearings in early 2010 and much discussion and effort throughout the year. WSCGA will work to develop a rule which growers can comply with and still maintain their operations.

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 worked with DNR and County Zoning offices on clarification of the application of floodplain ordinances on grower activities. These resulted in new guidance from DNR to counties and FEMA on these Standards.

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.

Wisconsin State Cranberry Growers Association



Strategic Plan 2009 Preparing for the New Decade Ahead

FOUNDED 1887

Beginning in the spring of 2009 the WSCGA launched an effort to evaluate the programs of the organization and seek grower member input into the priorities for the next 3-5 years. This process included mail surveys of the grower membership and telephone interviews focusing on specific program initiatives. The process culminated with a two day planning session by the WSCGA Board of Directors. The board approved the plan at its June meeting. A detailed plan to implement the efforts was approved by the board at their August meeting.

Executive Summary

The Wisconsin State Cranberry Growers Association was formed in 1887 to provide Wisconsin's cranberry industry with a mechanism to exchange information and represent grower interests. Over the course of its history the association has evolved to meet the changing needs of Wisconsin's cranberry growers. Major changes to the structure of the organization were made in 1989 with the establishment of a full time staff and office, in 2000 with the incorporation of the Wisconsin Cranberry Research and Education Foundation (a charitable foundation to support and enhance cranberry research and education programs) and in 2001 with the assumption of the operation of the Cranberry Museum, Inc (a facility dedicated to the education of the public about the historical and contemporary aspects of cranberry growing in Wisconsin).

In 2008 the WSCGA Board of Directors redefined its relationship with the Cranberry Museum, Inc. Board of Directors. Under this new relationship the CMI Board was restructured to add individuals with a passion and interest in the mission of the Wisconsin Cranberry Discovery Center and the talents and expertise to provide guidance for the successful operation of the center. WSCGA remains involved in the new board with two seats designated for members of the WSCGA Board or its designees.

The association has conducted three strategic planning exercises. The first, a comprehensive review of programs in 1995, a second one in 1999 with the board reviewing and updating the plan developed in 1995. In late 2002 and early 2003 the board of directors authorized the initiation of a comprehensive planning program to include grower interviews and focus groups coupled with a two day board planning session. During these efforts the WSCGA utilized the services of Kip Lilly of Lilly Foresight Dynamics to collect data and facilitate the planning process. The latest planning effort was authorized in 2008 with interviews and data collection to be conducted in 2009.

The data collection portion of the project included the development of a mail survey sent to all 155 of the WSCGA Grower Members and telephone interviews with 58 of the association members. The telephone survey component contacted three sets of about 20 growers to seek their input on one of three specific program initiatives: Marketing and Communication Program; the National Cranberry Research Enhancement Initiative and Programs for Development of the Next Generation Leadership. The mail survey had a 64% return rate (99 out of 155) and the telephone surveys had a contact rate of 76% (44 out of 58). The survey was mailed March 2 and was to be returned by March 19. Responses were accepted through April 3. The telephone interviews were conducted from March 24 through April 1, 2009. The Board conducted the planning session April 21-22, 2009.

The board session included a discussion of the outlook for the economy and its impact on the WSCGA, an evaluation of existing programs, a discussion and review of the interview findings, trends in associations, key messages and beginning the development of a plan for final approval at the July meeting of the board.

The Board identified the following priorities and plan of activities for the WSCGA:

Existing Programs: WSCGA conducts programming in five different categories as identified in previous planning sessions. In general, the board agreed that the five program areas were to be continued with some adjustments to the placement of specific activities. The board will review annually the programs for effectiveness and their performance in meeting grower needs. In general by category, the board identified the following for each program area:

- *Advocacy* – The members and the Board of Directors set this as the highest priority for the organization. There will be increased efforts at relationship building on the Federal, State and Local levels, increased use of the voterVoice system and work to represent growers at all levels.
- *Public Awareness* – WSCGA will increase its efforts in the area of communications and public relations to communicate the positive story of the cranberry industry in Wisconsin. These efforts will contain key messages of environmental stewardship, economic benefits, ranking as #1 producing state and the health benefits of cranberry consumption. WSCGA will focus on these areas and look to the Wisconsin Cranberry Discovery Center and other venues to engage in direct consumer marketing.
- *Management Practices* – Growers listed this area of programming as a high priority for them and an area where WSCGA excels in providing high quality programming. WSCGA will continue efforts through its Education Committee to provide programs at this level including the Wisconsin Cranberry School, the Summer Meeting, Field Day, development of grower tools and bulletins such as the pocket insect pest guide, pest management bulletins, etc. Increased efforts will also be made in use of the WSCGA website and the WSCGA newsletter. The WSCGA/NRCS Conservation programs will become part of the Environmental Stewardship programming efforts.
- *Stewardship* – The board recognizes member confusion over the Stewardship program and as a result has reorganized programming under the heading. The scholarship program efforts will become part of the Public Awareness Program and the efforts with USDA NRCS and WSCGA will take the center role in the new Environmental Stewardship program. Association efforts on sustainability will also be part of the Stewardship program.
- *Networking* – Opportunities for growers to come together at events like the Summer and Winter meetings as well as social events was ranked as important and will continue. WSCGA will continue these events as well as look at providing other opportunities through regional meetings, etc.

New Initiatives As part of the planning process the board looked at three new or modified efforts for the association. They include; Marketing and Communications, the Wisconsin Cranberry Research Initiative and Next Generation Leadership.

- The board supports increasing efforts in the communications and public relations efforts of the association. Messages will key on environmental stewardship, economic benefits, heritage, sustainability and cranberry health. While open to continued consumer marketing efforts WSCGA will look at other venues such as the Wisconsin Cranberry Discovery Center to serve as a platform to reach consumers about products and uses of cranberries.
- The board is excited about the possibility of obtaining Federal funding for the National Cranberry Research Enhancement Initiative. The WSCGA will continue to support the federal effort, work with USDA ARS and UW CALS and Extension to develop a structure to meet industry needs. WSCGA will also continue to communicate effort and progress to the membership and seek their input on how to structure the operation of the station.
- WSCGA will appoint a working group to develop a program to develop the next generation of member/leaders for the association. This effort is designed to cover 3-4 sessions on all aspects of

WSCGA and its programming, and to provide young members with skills to step into leadership positions.

The WSCGA Board of Directors has taken the input from the growers to fine tune its programs, place an increased and refocused emphasis on advocacy, communications and education programs for the organization. The grower surveys showed strong support for these programs and rated the performance of the organization in these areas positively. Changes will be implemented to the Stewardship program to reflect growers' desire for demonstrating conservation of resources.

The participation levels by members in the data collection process were outstanding. It enabled the Board to act on the plan, confident that the feelings of the members were clearly understood and incorporated into the development of the plan to guide the organization for the next three to five years. It also is reflective of the success of WSCGA in reaching members with programs and developing programs that the grower members support and feel are essential to their business. WSCGA will strive to continue to meet those expectations in the future.

The Planning Process – Development

The Reason

In 2008 the WSCGA Board of Directors approved an action to develop the fourth strategic plan for the association since 1994. The decision was consistent with previous board planning processes that took place on a five year rotation. The board felt that the association should conduct a comprehensive process to make sure that WSCGA programs and activities were consistent with the priorities and needs of the membership. The board also wanted to investigate member opinions about possible new initiatives

The Process

The WSCGA Board of Directors agreed to contract with Kip Lilly of Lilly Foresight Dynamics to provide assistance in the development of the Strategic Plan. Collecting data and the opinions of growers on WSCGA programs was identified as an important first step in the process. The board agreed that all grower members should be given the opportunity to provide input on programs via a mail survey. In addition telephone interviews would be conducted on three separate initiatives the board was seeking member input on.

In January, 2009 the WSCGA staff began to develop materials for use in the planning process. Lilly met via teleconference with the WSCGA Officers on February 5 to review the materials and questions for the grower member survey and the telephone interviews. Lilly then met via teleconference with the board on February 18 to finalize the questionnaires and the process.

The mail survey was sent to 155 grower members on March 2. 99 members responded for a response rate of 64%. The telephone survey consisted of attempts to reach 58 growers. 44 participated for a response rate of 74%. The telephone surveys were conducted from March 24 through April 1.

The first group identified for the telephone interviews focused on the association's Communications/Public Relations/Marketing program and what if any additional efforts should be undertaken in terms of additional consumer marketing. 14 members participated in these interviews.

The second group identified for the telephone interviews was asked to provide input on the Cranberry Research Enhancement Initiative which includes the establishment of a research station for cranberries and two USDA research positions in Wisconsin. 15 members participated in these interviews.

The third group was younger members (under 40) who recently started taking a role in the cranberry business. They were asked about participating in a next generation leadership program of the association. The interviews

also discussed program needs of this group and their interest in participating in WSCGA programs. There were 15 members in this group.

The support materials for the interviews and the mail survey form are included in Appendix 1.

All of the results were tabulated and analyzed by Kip Lilly and presented to the Board of Directors at its planning retreat on April 21-22 in Wisconsin Rapids. WSCGA staff developed this report based on that meeting and the results of the survey provided by Lilly Foresight Dynamics.

Data Collection Results – Mail Surveys

Mail surveys were sent to all grower members on March 2, 2009 and were to be returned by March 19. Growers were asked to classify their operation in terms of location, longevity and size. The mail survey asked respondents to rate WSCGA programs and activities on a scale of 1 (no value) to 4 (very valuable). Members were also asked to indicate if they used the program and then if the WSCGA should devote less, the same or more resources to the program or activity. Growers were also asked to respond to 4 open ended questions about what current services they liked, any new efforts they would suggest, what WSCGA does well in their opinion and any advice they would have to offer to the board.

In general growers saw the Advocacy program of the association as the most valuable to them and one where they wanted to see more resources devoted. They also rated the efforts of the organization in these areas highly. They also rated the Management Practices area of high value and one where they would support additional efforts being placed especially in delivering useful grower tools such as field guides and the weather forecasting service. The monthly WSCGA newsletter was also ranked high in terms of grower value. The communications efforts were also supported strongly with an emphasis on public relations activities that would garner more recognition for the environmental stewardship practiced by the industry. Economic benefits were also considered an important message to deliver to the public.

There was less support for increased efforts to market products directly to the consumers by WSCGA. The members appreciated current efforts but questioned if this was truly within the core mission of the organization or more appropriate for other industry groups. There were however a significant number of respondents who encouraged increased efforts in paid advertising programs while at the same time asking if the return on investment in these programs made them worthwhile.

The Winter and Summer Meetings of the WSCGA were ranked positively by the membership along with other networking opportunities. The Stewardship program presented the most concern and confusion on the part of the membership. This was in part due to the use of the term Stewardship probably not matching up with the general perception of the term by growers.

Most growers think of environmental stewardship when they are asked about the program. The WSCGA program however includes activities that promote civic stewardship and outreach. The program includes the development of endowed scholarship funds at post secondary institutions and not resource conservation. It is clear from grower responses that the association needs to look closely at the program and its classification and also improve its communication efforts of the program to the membership.

Data Collection Results – Interviews

The WSCGA identified three topics to be the subject of the telephone interviews conducted by Kip Lilly. The three topics were: WSCGA Marketing and Communications Programs; Cranberry Research Enhancement Initiative and Next Generation Leadership. Attempts were made to contact twenty growers in the Marketing group with sixteen participating in the interview, sixteen were in the Research group with fourteen participating in the interview and twenty two were identified for the Next Generation Leadership group with fourteen

participating. Overall this represented 76% contact rate which is not only statistically valid but also higher than normal rates for interview participation.

All interviews consisted of an initial set of general questions on WSCGA and its programs. Participants were then asked their responses to a series of questions on the specific topics and projects.

In describing the association there was a overwhelming number of positive responses by the participants. Terms like advocate, educational, informative, knowledgeable, helpful, supportive, professional and innovative were used often. Comments classified as neutral by Lilly included traditional, field days, school and agencies such as DNR and COE. Only two comments that could be perceived as negative were received. They were defensive and set in its ways.

Participants indicated they were members of WSCGA to unify growers on issues, the overall need for an association for growers, production education programs, assistance with regulatory issues and many indicated it was a family tradition and the thing to do as a grower. The responses reflect a strong tradition of the association as well as its success in bringing growers together on key issues.

In identifying their top business concerns for the next three to five years the respondents indicated that grower returns and the threat of oversupply were there primary concerns with environmental issues, regulation and sustainability as the second most important set of issues for them.

Respondents felt that WSCGA should focus its messages to the public on the health benefits of cranberry consumption, good land stewardship practiced by the industry and that the industry in the state is dominated by “down to earth Wisconsin farmers”.

In evaluating the major program areas of the association the respondents indicated that they view the program areas of advocacy, public awareness and management practices as strong. They also rated the opportunity for networking as important.

In terms of increasing or improving program areas the growers felt that programs in general were strong and they would like to see an increased emphasis on advocacy, public awareness, stewardship and management practices.

Topic 1: Marketing and Communications

The questions were divided into two different areas: marketing/consumer product promotion and public relations. The marketing area includes efforts aimed directly at consumers to cause them to buy or use cranberry products. The public relations efforts are designed to promote a positive image of the industry and growers to the general public.

Sixteen growers out of the twenty selected were contacted and participated in the interviews.

Marketing/Consumer Product Promotion

On the consumer product promotion programs respondents felt the association could and should be doing more. There were suggestions to promote more widely, perhaps on a more regional basis and to look at generic in store promotions. The group suggested that the Wisconsin Cranberry Discovery Center be used more for these types of promotions and had questions about the returns on the efforts with sports advertising.

Health benefits were the key message that the group felt should be part of the consumer product promotions as well as the versatility and good taste of cranberries and cranberry products. The group also felt that WSCGA should emphasize health facts from non partial scientific studies. Antioxidant content and the anti adhesion properties of cranberry should be emphasized as well as the fact that the fruit has low calories off the vine.

In the future WSCGA should consider use of Alice in Dairyland to cross promote cranberries. Distribution of sports or other snack packs to schools was identified as another project to reach potential consumers, especially young and active ones.

Public Relations

Respondents rated the public relations efforts high and encouraged the efforts to be continued and expanded. The fall media efforts were rated favorably. The group felt that the association should focus on environmental stewardship practiced by growers including showing wildlife habitat. Communicating the economic impact of the industry in the state was an important message as was the family heritage aspects of cranberry farming.

Economic and environmental stewardship were identified as key facts to be communicated to the public. Letting people know that Wisconsin ranks number 1 in production is important to the group. The economic message does provide a bit of a challenge though as grower responses in the mail survey expressed concern about communicating crop forecasts or harvest projections to the public. Generally these types of information are the basis for communicating the economic benefits of the industry in the state. The association uses the projections from USDA to frame the discussion and messages with media. In the future efforts will be made to communicate the program workings to the membership.

In the future WSCGA should look at public relations opportunities outside of harvest especially during bloom. Industry efforts on environmental stewardship such as the nutrient management programs and cooperation with NRCS should be emphasized.

Topic 2: Wisconsin Cranberry Research Initiative

The WSCGA has partnered with the Cape Cod Cranberry Growers Association to secure Federal funding for an initiative to enhance cranberry research on a national basis. The efforts have resulted in language in the 2008 Farm Bill to authorize the program. Efforts are now underway to secure funding through the Agricultural Appropriations Bill. The initiative would consist of three major components: 1) Funding for positions attached to the UW Madison and U Massachusetts to conduct research on cranberry 2) The development of a research station in Wisconsin, and 3) Physical improvements to the Experiment Station in Massachusetts.

Fourteen out of the pool of sixteen growers participated in the interviews to provide input on the initiative.

The participants were generally supportive of the initiative but did express questions and concerns about the project. Most concerns revolved around the funding and being sufficient to sustain the effort. Growers want to make sure that there is long term financial support from the Federal government to make sure the station and positions do not become a drain or draw on the industry and association. Concerns were also expressed about not being distracted from other important issues and there was a general concern expressed about the need for the project or whether it was an efficient use of money. Growers also wanted to make sure that research continued to take place on grower marshes to make sure it maintains its relevancy to real grower problems.

On a number of the specific questions on devoting resources to secure funding growers were not comfortable commenting due to lack of specific information. In both cases the majority did feel the association should devote more or the same level of resources to secure funding for the facility and personnel. Growers were split on who should own the facility and no clear consensus was provided.

In summary growers support the WSCGA continuing to pursue the initiative to enhance cranberry research on a national basis. Concerns remain about making sure that adequate resources are provided so the initiative can be successful and does not become a drain on grower resources or require ongoing financial support from the industry.

Topic 3 Next Generation Leadership

Succession planning is important to an individual farming business. It is also extremely important for an organization like the WSCGA. In order to continue its mission the organization needs to have a strong contingent of leaders across all generations. WSCGA also needs to provide relevant services to the next generation of marsh owners. As part of the ongoing leadership development program of the association the board identified twenty two “next generation” members to interview about their needs, priorities and impressions of the organization. Fourteen participated in the interviews. WSCGA was also seeking to measure interest in participation in programs to develop leadership skills and to learn more about the organization.

This group was unanimous in its feeling that the association is very important to them. All had participated in the Wisconsin Cranberry School; many have participated in summer meeting and field day as well as workshops and committees. The biggest obstacle for them in participating in WSCGA programs is time. A large number of them looked at the association to provide programming to assist them in best business practices, legal issues and in some cases a simple “Cranberry 101” program. A large number indicated that the association was doing a good job assisting them in their operation and also looked for additional programming in advocacy and education.

When asked about a special leadership program all indicated an interest in participating with all but one indicating that they would be willing to commit 3 or 4 days for the program.

This group prefers to have communication via e mail or the internet. Print methods and workshops also were important to them. Interestingly none identified the telephone as the best way to reach them.

Finally they were given the opportunity to provide advice to the board on programming. They suggested finding ways to involve younger members although they did not offer specific ideas. They also indicated that they would like to participate in decision making and be part of conversations on issues and programs. Special networking or workshops also would be beneficial to them.

Board Planning Meeting – Plan Development

The WSCGA Board of Directors held a two day planning meeting April 21-22 in Wisconsin Rapids. An agenda is included in Appendix 2. The meeting spent time reviewing the vision the board and members had for the association, looking at the current national economy and its impact on associations, including WSCGA. The board also conducted an evaluation of existing programs which included a review of the findings from the grower interviews.

The board began the planning process by identifying and reviewing trends in the industry and the association. They then worked on developing key messages and identifying priorities for the near future as well as key messages and new programs.

Trend Analysis: The board identified the critical trends in the following tables.

End Customer

5 Years Ago	Today	5 Years in Future
Mostly domestic sales. International markets just taking off	Sales of cranberries as ingredient due to growth and development of SDC products	Increased demand for food grown in a sustainable manner and food safety issues.
Cranberries were an “In” food	Growth of SDC	Measuring “carbon footprint” of food production.
White juice products marketed	Concerned with cost of food in general	More end users of product if health benefits can be demonstrated.
More end customers for products; less ingredient sales	Looking for products that are “good for you”	Increased international marketing of fruit and products
Coming out of downturn in industry	Consumer looking for more locally grown products	Growing US market and use by Latino community
Prices to growers on rise, rebounding from record lows in 1999-2002	Increase in international sales of cranberries and cranberry products	Demand for reduced or sugar free products
Buyers and handlers not looking for additional fruit	Overall demand has seemed to have leveled off	Increased interest and demand in locally grown foods.
Selling more consumer products, primarily juice	Increased diversity of product use	
	Organic market	
	More restrictions on farming practices	
	More product testing	
	Customers asking for products and food grown in a “sustainable” manner	

Management/Business Practice Trends

5 Years Ago	Today	5 Years in Future
Focus on cost reductions	Expansion of marshes through planting new acres, development of new marshes and planting of new acres	Supply will be in question. There is a potential for over supply of fruit while some believe market will grow to meet increased supply.
Efficiency analysis of operations	Renovation of exiting acres to improve productivity	Sustainable cranberry production will be an issue to be addressed
Need to turn around, quickness	Increasing production of fruit	Growers will cycle back to looking at efficiency of operations to deal with increased supply and lower prices
Easing into micro management	Development and planting of new varieties	Increase in the amount of production grown to meet organic standards and market needs
More non-traditional acres	Investments in infrastructure	Growers will look to run businesses more efficiently
Focus on renovation of exiting acres to improve productivity	Nutrient management planning	Growers will look for ways to deal with a potential economic downturn in the industry.
	Increase in number of growers micro-managing operations	Continue to develop and analyze new varieties of cranberries
	IPM	
	Development and use of new pest control tools	

Market Focus and Outlook

5 Years Ago	Today	5 Years in Future
Focused on recovery of market	Competition between Private and national brand name	Surplus?
Need for additional markets for fruit	Diverse number and size of buyers of fruit from growers	In depth health traits of cranberry
Focus on international market	Whole market trying to maximize return on investment	Food safety
Grow demand for concentrate	Add value to fruit	Increased amount of research results on the science of cranberry health
Products largely juice and concentrate	Price uncertainty for growers	More nutraceuticals using cranberries
Health message getting emphasized	Increasing demand for cranberries and cranberry products	Market restructuring companies/consolidation
Shift in where cranberries are produced – Wisconsin a bigger player in market	Investigation and research in health benefits. Consumer more aware and focused on eating healthy	
SDC are starting to build		

Technology Change

5 Years Ago	Today	5 Years in Future
A need to improve	People more willing to use and adapt new technologies	Look at today's trends and move forward
Technology advances under utilized by industry	Move toward automation	Businesses look at geographical efficiencies (close to users of product)
Closer look at cost benefit analysis of new technologies	Looking at energy efficiency	Increased impact of internet
Water technology moving toward and seeking increased efficiencies	More kinds of fuel available (bio, wind, solar, etc)	Improved plant genetics
Business use of computers for spreadsheets, etc	New generation of pesticides	GPS and infra red technologies for crop management
Using "beaters" for harvest	Optical sorters being used for fresh fruit	Another generation of new chemicals for crop protection
Cranberry mills and hand sorting for fresh fruit	New technologies in mechanical harvesters for processed fruit	
Less high speed internet access in rural areas	Real time data streams	
	Integration of GPS in farming practices	
	Website upgrades and new web customers	

Educational Needs and Emphasis

5 Years Ago	Today	5 Years in Future
How to be more efficient	New Technologies	Food Safety
Health	Communicating that Wisconsin ranks #1 in production	Information on and from a cranberry research station in Wisconsin
Crop Production	Communicating cranberry grower environmental stewardship and sustainability	A growing elderly population
	Methods to communicate information (State Fair, Festivals, Paid Advertising programs)	Communicating stewardship and sustainability of cranberry production
	Water Conservation	Communicating health benefits of cranberry consumption to the consumer

Public Policy Issues Local/State and Federal

5 Years Ago	Today	5 Years in Future
Water Quality	Water quality, quantity and access	Water quality, quantity and access
Pesticide review and regulation	Regulation and permitting issues including the traditional COE and DNR with the addition of county or local zoning.	Wetlands
Wetland permitting issues with COE and DNR	Wetlands	Increased government involvement in grower operations and activities
Public funds used to support cranberry industry	Need to improve at informing policy makers at all levels	Loss of rights growers currently have under cranberry laws.
Wetlands	Establishing relationships with new policy makers	Need to reach the public to inform them on cranberry grower production practices.
		Sustainable agriculture standards
		Taxes
		Loss of landowner control of property rights

Perceptions of WSCGA

5 Years Ago	Today	5 Years in Future
Good to belong to but members sought reason for membership.	Reliable source for educational programs such as Wisconsin Cranberry School	Unifying force among growers
Financial times required a close cost benefit review of membership	Providing additional support as an advocate for growers on environmental issues	Increased advocacy on behalf of growers and industry
Unites growers	Addressing diversity of issues and challenges	More involved as a “watchdog” on production
Focused on improving production and practices	Integral piece of puzzle for growers	Messenger of changes in farming practices.
Efforts geared at a more elementary level of cranberry production	Increased membership with role played in Zawistowski case	Improved communications through internet.
Served as strong grower advocate	Environmental “victories” show increased value to growers.	Advocate for conservation programs
	Seen as a problem solving group by state agencies.	Successful defend cranberry laws.
	Provides a united voice for industry with policy makers	

Strategic Plan - Actions

Programs and Services

The Board of Directors reviewed all of the existing programs and services that the organization offers to its members. They also spent a good deal of time examining grower responses to the mail surveys and the telephone interviews and incorporated grower responses into the planning process. The membership gave high ratings to programs and indicated their support for increased efforts in the area of advocacy and communications on behalf of the industry. The growers also rated education programs high and encouraged the board to continue to emphasize the provision of high quality education programs for growers and the public. The board concurred with the membership and agreed that the current programs should be continued and an increased emphasis be brought to the advocacy, education and communication programs. More specifically the WSCGA will:

- Continue to be a strong advocate for the Wisconsin cranberry grower.
- Maintain a strong focus on advocacy programs at the local, state and national levels.
- Shift the focus of the communication efforts of the association to promote the industry in general in Wisconsin and the consumer marketing and promotion efforts to the Wisconsin Cranberry Discovery Center.
- Pursue Federal funding for the establishment of a cranberry research station in Wisconsin and a USDA ARS cranberry research program at the UW Madison CALS.
- Develop a young leader development program to create a trained pool of young growers to serve the industry in leadership roles.
- Continue to serve and assist individual growers with issues and problem resolution as they arise.
- Reorganize the Stewardship line of business to include environmental stewardship and the Cranberry Conservation Program conducted in cooperation with USDA NRCS. Move the scholarship programs to the Public Awareness line of business.

WSCGA is structured to conduct programs under five identified lines of business. They include Advocacy, Management Practices and Research, Public Awareness, Member Networking and Stewardship. The board reviewed each of these lines and determined activities to be conducted over the course of the next three to five years as part of this plan.

Advocacy

The WSCGA Public Policy Advocacy Program is part of the core mission of the organization. A Public Policy and Environmental Affairs Committee advises the board on positions to take on issues be they local, state or federal. WSCGA retains Legislative Counsel to provide guidance on issues, track state legislation and rule making and to work on its behalf in implementing policy positions. Currently the Executive Director and three members of the Dewitt, Ross and Stevens Law firm are registered to lobby in Wisconsin on behalf of WSCGA.

WSCGA also retains Counsel in Washington, DC to work on securing funding in support of the National Cranberry Research Enhancement Initiative. The CCCGA also shares in retaining the counsel. Local issues such as Town and County Zoning are assigned to the Executive Director who will work with appropriate Legislative and Legal Counsel on issues as needed.

At the Local Level the organization will work with growers on issues related to zoning including but not limited to Floodplain Zoning ordinances, Non Metallic Mining ordinances, Shoreland and Wetland Zoning ordinances, Exclusive Agricultural Zoning ordinances and Floodplain Mapping. These local efforts will also include support for growers operating their farms in organized drainage districts. The primary focus of these efforts will be to make sure that growers' rights to access water are upheld. WSCGA will also take a strong position in support of rights granted to growers under state statutes to build, maintain and operate their farms.

At the state level WSCGA will monitor the State Legislature and Agencies for legislation and rules that may have an impact on the industry. Of utmost concern to the association is protecting the rights granted to growers by state statutes to access water for their farming operations. The association will continue to work with other groups in support of Legislation and rules that promote good public policy, economic development, sound fiscal policy, resource conservation and environmental protection.

At the Federal level the WSCGA will continue to aggressively pursue funding for conservation programs, the establishment of an experiment station for cranberries in Wisconsin and a strong USDA Agricultural Research Service Cranberry program in Wisconsin, New Jersey and Massachusetts. The association will also work with the US Army Corps of Engineers on wetland permitting issues under Section 404 of the Clean Water Act. Pesticide registration efforts with EPA will be coordinated with Cranberry Institute, IR4 and University of Wisconsin research scientists.

Management Practices and Research

The Management Practices and Research line of business is also one of the core programs for the WSCGA. In this program the association conducts those activities that are consistent with its grower education mission. These programs are developed primarily by the WSCGA Education Committee but also include input from the WSCGA Research Committee, UW Extension Faculty and crop consultants.

The line also includes the Cranberry Conservation Program conducted in cooperation with the USDA Natural Resources Conservation Service. After reviewing the responses from the surveys and telephone interviews it became clear that there exists some confusion on the part of the membership as to what exactly the Stewardship line of business includes. Most growers think of stewardship in terms of environmental and resource conservation. As a result the WSCGA/NRCS Cooperative program carries the connotation of stewardship. The board believes that this portion of the Management Practices business line should be moved to the Stewardship line of business. As part of this plan the board has directed that that move be completed.

The Wisconsin Cranberry School is the flagship for the educational programs of the WSCGA. It received excellent rankings from members and will continue to be a high priority for the association.

This past year WSCGA made major changes to its weather forecasting service in an attempt to improve delivery of forecasts to the growers. A new vendor and a major upgrade to the web forecasts were part of this change. WSCGA will evaluate the service throughout the year in an effort to insure the highest quality service for growers.

WSCGA also has completed upgrades to the website. These upgrades will allow the association to provide better information to the grower members in a timely manner. The new platform for the website provides WSCGA with access to the latest technology for information delivery. Features to be added include a search tool, video and improved links to websites that provide information on the latest growing practices.

WSCGA will continue to publish the monthly newsletter. Growers have also rated the compilation of the Insect Pest Management Bulletins and pocket guides as high and an important tool for growers. A new weed management guide will be prepared and distributed in the next 12 months. A new UWEX Bulletin on frost tolerances will also be made available to growers. On marsh workshops will be held as needed during the growing season.

Public Awareness

Effective public communications programs are also a core part of the WSCGA Mission Statement. As such the organization has in the past implemented programs to communicate the industry's story to the general public. A second component of this line of business has been promotion of cranberry consumption with consumers. As the board reviewed the responses of the members in the survey and the telephone interviews directly related to these

two areas it found that growers support the WSCGA efforts in these two areas. Members indicated that WSCGA should focus more resources on efforts to promote the industry and its importance to the economy and strong environmental stewardship. In response the board will re align programming in this area.

Generic promotion programs such as the State Fair, recipe brochure development and distribution, general public video presentations, fall harvest brochures and website recipe pages will continue to be conducted by the association. In the future the WSCGA will work to shift the direct consumer promotion programs to the Wisconsin Cranberry Discovery Center and its Taste Test Kitchen as a platform for these efforts. WSCGA will also encourage and work to develop the necessary resources for the Discovery Center to conduct the promotions.

Programs that have a dual purpose of promoting the industry and consumption such as the paid advertising program with the Milwaukee Brewers will also continue to be supported. They will be evaluated for their effectiveness in reaching the public with messages to determine if they are achieving the expected outcome.

General public relations and communications efforts will be enhanced by the organization. Members have clearly indicated that they are supportive of current efforts and rated the performance by WSCGA in this area highly. The members also suggested a refocusing of the efforts and messages to include a stronger environmental stewardship theme. These message tracks and the concept of sustainable cranberry production will be incorporated into future communication efforts.

WSCGA will continue to support community festivals as requested with materials and educational displays, provide speakers for groups, issue timely news releases on industry activities and events, conduct a fall harvest communications program and distribute brochures on cranberry growing in Wisconsin. Support for Ducks Unlimited and the Wisconsin FFA will continue but be evaluated on an annual basis for their effectiveness as well.

The scholarship programs at UW Madison, UW Stevens Point, UW LaCrosse, Wisconsin Technical Colleges and UW River Falls will become part of the Public Awareness line of business. In the near future the WSCGA will also begin work on a new curriculum packet with funding from the Specialty Crop Block Grant program.

The communication efforts focus will shift from the promotion of consumption to the promotion of the cranberry industry in Wisconsin. These efforts will be ongoing throughout the year and require additional resources to be effective.

Resource conservation and stewardship will be key messages. Specific story opportunities will include:

- Wildlife nesting and habitat such as cooperative project with USGS and loon nesting, trumpeter swans, whooping cranes, etc.
- Water conservation programs with NRCS.
- Highlighting the partnership for conservation with NRCS.
- Updates on results of UW study on sustainable cranberry production.

Economic messages will be communicated through various opportunities including the annual fall harvest communication efforts. The possible funding of the research enhancement initiative also provides an opportunity to communicate economic messages that include search for better management practices, improved technologies, new jobs, etc.

WSCGA will also be prepared to implement communications efforts in direct support of industry initiatives. In the recent past these efforts have included actions during the “Zawistowski Right to Farm Litigation” and work in support of reforming the permitting process for cranberry operations.

The WSCGA website will also be utilized to communicate information to the general public. The information on the public portion of the website will be monitored and updated with the latest information. A search component will be added to enhance its performance and media efforts will direct traffic to the site. Site traffic will be monitored to assist in evaluation of communication efforts.

Member Networking

The WSCGA will continue to provide opportunities for all members, both grower and associate, to interact on an informal basis. These opportunities will include the Winter Meeting, Summer Meeting and the Trade Shows associated with those events. The association will also continue to hold regional grower meetings and on marsh workshops as needed.

Social networking opportunities will be provided at the WSCGA Cranberry Open and the Sporting Clay Shoot. The annual Buyer's Guide will also be produced and distributed as part of the Summer Meeting, Field Day and Trade Show.

Stewardship

In the review of the surveys and grower interviews it became clear that there was a lack of understanding about the Stewardship line of business. The line includes the efforts by the association to provide service to others, civic programs and scholarships. Growers generally view the term Stewardship to be consistent with an environmental or resource conservation program. It is clear that the WSCGA has not been effective in communicating the programs in this line of business.

The Board of Directors determined that it would reconfigure the Stewardship line of business to reflect the grower perception. As a result the scholarship programs and support of Ducks Unlimited, Trees for Tomorrow and FFA will become a part of the Public Awareness line of business. The Cooperative program with the USDA NRCS will be the key component of the Stewardship program.

WSCGA will continue to seek Federal funding for the Cranberry Conservation Program in cooperation with USDA NRCS. Activities under existing agreements will be completed and new cooperative agreements will be entered into with the NRCS to allocate these funds in support of conservation programs for growers.

NRCS will continue to provide resource conservation staff to be housed in the WSCGA offices. WSCGA will continue to contract for a project coordinator.

Additional practices for cost sharing for growers will be investigated. WSCGA will look for grant opportunities such as the AWEF grant program at USDA that can generate additional cost sharing funds for growers. The WSCGA/USDA NRCS Cranberry Conservation program includes:

- NRCS resource conservation staff assigned to the WSCGA office to work with growers.
- Coordination of EQIP funding for cranberry growers.
- Coordination and administration of WFPIP funding for cranberry growers.
- Nutrient management plan writing training sessions, assistance and approval.
- Identification and development of technical standards for new practices for cranberry growers to be eligible for cost sharing.
- Development and administration of pilot projects.
- Energy audits.
- Water conservation practices.

New Programs and Initiatives

The WSCGA Board of Directors asked members for input on three different programming areas.

The first dealt with the marketing and communication programs of the association. Based on these responses and those in the survey the WSCGA will focus its communications efforts on the public relations area with economic impact and environmental stewardship as the two main messages for the public.

The second dealt with the National Cranberry Research Enhancement Initiative. WSCGA has been working with CCCGA to secure Federal funding for this initiative. The initiative includes the establishment of a research station for cranberries in Wisconsin; upgrades to the research station in Massachusetts; two USDA ARS Research Scientists in Wisconsin and one ARS Scientist in Massachusetts.

Authorization for the program was included in the 2008 Farm Bill. Funding requests for the program have been made by Representatives Kagen, Frank and Obey along with Senators Kerry, Kennedy and Kohl. Appropriation requests are \$3 million for the ARS scientists and \$7 million for the Wisconsin Station and upgrades to the Massachusetts station. The positions in Wisconsin would be assigned to the UW Madison CALS. The facility in Wisconsin under the current proposal would be owned and operated by the USDA ARS.

WSCGA will continue to work at the national level to secure the necessary funding for the initiative. WSCGA will also work with UW Madison, USDA ARS and growers on identification of a site and implementing the program to create a partnership to insure that the work done by ARS and the station are responsive to industry needs.

The third and final programming area dealt with the development of future leadership for the organization. WSCGA Board of Directors is committed to the future of the organization. Planning for the transition of leadership in an organization is extremely important to insure its long term success. WSCGA proposes to implement a program to identify potential future leaders, develop educational programs and workshops for them and to aggressively recruit young member participation in the program and the WSCGA.

WSCGA will solicit younger members to participate in a 3-4 day leadership program over a 12-18 month period. Topics to be covered in the leadership program will be developed by a working group of younger members, UWEX and the education committee. Participation would be limited through an invitation or application process. WSCGA will have to develop a budget for the entire cost of the program and identify funding sources.

Potential areas of study are:

- Industry History, Future Trends and WSCGA Demographics.
- Cranberry organizations structure, roles, missions coordination and interaction.
- Public Policy Issues including WSCGA advocacy program, committees.
- Basic management skills; people skills, WSCGA resources, family business issues, web resources, social and psychological exercises.
- UW Cranberry researchers, UW Extension, WSCGA and WCB interaction and relationships.
- NRCS Integration and programming with WSCGA.
- WSCGA leadership opportunities and organizational skill development.
- Media Training and communication programs.

It is the intention of the board of directors to implement the activities listed in this plan in the next five years by the association. The WSCGA Board will review and evaluate the progress annually. As a living document the board will modify this plan as changes in the industry warrant.

2010 WSCGA Winter Trade Show

Exhibitors

Advantage Refrigeration, LLC
AgSentry
AgSource Laboratories
Air Communications of Central WI, Inc.
Altmann Construction Company, Inc.
American Family Insurance
Aquatic Biologists, Inc.
Aring Equipment
Ayres Associates
B.D.T., Inc.
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BBC Technologies
Bonestroo
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Clement Pappas & Co., Inc.
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Converted Organics, Inc
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Cranberries Limited, Inc.
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Ellingson Companies
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Fabco Equipment, Inc.
Faivre Implement, Inc.
Farm Credit of Wisconsin
Federation Cooperative
Great Rivers Irrigation of Warrens, LLC
Hydroclean Equipment
Innovative Machine Specialists, Inc.
Integrity Grading & Excavating, Inc.
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Value Implement
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Warner & Warner, Inc.
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Wehrs Chevrolet, Inc.
Westermann Supply
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Wis Cranberry Discovery Center
Wisconsin Flowgate & Culvert
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Wisconsin Tubing, Inc.
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