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FIELD ROT UPDATE

My research group is starting a project on cranberry fruit rot. I thought you might be interested in some early results. On August 23, we sampled fruit from 12 different Stevens beds west and southwest of Wisconsin Rapids. Six beds were traditional plantings with vines at least 10 years old, and six beds were upland planting with vines less than 6 years old. In each bed we took berries from 8 different areas. We have not yet done any of the necessary statistics (so we can't draw conclusions yet) but here are the numbers average over all sites:

For conventional beds: 2% of berries rotten; 15% of berries unmarketable for other reasons (the majority being pinheads or insect problems); 4% of fruit unmarketable based on WEIGHT.

For upland beds: 5% of berries rotten; 10% of berries unmarketable for other reasons (the majority being pinheads or insect problems); 4% of fruit unmarketable based on WEIGHT.

Notice that the percent unmarketable berries based on weight is much lower than the percent unmarketable berries based on number of berries. This is because we counted pinheads as unmarketable, but they didn't contribute much to the overall weight of the sample. Also, in general, our samples were not from the edges of beds where berries were more susceptible to flooding and scald in 1999. Rot is almost certainly worse in those areas, but the culprit is not pathogens; it's the environment. So for our study, we wanted to avoid those spots. More on this study as the data develop!

Patty McManus, UW-Madison Extension Pathologist

PROUD AS A PEACOCK; DEFLATED LIKE A POPPED BALOON!

In the late 1980's we discovered a looper that was unknown to us. We dubbed this pest the "Pittsville looper". We continued to study it's habits and life cycle. Thinking that we were making the discovery of the century, we gathered larvae and Tim Dittl and Leroy Kummer kept this unknown alive in hopes of rearing some out. Soon they pupated and then we waited all winter for "something" to emerge. Finally in the spring the distinct adult was here. Tim and Leroy carefully caged the "unknowns", packed them into a vehicle and headed to Madison. Together the gentlemen searched the Entomology Library for an identity. Low and Behold! There it was—The "spiny looper" "Half-wing geometer" Phigalia titea (Cramer) Lepidoptera:Geometridae. We were so proud—now we had a name for our new pest.

Guess what? In July of 1999 I purchased the "Cranberry Insects of the Northeast" book that Anne Averill & Martha Sylvia had put together. While reading each page I came across a chapter on spanworms. Page 31 caught my eye, for on the upper right hand side I saw the "Pittsville looper". The article went on to describe OUR "Pittsville looper" to a tee. An then, there it was—plain as day—a well respected gentleman by the name of Henry J. Franklin had documentation on this pest as early as 1948. Maybe it just took 40 some years for Massachusetts' pest to get to Wisconsin. In any event, the Spiny looper was indeed discovered first by Henry Franklin, but we **REDISCOVERED** it in the 1990's

Jayne Sojka, Lady Bug IPM

Results of 764 square foot samples from six different Wisconsin counties. This is a summary of the 34,978 berries.

Cultivar	Mean # berries/ sq. ft.	Mean fruit wt/sq. ft. (g)	Mean wt/berry (g)
Ben Lear	303	326	1.08
Searles	231	229	0.99
Stevens	200	246	1.23
Pilgrim	250	279	1.12
Bergman	197	210	1.07
Beckwith	206	204	0.99
Lemunyons	210	235	1.12
Howes	183	196	1.07
McFarlins	192	181	0.94
Crowley	262	220	0.84

Uncle Zeke said: 'It ain't my ignorance that done me up but what I know'd that wasn't so.' The ultimate evil is the closing of the mind or steeling it against truth, resulting in the hardening of intellectual arteries.

Hugh B. Brown

Prior year berry size results

Cultivar	1998	1997	1996
Stevens	1.29	0.97	0.74
LeMunyon	1.22	0.86	0.78
Pilgrim	1.32	0.89	0.73
Ben Lear	1.14	0.82	0.71
Searles	0.99	0.76	0.54
McFarlin	0.92	0.66	0.47
Howes	0.91	0.57	0.45
Natives	0.69	0.59	0.63
Crowley	0.82	0.57	0.41

CRANBERRIES ON THE WEB

The agricultural libraries at land-grant colleges in cooperation with the National Agricultural Library are assembling a collection of web pages that are indexes or "webographies" of a given crop. Steenbock Library at UW-Madison is the host for the cranberry web page. Other states are taking the lead for other crops. For example, Michigan is doing blueberries, Washington is doing tree fruits and New Mexico is doing chili peppers.

While there is some original information about cranberries on this page, most of the page consists of links to existing information that is already available. The librarians did exhaustive searches of web pages for any mention of cranberries and then assembled, categorized and cataloged the information.

Hopefully, this will be a primary source for people wanting information about cranberries. While there are links to recipes, the bulk of the information is biology, marketing and pest management. The information has been "refereed" to the extent that unfounded or marginally relevant links are not included.

The page will be updated periodically and the links will all be checked to make sure they work and that they go to the same information. As you look at this page if you know of other pertinent information please send an e-mail to the link at the bottom of the page for the "responsible person" (currently Diana Wheeler). Part of the cost of assembling and maintaining this important resource was supported by the Wisconsin Cranberry Board, Inc. We thank them for their generosity.
The URL is:
http://www.library.wisc.edu/guides/agnic/cranberry/cranhome.html

Teryl Roper, Dept of Horticulture
Gretchen Farwell, Steenbock Library
Diana Wheeler, Steenbock Library

CRANBERRY WEED REFERENCES

I recently became aware of a couple of good references that may be of value to cranberry growers in the Midwest. The first is a book entitled "Wetland Plants and Plant Communities of Minnesota and Wisconsin". It was written by Steve Eggers and Donald Reed and is published by the St. Paul District of the Army Corps of Engineers.

As the name suggests, the book contains descriptions of plants that are commonly found in wetlands. Since cranberries are wetland plants, many of these plants are considered weeds in cranberry beds. The best part of the book are the color pictures of each listed species and a description of where they are commonly found and some botanical description. Where more detail is required in the descriptions, line drawings are provided to give further information. I was able to find many of the weeds that I commonly see in cranberry beds in this book.

The binding is both sewn and glued and the paper cover is vinyl shrouded so it should stand up to work in the field. The cost of the book is $11.00 plus $2.00 shipping. An order form is available over the Internet at:
http:// www.mvp.usace.army.mil/library/wetform.html
Send your order to:
St. Paul District, USACOE
Army Corps of Engineers Center
Attn: CEMVP-Library / Sales agent
190 5th St. East
St. Paul, MN 55101-1638

Another resource that is available on the Internet is the web page for the herbarium at UW-Madison. While the web page does not contain descriptions of all the species found in the herbarium, it contains many or most of them. The web pages will list the contents by either common name, family, or Latin name. There are also links to other botany sites within Wisconsin and around the world.

For each species there are links to habitat descriptions, pictures, distribution maps and other relevant information. There are also links into the USDA plant database that contains even more information.

This resource will be valuable because of the breadth of information available. The URL is:
http://wiscinfo.doit.wisc.edu/herbarium/

Teryl Roper, UW-Madison, Extension Horticulturist

Let us, then be up and doing,
With a heart for any fate;
Still achieving, still pursuing,
Learn to labour and to wait
Longfellow

REPORTING ORBIT USE

The Section 18 permit for the fungicide Orbit (propiconazole) expired on July 31, and now is the time to report use of this product in Wisconsin. All cranberry growers in Wisconsin have received, or soon will receive, a form to record their use of Orbit. If you used Orbit, you MUST provide the information requested on the form and return it to me no later than September 17, 1999. My address is Dept. Plant Pathology, 1630 Linden Dr., Madison, WI 53706.

Reporting Orbit use is required by the EPA, and future Section 18 or regular labels for Orbit will not happen if we don't provide them with use data. Orbit is not on EPA's fast track, so it is critical that we follow all the rules and report use information. If you have questions about reporting fungicide use, call me at 608-265-2047.

Patricia McManus, Dept of Plant Pathology
UW-Madison and UW-Extension

My phone number printed in the "Buyers' guide" distributed at cranberry field day is wrong. My correct number is 608-265-2047. Please make the correction if you rely on the Buyers' guide.

Patty

Note: Forms for reporting STINGER use during 1999 will be mailed later this year after harvest. Just like ORBIT use, growers who have used STINGER are obligated to report its use.

DORMANCY

Growers and researchers alike consider cranberry dormancy. We use the term "dormant" frequently. This article will define dormancy in its various manifestations and attempt to explain what regulates dormancy and will describe how plants can and cannot be managed for dormancy.

Plants grow at different rates during different seasons. When the weather is unfavorable they limit their growth or cease to grow completely. This adaptation allows plants to grow from season to season and to survive drought or cold weather. Annual plants survive hostile weather by producing seed just before the onset of unfavorable weather. Although living, seed have a low respiration rate and can survive heat, drought, or cold and then germinate and grow once the weather is again favorable.

Perennial plants (like cranberry) have to take a different approach. Perennial plants have dormant buds that can survive through inclement weather and grow during the next period of favorable weather.

Dormancy is usually divided into three sub categories and these divisions have been given different names by different authors. I'll not name them in this article.

The first phase of bud dormancy begins in late summer to early fall when growth stops and terminal buds form. The weather at this time is usually satisfactory for normal growth, but it is thought that a combination of environmental cues (daylength, temperatures, spectral quality of light) and internal cues (levels of different plant hormones) trigger the cessation of growth. The onset of this first stage of dormancy can be delayed with heavy applications of nitrogen fertilizer, pruning, or other invigorating practices. At this stage of dormancy, uprights that are collected and rooted will not produce normal growth and flowering. In cranberry, one sign of the onset of dormancy is the vines taking on the characteristic red coloration.

The second stage of dormancy occurs as the temperatures become colder in the late fall and through the winter. This dormancy is induced primarily through cold winter temperatures although some internal cues may also be functioning. The rate of respiration (oxygen use) plummets until the plants seem barely alive. Individual tissues

are compartmentalized to prevent any ice formation (that is usually deadly to cells) from spreading from one tissue to another. During the second stage of dormancy plants are most hardy (least sensitive to frigid temperatures).

During the second stage of dormancy plants accumulate "chill hours". This is commonly expressed as the number of hours below 40°F required to have normal growth and flowering in uprights. Cranberries require about 650 hours of chilling before normal growth can resume in the spring. However, this chilling must be followed by warm temperatures and long days. Interestingly, gibberellic acid (a plant hormone) could substitute for chilling. This mechanism prevents cranberries from resuming growth in the fall or too early in the spring before temperatures are sufficiently warm. This also prevents cranberries from being grown in subtropical to tropical regions, even if the soil and water conditions were acceptable.

The third stage of dormancy occurs in the spring after an appropriate number of chill hours have been received. The third stage of dormancy is characterized by plant growth being limited solely by external factors i.e. air and soil temperatures. Once temperatures are warm enough plant growth will resume normally.

Since a cranberry bed is composed of a population of uprights not all uprights in the population would be at the exact same stage of dormancy as all others. This is especially true during the transition periods between the stages of dormancy. Further, an upright can be deeply or lightly dormant within each stage.

The practical aspect of this discussion is that uprights become dormant slowly over time and that within a bed individual uprights are also becoming dormant at different rates. We know from research at the University of Wisconsin and the University of Massachusetts that cranberry buds and vines become hardier as winter approaches. Before the winter flood is applied it is critical to watch the temperatures as the vines are probably not fully dormant and can be injured by low temperatures. We probably saw some late fall injury last fall as we had some cold snaps after harvest but before the winter flood was applied.

According to Dr. Jonathan Smith of Northland Cranberries vine temperature under the ice stays pretty much constant at 28°F, regardless of the air temperature above the ice. Once cranberries are encased in ice it is unlikely for winter injury to occur. Not only are the vines protected, but they are at their hardiest stage and their rate of respiration (oxygen use) should be negligible. At 28°F vines should accumulate chill units quickly and be ready for the resumption of warmer weather in the spring.

In the spring once the winter flood is removed cranberry vines are kept dormant only by unfavorable temperatures. One the weather warms there should be no internal factors keeping the vines dormant. During this same period of time the vines lose their hardiness and once again frost protection becomes important. One sign of the loss of hardiness and dormancy is the loss of the red color and the vines once again take on a green cast.

Research to understand bud dormancy of perennial plants is difficult because so many factors are potentially involved. It is almost impossible to control for all of them. Research to understand the effect of unusual winter weather (very cold, very warm) is also difficult because it is impossible to predict months ahead what sort of winter will be coming and it is also difficult to provide some sort of stable control that will allow for making comparisons.

Teryl R. Roper, UW-Madison, Extension Horticulturist

There is no act, however trivial, but has its train of consequences

Samuel Smiles

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