Volume XII, Number 5, July 5, 1998

STEM "CANKER" UPDATE

The cranberry malady commonly called "canker" has reared its ugly head in a number of marshes and on several different varieties this year. Canker symptoms from the dike appear as patches of unthrifty or dead uprights. Upon closer examination, stems (runners and uprights) are swollen with bumps and galls erupting through the bark. Foliage distal to (above or beyond) the affected stem portion is dead or dying while foliage proximal to (below or toward roots) is often healthy. Sometimes small shoots grow out from the runner proximal to the galled portion. The pattern of affected plants in a bed varies but usually suggests physical damage or stress during harvest. For example, in some beds the problem is worse at the ends where beaters turn; in other cases, the damage seems to follow tire tracks.

Although the cause of canker is not known, I strongly suspect the galls may result from infection by the common soil bacterium, *Agrobacterium*. This bacterium infects the roots, crowns, and stems of a wide range of plants including blueberry and other cranberry relatives causing a disease known as "crown gall." When a cranberry gall is cut open and viewed under a microscope, you can see bacteria swarming from the cut surface.

In 1997 Tom Burr, a plant pathologist at Cornell University, isolated bacteria that he believed were *Agrobacterium*. Then a student of Eric Triplett's in the UW Agronomy Department determined DNA sequences for specific genes of the bacteria. When we compared these sequences to bacterial sequences on computerized databases, we found near perfect matches with species of *Agrobacterium*. The next step was to try to infect cranberry with the suspected *Agrobacterium* isolates and get galls just like what we see in the field. Unfortunately, this step has us stumped—we were unable to reproduce symptoms on cranberry. Until we do this, we cannot conclude that *Agrobacterium* is the cause.

With other woody plants, *Agrobacterium* often enters through wounds resulting from winter injury or pruning. The bacterium becomes systemic in some plants. In the soil, it is readily dispersed by rain or moving water. Beater damage, winter injury, and lots of water are all part of cranberry culture. Thus, it's not hard to envision infection by *Agrobacterium*.

There are no chemical controls for *Agrobacterium* on other crops, although

nursery stock is sometimes treated with biocontrol bacteria that outcompete Agrobacterium. For other crops, control measures usually consist of a) planting clean stock in soils that have no history of crown gall (Agrobacterium); b) avoiding winter injury by allowing plants to harden off (no late nitrogen applications); c) avoiding excessive mechanical injury during harvest; and d) controlling root- and crown-feeding insects. Although we have not proven that Agrobacterium causes stem “canker” on cranberry, it would nonetheless be prudent to adopt these measures in areas that have been affected.

Patty McManus, UW-Madison and UW-Extension
July 1, 1998

LADY BUG IPM NEWS CLIPS

1998 is going down in the history books as being one of the most phenomenal growing seasons yet! It is only June 30th and we are well out of bloom in most of our varieties. Fruit is setting beautifully with very little early abortion showing.

Disease pressure was present early as well. Early cottonball signs showed three weeks ago, and within 7 days of the early signs we witnessed full-fledged frosted mantels of conidia. Brown fungal activity has been observed in Ben Lear, Stevens as well as Pilgrim vines.

Canker really showed it's ugly colors when we were in full bloom. It appears in many varieties this year. Ben Lear, Stevens, Pilgrim, McFarlins seemed to be hit hardest. Experienced Growers feel that a good sanding program, and proper nutrient supply is the only means of mending. Keep in mind that we must create an environment that is favorable for new uprights to root because those that are damaged will not make it. Our density will decrease.

This is indeed the year of BUGS! But take note of all the natural pollinators that are out there this year. The bumble bee populations are exceptional. Green Lacewing, Damsel flies, Dragon flies, parasitic wasps, spiders and, hey we are even sweeping LADYBUGS!

It is the time for fruitworm activity. Our team does not rely on one means of timing our control of this berry pest. We monitor flight to indicate the kind of pressure we MAY see work our marshes, we make observations for the larval activity to begin, we carefully calculate % out of bloom (yes, there are times that we find it necessary to take our shoes and socks off to count our toes and fingers making absolutely sure that we get it right!) Egg hunts are always a joy! Tell me, why is it that these treasures are not the size of RASTER EGGS and as brightly colored? Why don't those female moths lay all the eggs right out in the open, side by side?

We are observing some strange Girdler flight. The question across the region is, "Have we peaked, or not?" It appears that flights peaked the week of June 26 because flights are down this week. Are the flights down because of the rains or are they down because it is just that time of the year for these critters? In 1997 most of our growers peaked the week of July 20 and today our growing degree days are nearly three weeks ahead, so it could be possible. Let's play the game of wait and see just what we are going to find next week in our flight patterns.

What else is happening in the "BUG WORLD"? We have seen Cranberry Flea Beetle adults working the

weeds at least 10 days ago. These pests were quite healthy and fairly large already. Cutworms are working the berries once again. This troublesome critter is taking a bite here and there and wasting more good fruit than we care to allow it to. Often it will bite three berries in one area before going down to the bog floor and coming up a distance away; a shy little brute that hides itself from the sun. The tractor tread, some miscellaneous spanworm and a few million grass hoppers are present in the marshes. Aster leaf hoppers migrated in some time ago, and seem to like it here for they have not migrated out yet!

I commend those Growers that have had to deal with 9 to 11 inches of rain in a short 3 to 4 days. You did well. We are observing some scald due to water up in the ditches, but for the most part you did your best at getting that water off before serious damage occurred. Blossoms that were under water are gone, berries could not withstand the temperature of the water after a few short hours thus scald took place. Rots are inevitable.

The hail damage we see from those violent storms are anything from a superficial nick to a complete cut from the vine. Blossoms are on the bed floor, and some vines sure took a beating.

I believe that in spite of all that Mother Nature has shown us the past few weeks, we have been given the opportunity to raise one of the BEST crops in Wisconsin yet. Keep up all the good work people . . . it does indeed show!

Jayne Sojka, Lady Bug IPM

Democracy is not something which can be inherited. It is a process which must be worked upon and then re-worked upon continuously.

C.A. Dykstra

SAFETY IN THE SUN.

We recently held a seminar for the younger workers on cranberry marshes in Wisconsin. One of the topics we covered was reducing sun exposure to reduce the risk for skin cancer.

Skin cancers affect almost 1 million Americans each year, resulting in over 7,000 deaths per year. Because farmers spend substantial amounts of time outdoors during the summer they are at a higher risk for skin cancer. If you have fair skin or have a history of skin cancer in your family your risk is also higher.

Wearing appropriate clothing is one key to reducing sun exposure. Perhaps the most important piece of clothing is a hat that will protect your face, ears and neck from the sun. Most baseball caps, like the ones provided by handlers and chemical companies, don't protect the ears and neck. Choose a wide-brimmed hat (pith helmet, straw hat) or a hat with a neck shield. The most important thing is to wear the hat you choose.

Cover as much of your skin with clothing as is practicable. Today we are more inclined to wear shorts and a T-shirt (or less, as modesty is disregarded). If you notice pictures of farmers from earlier in this century they wore long pant and long sleeved shirts. This provided ample sun protection. Light weight and light colored cotton can be comfortable, even long sleeved shirts and long pants.

For skin areas that will be exposed to the sun use a sunscreen with a sun protection factor (spf) of at least 15. Select a sunscreen with both UVA and UVB protection. Apply the sunscreen about 20-30 minutes before going outside to allow the material to become effective. Choose waterproof sunscreen so it will stay put as you perspire.

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Wisconsin Cranberry Crop Management Newsletter
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