TIPWORM

The new IPM season has begun and the buzz word around the industry is tipworm. Repeatedly I have overhead growers at the winter meetings commenting that we need to "get tipworm under control"! The only question is: How are we going to control tipworm? There was some talk at the Warrens Mall that Tipworm is becoming resistant to many of the insecticides we spray. Others at the County Cafe in Babcock states that the implementation of IPM has increased tipworm levels because growers are not spraying as much as they used to. (at the coffee shop in Trego, everybody was from Illinois and they didn't even know what a cranberry plant looked like.)

There is no doubt that tipworm injury has increased on some Wisconsin marshes over the past two seasons. However, I have my doubts that tipworm are resistant to all of the organophosphate insecticides, nor that IPM is ineffective. Last season, some chemicals worked well on one marsh and not on another. This observation tells me that we are not getting the chemical down in the bud to the insect, and as a result the control is variable. To circumvent this problem, some growers are testing adjuvants (spreaders) with their insecticides to decrease surface tension and get the chemical in the bud to the insect. The second problem is determining when to spray. Scouting for the insect is of utmost importance if chemicals are going to be effective. When IPM procedures were implemented by the industry, tipworm was not a high priority. In the past we were probably killing off the tipworm during a fireworm spray, and the small amount of early damage would re-bud later in the year. But the weather these past two seasons may have caused the fireworm spray to miss the effective tipworm control stage. The weather possibly even provided optimum growing conditions for tipworm!

If we are going to control tipworm we must first determine when they are present in the bud, and that means integrating it into the scouting program. Because tipworm eggs and larvae are difficult to see, our scouts are now outfitted with high powered magnifying glasses or portable microscopes. The will begin scouting the edges of the bed early this season and concentrate on areas with high activity last season. Likewise, the scouts will use sweep nets to catch adult tipworm in flight. Although the adults are difficult to distinguish from a mosquito, a trained eye can readily identify an adult tipworm. Mowed beds will be monitored very carefully, as well as fast growing non-productive vines. Tipworm were found last year in greatest quantities in newly mowed beds.

In the past we have not really worried about this pest, and it has finally caught up with us in Wisconsin. Over the next few seasons hopefully more information will be generated from research so growers can more effectively control tipworm using IPM principles and practices. Growers which discover an effective control with a chemical or cultural practice are encouraged to let consultants and researchers know. With any luck tipworm will not be the major topic at coffee shops across cranberry country this season.

Jonathan Smith, Northland Cranberries, Inc.

When were through changing—we're through!

P.H. Dunn

TIPWORM: The final analysis

In the January 1993 Cranberry station Newsletter, I reported some of the results that Anne Averill and I had collected from a study of Cranberry Tipworm. In 1993, we conducted a follow-up of uprights which were 'clean' in August of 1992 but damaged in October of 1992 in order to concentrate on the recovery potential of uprights damaged by 'late-season' tipworm. The 1993 data confirmed that these late-season damaged uprights had a flowering rate which was only 25% of that of undamaged uprights. 'Howes' were most susceptible to late season infestation and showed the lowest recovery. 'Stevens' were the least susceptible.

Based on the late-season data, we constructed a "what-if" table (below) to determine the impact of late season tipworm. Calculations are based on 25% recovery rates of damaged uprights and various return bloom rates of 'clean' uprights, starting with 100 vegetative uprights.

Calculating losses to late-season tipworm

	Percent return bloom		
	60%	70%	80%
	Potential flowering uprights		
No tipworm	60	70	80
5% infestation after mid August	58	67	77
10% infestation after mid August	56	65	74

In previous studies, we found that if a vegetative upright is not infested, it has an 80-85% chance of flowering the following year. In the 92-93 study, the actual figures were 68% for 'Early Black', 57% for 'Howes', and 82% for 'Stevens'. Actual late-season infestation levels average about 5% or less, occasionally going as high as 10%, and rarely higher.

A summary of our tipworm findings follows:

1. Tipworm are more likely to infest 'Howes' than 'Early Black' or 'Stevens'. Other cultivars also show low susceptibility to tipworm.
2. Visible damage from tipworm becomes apparent at least 2 weeks after the insect was present in the tip.
3. Highly visible damage on a bog does not mean that large numbers of tipworm are present at that time.
4. Uprights showing tipworm damage are more likely to produce side shoots than clean uprights.
5. The highest numbers of damaged tips are seen in August. However, most of these tips were damaged much earlier in the season. We saw 30% damage but only 5% or less infestation in late August 1991. This means that what was previously called 'late-season' tipworm may have only been the cumulative effect of an entire season of insect activity.
6. Uprights showing damage as late as mid-August make a complete recovery in terms of flowering potential for the next season.
7. The only period of high tipworm infestations (not visible damage) occurs early in the season, from mid-May to mid-June in 1991; from late June to early July in 1992.
8. Some upright tips which were 'clean' in August showed damage after harvest. These uprights showed only a 25% recovery compared to 'clean' tips
9. Base on 10% late season infestation and 25% recovery and 80% normal return bloom, less than an 8% decline in potential for flowering can be attributed to late season tipworm effects even in a bad year. The normal late-season infestation is 5% or less.

Carolyn DeMoranville, University of Massachusetts

The Bottom Line: most tipworm damage occurs early. This damage does **NOT** affect flowering and fruit production the following season. The small but real 'late-season' tipworm population does affect flowering and fruiting in the following year. However, **VERY FEW** of the damaged uprights seen at the end of the season represent 'late-season' tipworm. Most of what you see is old damage from earlier infestations. The average late-season infestation is 5% (leading to a less that 4% decrease in flowering).

LADY BUG NEWS CLIPS

Let's talk about Tipworm.

In a 1944 publication on Cranberry Tipworm it stated that this PEST was indeed a concern already then. I quote, "The first brood of maggots works mostly during the first half of June. It does harm our tips but for this brood we have time to recover." "Unfortunately the second brood is much more plentiful and generally appears when the vines are in full bloom. Its work is more serious for it interferes with the development of the terminal buds that should produce the blossom-bearing growth the next year."

My current findings are similar to this 1944 publication. In the field I see peak larval activity for the first generation to be late May and early June. The activity continues throughout the entire growing season, with four to five generations per season. These generations are hard to distinguish for their life cycle is short, generally two weeks. They are host to vegetative growth. Tipworm like newly mowed beds. They seem to thrive in areas that have excessive Nitrogen applications. All indications show that Tipworm are not very mobile. The adults are but pinhead size, therefore may not fly far. This is to our advantage, for we can experiment with each bed individually.

We are all frustrated with this PEST here in Wisconsin. Some growers are experimenting with this PEST here in Wisconsin. Some growers are experimenting with strategically flooding areas that are heavily infested, other believe that their sanding program is enough. I find that we must concentrate our attention on this first generation, and time our "control" very carefully. If we can reduce this trouble-maker early on, perhaps we will have time for our vines to mend and a new bud to develop for 1995's crop.

Jane Sojka, Lady Bug IPM

PEST PROFILE: TIPBLIGHT/COTTONBALL

Did you notice a significant amount of cottonball on your marsh during last year's harvest? If so, now is the time to consider what actions need to be taken. Symptoms of the cottonball fungus, *Monilinia oxycoccus* are easily recognized at harvest as the diseased berries normally fail to ripen, rarely showing any red coloration but remain green, white or most often turn yellowish-brown in color. Upon opening up these berries the interior portion is filled with white cottony mycelium, hence the name "cottonball".

This fungus overwinters in diseased fruit or "mummies" that sometimes remain on the plant but most often fall to the marsh floor during harvest. In the spring, "mummies" produce apothecia (mushroom bodies) which release spores that infect new upright growth. Since spore release is closely synchronized with cranberry plant development, monitoring plant growth is one method in determining peak ascospore release. To minimize or prevent plant infection in the spring (tipblight stage) the first fungicide application should be timed at bud break or when 50% of the upright shoots have begun to elongate (1/4-1/2" new growth). This will most likely vary from bed to bed, particularly those planted to different cultivars. Following the first fungicide application, a second follow-up application should be made 7-9 days later, but not more than 10 days, since the fungicide used for control of cottonball has short residual activity.

FUNGINEX is the current labeled fungicide for suppressing tipblight/cottonball. Accurate timing and correct application techniques are critical with this fungicide. Various methods of applying FUNGINEX exists, however, some seem to provide better control than others. Ground and aerial application is most preferred. Chemigation is not highly recommended since FUNGINEX is very water soluble and may wash off the plants unless you've timed your system properly. Rates of 24

ounces per acre per application, not to exceed 4 applications per season are recommended. Also, keep in mind that FUNGINEX is moderately toxic to fish and water holding precautions should be taken.

By mid-June or during early bloom you can see how effective your first two applications were in protecting the new growth from the tipblight stage. Scouting for this stage of the disease is critical in determining whether your final two applications are necessary. If so, the third application should go on at 5-20% in bloom followed by the fourth and final application 7-10 days later.

See UW-Extension bulletin *Cranberry Pest Management in Wisconsin* for further details.

Tim Dittl, Ocean Spray Cranberries

HERBICIDES

ROUNDUP HERBICIDE FOR WOODY BRUSH CONTROL IN AND AROUND CRANBERRY MARSHES

In addition to the uses of ROUNDUP as a wipe application which are detailed in A3276 *Cranberry Pest Management in Wisconsin*, the manufacturer of ROUNDUP (Monsanto) has issued a 2EE Fact Sheet label addition which allows a tree injection or cut stump treatment with ROUNDUP in and around cranberries.

The ROUNDUP label contains a cut stump treatment or injection and frill application methods section which should be followed when using Roundup in this manner.

The Fact Sheet lists several woody brush and tree species where control or partial control is claimed. If the material is applied within a cranberry bed, do not make applications within 30 days prior to harvest.

He who learns but does not think is lost. He who thinks but does not learn, is in great danger.

Confucius

TOUCHDOWN HAS LABEL FOR APPLICATION IN AND AROUND CRANBERRY PRIOR TO PLANTING AND UP TO ONE YEAR OF HARVEST AS A WIPE, SPRAY OR SPOT TREATMENT

TOUCHDOWN (sulfosate) has a label which allows it to be used in and around cranberries prior to planting and up to one year before harvest as indicated in A3276 *Cranberry Pest Management in Wisconsin.* This bulletin indicates that TOUCHDOWN can be used as a wiper application. In addition to the wipe application , TOUCHDOWN can be used as a spot or spray application.

TOUCHDOWN is a nonselective, systemic herbicide which can be used to control a broad spectrum of emerged weeds. It will control many annual and perennial grass and broadleaf weeds. TOUCHDOWN is formulated as a liquid concentrate which contains 6 pounds of active ingredient per acre. Do not make more than one application or exceed a total of 4 pounds active ingredient of TOUCHDOWN herbicide per acre per year. The label indicates that a 6 hour rain free period is required after application for most effective weed control.

As with the commonly used herbicide ROUNDUP (glyphosate), TOUCHDOWN requires actively growing green plant tissue to function as an herbicide. As is suggested when using any new herbicide, read the label carefully and use for the first time on a test basis.

Herbert J. Hopen, UW-Madison, Dept. of Horticulture

DEVRINOL PREPLANT?

I have been asked about the advisability of applying 30 pounds per acre of DEVRINOL 10G before planting cranberry vines. The label reads: "New plantings: Apply 30 pounds DEVRINOL 10G per acre to a weed free soil surface in the spring after setting vines." The operative word here is **after**. Postpone applying DEVRINOL until after planting cranberry vines.

Teryl R. Roper, UW-Madison, Dept. of Horticulture

FIELD NOTES

Week of May 1-13

We are still seeing many young blackheaded fireworm larvae throughout the central area of Wisconsin. In the Warrens area the Cranberry Crop Manager program is stating that we are at about 55% egg hatch. In the Cranmoor area, larvae are at about the same 55-60% egg hatch. Mostly first and second instar larvae are still being swept, however, we are seeing more third instar larvae during the past 3-5 days. When the larvae reach third instar they will begin to web some of the uprights.

Some young green spanworm and rannoch loopers are also being swept in the central Wisconsin area.

Yearly comparison CCM egg hatch

Date	1992	1993	1994
	Percent egg hatch		
4/24	ND		3
4/25	ND		7
4/26	ND		15
4/27	ND		19
4/28	ND		22
4/29	ND		22
4/30	ND		22
5/01	ND	8	22
5/02	ND	15	27
5/03	ND	18	29
5/04	ND	21	33
5/05	ND	26	35
5/06	20	36	37
5/07	27	44	41
5/08	40	50	45
5/09	50	63	49
5/10	62	72	51
5/11	68	78	60
5/12	73	85	63

Data from John Harter, Potter & Son Cranberry.
In 1992 the flood was removed April 6; April 10 in 1993 and April 7, 1994.
ND= No data.

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Contributors:

Teryl Roper, Editor	UW-Horticulture
Lou Ann Bever	Cattail Marsh Consulting
Bill Bland	UWEX-Soil Science
Tim Dittl	Ocean Spray Cranberries
Herb Hopen	UW-Horticulture
Leroy Kummer	Ocean Spray Cranberries
Dan Mahr	UWEX-Entomology
Ann Merriam	BioCran IPM
Laurel Riedel	Crantrol
Tod Planer	UWEX, Wood County
Jayne Sojka	Lady Bug IPM
Johnathan Smith	Northland Cranberries

I have yet to find a man, whatever his situation in life, who did not do better work and put forth greater effort under a spirit of approval than he ever would do under a spirit of criticism.

C.M Schwab

Special issue featuring Tipworm Articles

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Department of Horticulture
1575 Linden Drive
Madison, WI 53706-1590