SEDGES vs. GRASSES

Sedges and grasses are noticeable weeds in young cranberry plantings. They are very competitive and may interfere with getting good vine establishment. You should be able to identify whether you have grasses, sedges or both in order to plan your control strategy.

To tell if you have a grass or a sedge, pick off a stem and roll it between your thumb and fingers. If it is a sedge it will feel triangular with definite edges. If it is a grass it will roll easily and will feel round in your fingers. This couplet may help you remember: "Sedges have edges, grasses have none". There are exceptions to every biological rule, but this should give you a good idea if you have a sedge or a grass.

The reason it is important to know what weed you have is that Poast and Fusilade are effective only against grasses and are not effective against sedges. If your biggest problem is sedges and you treat with one of these graminicides you won't get control and you may believe that these materials don't work (when in fact they do work well against grasses).

Remember that both Poast and Fusilade have a one year PHI and so should be applied only to non-bearing beds.

Teryl Roper, UW-Madison, Horticulture

BLOSSOM TIME PESTICIDE APPLICATIONS

As blossom time rapidly approaches, many growers may be pondering what course of action they will take if faced with the dilemma of treating during bloom. As most growers know, treating with our conventional insecticides during bloom is often not a good idea because of pollinators such as honey and bumble bees actively working the cranberry flowers. Most of our conventional insecticides are hard on foraging bees and should not be applied while bees are in the field.

If a grower should have to treat during bloom, they should consider using some of the biological Bt products (Dipel, Biobit and MVP) that we have currently labeled for use on cranberry. growers may see some benefit from these products when treating for spanworms, cutworms, leafrollers and fireworm* during blossom time. Growers should consult product labels for exact rates. Keep in mind that these products often perform best when applied while insect larvae are small and that more than one application may be needed.

Last season several growers tried the product Pyrenone with some success. Pyrenone is a natural occurring insecticide taken from the Pyrethrum flower (Chrysanthemum Family). Growers used rates ranging from 8-12 ounces per acre and the results were encouraging. Pyrenone is a contact poison and has a residual of 1 day or less. Applications were made during the evening when bees were not foraging and then the treated areas were irrigated the next morning to discourage bee activity and help dissipate any remaining product.

* Not all Bt formulations are labeled for control of fireworm. Please consult your products label.

Leroy Kummer, Ocean Spray Cranberries

A WORD ABOUT BT'S

Even with this cool weather, blossom and bee time is just around the corner. Of course, so is the next round of insect pests. To avoid disrupting or harming the bees, many of you will want to use Bt products if insecticide treatment becomes necessary.

Bt (*Bacillus thuringiensis*) has occurred naturally for thousands of years in the soil and on leaves, evolving into several different strains. Twenty-one years ago, Bt's came into use as a biological insecticide with DiPel by Abbott. For cranberries, there are several Bt products now on the market, each containing different toxins to target our pests.

Technically speaking, *Bacillus thuringiensis* is a rod-shaped, spore-forming, aerobic, gram-positive micro-organism. Harmless to humans, birds, and animals, strains of Bt show specificity to caterpillars, flies, and beetles. The strain that is effective against our caterpillar pests is *Bacillus thuringiensis kurstaki*.

The Bt must be eaten to be effective, and is only effective on the larval stages of lepidoptera (the caterpillar). Stickers will increase the effectiveness, and the best results occur when you spray Bt while the caterpillars found are 1/2" or less in length.

Not all Bt products contain the same formulas of spores and crystals, but each work in much the same way. Following is how one Bt product, DiPel, works against pest larvae:

1) Larvae eat the Bt product, which is usually a combination of spores and toxin-containing crystals.

2) The high pH (9.0) in the insect's mid-gut breaks down the crystal into its toxic subunits.

3) These lethal toxins attack the mid-gut, perforating the wall. The mid-gut's contents are then released into the insect's body, infecting the larva.

4) The Bt spores also travel through these perforations. Once free to feed on the insect's tissues and inner organs, the bacterium quickly replicates and essentially takes over the insect.

5) In a short time (as little as 2-3 minutes) after ingesting the lethal dose, the insect stops feeding.

6) Death is in 3-4 days of inner trauma, septicemia, and starvation.

Every Bt product does not contain the same active toxins. Some products contain only one type of toxin, while others contain four or more.

Besides using Bt's just at blossom time, they can also be used throughout the growing season to target caterpillars. Perhaps one of the biggest benefits of Bt's is that your first line of defense, your beneficial insects, are left unharmed to multiply and help guard against future pest generations.

Theresa Sojka, Lady Bug IPM

SCOUT YOUR ABANDONED BEDS

When one scouts a marsh, productive beds get most of the attention while others, such as abandoned beds, are neglected. Even though berries will not be harvested from an abandoned bed, they have potential to harbor significant populations of insects and diseases. If one is not careful, these levels can build to critical proportions and spread to productive beds.

To avoid any problems, add abandoned beds to your scouting routine. If the beds are truly abandoned, destroy or remove the vines. Many growers re-sod their productive bends with vines from abandoned beds. This also provides an entry for insect and diseases in productive beds. Scouting abandoned beds is also tricky. These beds are very weedy, usually not protected by

frost, and as a result could be over a week later in both plant and insect development. In any case, remember that all cranberry plants have potential to harbor insects and diseases, and must be approached using IPM procedures, even if they are non-producing.

Jonathan Smith, Northland Cranberries

TRAP COUNTS

Because of cool weather not many insects have been caught in insect traps yet. We hope to include trap count data in the next issue.

CRANBERRY CULTIVAR YIELD

Dr. Don Boone of the UW-Madison Department of Plant Pathology has studied different cranberry cultivars for a number of years. Following is data he sent me and that I found in my files reporting yield in barrels per acre for variety plots at DuBay Cranberries and at Jacob Searls Cranberry Co. Although the data are reported as barrels per acre, the data were collected from small plots and then extrapolated to a per acre basis. Exercise caution in drawing broad conclusions from these data.

Teryl Roper, UW-Madison, Horticulture

Table 1. Yield as barrels per acre from small plots at DuBay Cranberry Company, Stevens Point, WI. Data from Dr. Don Boone, UW-Madison, Dept. of Plant Pathology.

	1992	1989	1988	1987	1986	1985	1984	1983	1982	1981	1979
Ben Lear	149	208	377	305		278	264	242	351	343	183
Crowley	206	284	377	223	398	295	230	301		360	216
Howes	146	188	363	295	315	219	296	152		208	134
LeMunyon	140	254	223	218		289	148	305		84	53
McFarlin	100	158	364	209	354	248	235	246		318	72
Pilgrim	145		376	209		280	288	261	552	290	266
Searles	144	166	396	344	330	350	336	210		308	156
Stevens	153	208	425	234	335	282	330	322		286	156

Table 2. Yield as barrels per acre from small plots at Jacob Searls Cranberry Company, Wisconsin Rapids. Data from Dr. Don Boone, UW-Madison, Dept. of Plant Pathology.

	1980	1979	1978	1977	1976	1975	1974
Ben Lear	394	257	250	195	632	65	255
Crowley	400	217	170	128	660	38	254
Howes	234	225	118	121	350	10	114
McFarlin	297	117	215	106	366	11	75
Lemunyon	346	284	197	254	584	68	158
Pilgrim	277	311	233	239	509	66	191
Searles	340	225	172	86	502	44	153
Stevens	350	223	223	180	566	12	177

Fruit Rot Control

Growers who use EBDC fungicides for fruit rot control in 1993 should pay special attention to the label this growing season. The label on all EBDC fungicides how has the following statement:
"If this product is used on a crop, no other product containing a different EBDC's active ingredient may be used on the same crop during the same growing season."

The words 'active ingredient' (ai) are key to understanding this statement. Formulations of Dithane ® (DF, F-45, M-45), Manzate ® 200 DF, and Penncozeb ® DF all have the same active ingredient, mancozeb. Manex ®, Maneb 80, and Maneb plus Zinc F4 have a different ai in common, maneb.

Simply stated, if you start your fungicide program using Dithane, you can use a formulation of Manzate or Penncozeb later in the season because they all have the same active ingredient. However, if you start with Dithane, Manzate or Penncozeb, you cannot change to formulations of Manex, Maneb 80 or Maneb plus Zinc F$ because they have a different ai.

You will find this statement under "Directions for use as a spray" for Manex, Maneb plus Zinc F4; under "Instructions for Application" for Penncozeb DF, Maneb 80; under "Restrictions" for Dithane DF, F-45 and M-45; and under "Recommended Uses" for Manzate 200 DF. This label change for the EBDC fungicides does not affect the application of chlorothalonil (Bravo) within your fungicide program.

Frank Caruso, University of Massachusetts
This article was taken from the Massachusetts Integrated Pest Management Newsletter.

DIFFERENCES IN DEGREE-DAY CALCULATIONS

The ever-watchful Len Purvis of Potter and Son Cranberry Company quizzed me the other day about changes in the degree-day calculations we report in this newsletter. This year we are using a base temperature of 45°F, rather than the 50°F used in 1991 and 1992. We made the change based on the judgment of folks at Ocean Spray, who adopted the 45°F base as their current best guess. As I discussed at the 1993 Wisconsin Cranberry School, we do not know how accurately a degree day model can predict development of the cranberry plant, and what base is best. We do not even know enough to give the usual "It depends..." response to good questions.

You can translate any observations you made over the last two years from base 50 to base 45 with the graphs we are printing this year. The degree-day accumulations, base 45, for both 1991 and 1992 are on the graphs, and you can determine the base 45 value for any date during the last two growing seasons. For example, in the Central region on 1 July, about 1180 base 45 degree-days had accumulated, compared to 800 base 50 degree-days. I apologize for not bringing this to your attention earlier, and thank Len for raising the issue.

Bill Bland, UW-Madison, Soil Science

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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
Elden Stang	UW-Horticulture

WEATHER

Data from Dr. Ed Jesse, UW-Madison, Department of Agricultural Economics.

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