CRANBERRY MINI-CLINIC UPDATE

Mini-clinics for cranberry growers are scheduled for Wednesday May 26 at 12:00 noon at Bartling's Manitowish Cranberry Company and Thursday May 27 at 3:30 pm at Walker Cranberry Company in Cranmoor Township. Dan Mahr and Teryl Roper will be at the Mini-clinic in Manitowish Waters and we will be joined by Herb Hopen and Brent McCown in Cranmoor. Walkers will host the Mini-clinic at their marsh, not their warehouse. To get to the Walker marsh turn north on County highway D from Highway 54. Turn right on Moore Road (about 1 mile north of 54 off of Cty D). Follow Moore Road east about 1.5 miles. There you will see 3 large white buildings at the Walker Marsh. That is where the mini-clinic will be held.

WHAT IS THE IR-4 PROJECT?

Interregional Research Project No. 4 (IR-4 Project) was organized in 1963 by Directors of the State Agricultural Experiment Stations (SAES) to obtain residue tolerances for minor use pesticides on food and feed crops where economic considerations precluded private sector registration. Since it's inception, IR-4 has been administered by USDA/ Cooperative States Research Service. In 1976, USDA/Agricultural Research Service established a companion minor use program to provide further support for the minor use effort. The objectives of the project were expanded in 1977 to include the registration of pesticides for protection of nursery and floral crops, forest seedlings and turf grass; and again in 1982 to include an initiative to register biological pest control agents for agricultural pest control. Also in 1982, objectives of the program were amended to include registration of animal health drugs for use on minor animal species.

With the passage of the 1988 amendments to the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), the Project was challenged to support the reregistration of existing minor pesticide uses that are needed by the producers of minor agricultural commodities but for which specific data would not be developed by commercial registrants. These amendments called for reregistration of all pesticides registered before 1984 in an attempt to use contemporary technology. Based on extensive surveys of the user community and product registrants, and through the use of priority setting workshops, IR-4 developed a strategic plan in 1990 to reregister up to 1000 existing minor crop uses, by the 1997 reregistration deadline. Continued data development of new project registrations will also continue.

The National Headquarters of IR-4 is located at Rutgers University in New Jersey. The North Central Headquarters is located at Michigan State University.

All residue research conducted for IR-4 must be conducted under guidelines which conform to US-EPA established Good Laboratory Practices (GLP).

Involvement of SAES and ARS personnel is essential to the success of the IR-4 Projects mission. These personnel provide leadership and expertise and conduct the studies for field and laboratory studies.

The pesticide industry often lends aid to projects by analyzing residue samples. Commercial growers organizations and

processors often contribute to specific projects through supporting projects by conducting studies or with financial aid.

After efficacy and residue studies are completed labels are prepared by the IR-4 Project and are approved by the basic manufacturer before submission to the US-EPA.

Minor crops are not really minor and are an important part of U.S. agriculture. 1987, the aggregate of minor crop production constituted 40% of all U.S. crop value. However, there are large number of crop species which are components of this aspect of American agriculture.

During the 1992 growing season we conducted residue studies in cranberry for the herbicide 2, 4-D and ethephon which can be used for fruit color enhancement. These studies were for reregistration of the two pesticides.

Plans for projects for the 1993 growing season include initial residue data development for Kerb as a herbicide and Aliette as a fungicide. The third project for 1993 will be residue data development for reregistration of the fungicide Funginex.

The support provided by growers who allow the studies to be conducted on their marshes is appreciated.

Herbert J. Hopen
Professor of Horticulture, UW-Madison

CRANBERRY YIELDS

One of the suggestions that was made from the survey we mailed with the last issue of the newsletter in 1992 was to provide information on yields of different cranberry cultivars. There are at least two ways to gather yield information. Dr. Boone has cultivar trials at DuBay Cranberries. He collects a variety of information from these plots each year. However, this information is only from very small plots given outstanding care. Another way to obtain this information is from handlers. The following table lists yield for 8 cranberry cultivars under commercial conditions in Wisconsin. I hope this is useful. I will try to compare this with Dr. Boone's data in a future issue.

CULTIVAR	**1991**	**1992**
	bbl/a	bbl/a
Ben Lear	187	161
Crowley	110	105
Howes	91	90
LeMunyon	260	99
McFarlin	139	138
Pilgrim	200	153
Searles	139	133
Stevens	170	193

Teryl Roper
UW-Horticulture

AIRBORNE REMOTE SENSING AND IPM

The search for new innovative methods to improve plant management has gone airborne. In a research project conducted by FS Cooperative and NASA, growers in Wisconsin have the opportunity to use sophisticated airborne digital camera systems to spot potential problems with their crop. The use of this new technology is a significant advancement over the old infrared images used in previous years.. Digital imaging allows the grower to view differences in the field which are not always visible to the naked eye.

Digital cameras can take pictures of the crop using different banks of the reflected light spectrum which show energy levels emitted by the crop. Using a computer system, images of the field are printed out in up to 16 colors which can indicate differences in plant biomass, plant stress, irrigation, or fertilization practices. Healthy plants are expressed as dark green images on the printout, while stressed plants and bare spots are yellow and red, respectively.

The remote sensing project provided growers with over 2500 acres of images in 1992. Most of the acreage was vegetable crops such as potatoes, beans, sweet corn, and peas. However, golf courses and a cranberry marsh were also included in the project. The images allowed growers to detect insect infestations, frost and

hail damage, drainage problems, herbicide overlap and irrigation variability.

Although the use of digital cameras as a management tool is still in a developmental stage, the cranberry industry could benefit from this technology. With the combined efforts of scouts, digital images could locate insect or disease infestations, fertility imbalances, or perhaps even potential yield. Using this technology, it may be possible to estimate berry counts, although it has not been evaluated yet. Additionally, weed identification and weed pressures may be visible from the images.

The long term goal of FS Cooperative and NASA is to use satellites to take pictures of fields from space. Growers could receive satellite images once or twice a day instead of once a week as currently provided with airplanes. Although more research is necessary to fully evaluate this management technique for the cranberry industry, the use of digital cameras may have potential.

Jonathan Smith
Northland Cranberries

NEW INSECT IDENTIFICATIONS

By now many of you, especially in the southern and central growing areas have seen signs of blackheaded fireworm, green spanworm and false armyworm. In fact, our first hatch of fireworm occurred around May 1 in the Cranmoor area. Northern growers should begin to see activity during the week of May 24 if not a little sooner, especially in the northwest. Although these insects, along with sparganothis fruitworm and cranberry tipworm, are common to some marshes during this time each year, we occasionally run into a few unidentified insects found feeding on cranberry. Most of the time these insects are sporadic pests which normally don't feed on cranberry, but fly in from areas surrounding the marsh.

During 1992 a number of new insect pests were being reported on several marshes throughout Wisconsin. Many of the larvae or caterpillars described were "spanworms or inchworms" belonging to the moth family Geometridae (also known as measuring worms). Most of the newly described caterpillars found feeding on cranberry last year were foliage or leaf feeders, however some of the were active during blossom time and fed on hoods, pods and flowers). If you are not routinely sweeping for insects, spanworms can especially go unnoticed until the damage has already been done. This most often occurs during bloom when we are trying to be more careful about sweeping. If you are using a sweep net, threshold numbers for your spanworms are an average of 14 larvae per 20 sweeps but as they become larger and more mature, the threshold drops to an average of 10 larvae per 20 sweeps. Like the green and brown spanworms most Geometrids go through only one generation (=univoltine) per year.

Listed below are some of the new insects we identified from last year along with other pertinent information.

Order:Family:	Lepidoptera: Geometridae
Species	*Abbotana clemataria* (S.& A.)
Common name:	Big Cranberry Spanworm
Larval Activity Period:	Mid June-July; univoltine
Larval description:	Black to dark chocolate brown in color; mature larva has distinct tubercles on dorsum of fifth abdominal segment and reaches 2-2.5 inches in length.

Order:Family:	Lepidoptera: Geometridae
Species	*Eupithecia miserulata* Grt.
Common name:	Common Eupithecia; or "tractor tread spanworm"
Larval Activity Period:	Mid June-July; univoltine
Larval description:	Pale yellowish or pinkish with reddish herringbone stripe along the dorsum (back).
Remarks:	Fed heavily on hooks and blossoms

Order:Family:	Lepidoptera: Geometridae
Species	*Xanthotype urticaria* Swett.
Common name:	False Crocus Geometer or "Green Spanworm"
Larval Activity Period:	Mid June-July; univoltine
Larval description:	Very similar to green spanworm, but more pale green in color
Remarks:	Fed heavily on hooks and blossoms

Order:Family:	Lepidoptera: Geometridae
Species	Phigalia titea (Cramer)

Common name:	Spiny looper, Half-wing geometer; "Pittsville looper".
Larval Activity Period:	Mid May -June; univoltine
Larval description:	Body mostly dark brown or gray with conspicuous reddish yellow (orange) spots along the sides of the abdomen with large dark spines on its dorsum (abdominal segments). Mature larva reaches 2-2.5".
Remarks:	Adult female is wingless which may explain the larval feeding habits (larvae found in circular patches).
Order:Family:	Lepidoptera: Noctuidae
Species	*Ceramica Picta* (Harr.)
Common name:	Zebra Caterpillar
Larval Activity Period:	Mid June-July; univoltine
Larval description:	Quite Attractive; larva zebra-like in color only with yellow stripes.
Remarks:	Larvae found feeding on newly planted UW micropropagated vines (skeletonizing leaves).
Order:Family:	Lepidoptera: Gelechiidae
Species	Dichomeris ligulella Hbn. tentative
Common name:	Palmerworm; "Cruella"; "The Cowboy"
Larval Activity Period:	June
Larval description:	Skinny pale body with yellow to light brown head similar to young sparganothis.
Remarks:	Breakdance like fireworm when disturbed; were found tying uprights together similar to fireworm, sparganothis. Note: One of our specimens collected looked berry similar to the potato tuberworm Phthorimaea Operculella (Zeller), also a member of the Gelechiid Family.

Tim Dittl, Ocean Spray Cranberries

INSECTICIDE INFORMATION

Orthene (acephate): Available as a soluble powder for use on cranberries. The product is labeled for use through air, ground and chemigation. Application through chemigation is not recommended because the product is water soluble and may be washed off cranberry plants. Common rates are 1 to 1.33 pounds per acre. Labeled for the control of blackheaded fireworm, spanworms and sparganothis fruitworm. It is an organophosphate and acts as a contact and a stomach poison. It does provide some residual control for a period of 5 - 10 days. It is a safe product to handle and does not harm bees or fish. It has a **90 day PHI** and can be only applied **once** during the growing season.

Sevin (Carbaryl): There are may formulations of Sevin available for use on cranberries. It can be applied through ground, air and chemigation. Many growers may apply Sevin mixed with another insecticide such as Guthion or Pyrenone. It is in the carbamate insecticide class and acts as a stomach and contact poison. It is labeled for control of spanworms, blackheaded fireworm, cranberry fruitworm and sparganothis fruitworm. It may provide some residual control for a period of 3-5 days. It has a **1 day PHI**. It is safe to humans and fish. Toxicity to bees varies with formulation.

Guthion (azinphos-methyl): There are many formulations available for use on cranberries. It can be applied through air, ground and chemigation systems. It is an organophosphate and acts as a contact and stomach poison. Growers may see residual control for a period of 5-9 days. There is a **21 day PHI** and maximum of three applications per season with **14 days between applications.** It s recommended for control of blackheaded fireworm, spanworms, cranberry and sparganothis fruitworms. Guthion is toxic to humans, bees and fish. It is recommended that you hold water for at least 5 days following application.

Diazinon (diazinon): Several formulations are available for use on cranberries. Labeled applications methods will vary with manufacturer and formulation. Diazinon is an organophosphate and acts as a stomach and contact poison. You may expect to see some residual control for periods of up to 3-5 days. It has a **7 day PHI**. It is labeled for control of blackheaded fireworm, spanworms, sparganothis and cranberry fruitworms. It is toxic to birds, bees and humans. It is recommended to hold water for at least 3 days following application.

Lorsban (chlorpyriphos): It is available as a liquid for use on cranberries. Common rates range from 2-3 pints per acre. It can be applied through air, ground and chemigation systems. It is an organophosphate and acts as a stomach and contact poison. You may see some residual

control for 3-7 days. It has a **60 day PHI** and can be applied only **twice** during the growing season. It is labeled for the control of fruitworm, spanworms, cranberry and sparganothis fruitworms. It is toxic to fish, bees, and humans. It is recommended that you hold water for at least **5 days** following application.

Pyrenone (pyrthrin): The product is available as a liquid for use on cranberries. It is a natural occurring insecticide obtained from the Pyrethrum flower (a chrysanthemum). It may be applied through air, ground and chemigation systems. Many growers may tank mix pyrenone with another insecticide as an excitor. It is a contact poison and has a residual of 1 day or less. There is **no PHI**. Many growers use it to control fireworm, fruiworm and spanworms. It is safe to humans and bees. It may be toxic to some fish.

BT's (*Bacillis thuringiensis*): several formulations are available for use on cranberries and the rates vary by manufacturer. They are labeled for use through air and aerial applications. Do not chemigate. BT's act as a stomach poison and offer residual control for 1-2 days (depends on sunlight and rainfall/irrigation). There is **no PHI.** The should be applied with a spreader/sticker and possibly a feeding stimulant. It is labeled for control of spanworms, leafrollers and armyworms. It is effective against young larvae. Growers may need to make 2-3 applications at 3-5 day intervals for sufficient control of young fireworm and spanworm larvae. BT's are safe to humans, bees and fish.

Nematodes: Beneficial nematodes are available for use on cranberry for control of the larvae of cranberry girdler. They should be applied approximately 2 weeks after peak flight. They are labeled for use through chemigation, ground and aerial application equipment. Nematodes should be applied in the evenings and irrigated into the soil to prevent them from photodecomposition. There is residual activity in the soil for **2-3 weeks**. Nematodes have **no PHI** and are safe to humans, bees and fish. They should be applied at the rate of 2 billion per acre.

As always, please consult the package label and Extension bulletin Cranberry Pest Management in Wisconsin (A3276) for correct pesticide rates. (*See your county Extension office if you don't have a copy of the bulletin*).

Leroy Kummer, Ocean Spray Cranberries

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REMINDERS

From time to time I hear reports of growers making applications of pesticides that are not legal. Cooperative Extension is not in the enforcement business, instead we are educators. Liquid 2,4-D is not labeled for cranberries in Wisconsin, even as a wiper application. Roundup is not to be used on cranberry until after bloom, and is only to be used as a wiper application.

Excuses I hear is that other growers are doing this or that growers in other regions are doing this. Remember you are smarter than they are. You will use only labeled materials so you won't have vine damage nor illegal chemical residues. It is against the law to apply pesticides in a manner inconsistent with the label.

Teryl Roper, UW-Horticulture.