Cooperative Extension
Long Beach Research & Extension Unit
Long Beach WA 98613

CRANBERRY VINE

July 1998

MEETINGS/CALENDAR

Pre-Cranberry Field Day Celebration. There will be a potluck (local growers will provide the food) Sunday evening at 7:00 at the station in the auditorium. Visitors are invited as our guests.

PCCRF Annual Meeting. Monday morning at 7:30, just before Field Day begins, in the auditorium at the Station. Continental breakfast will be provided.

Cranberry Field Day. Field day will be held on **Monday**, July 27, 1998, from 8:30 a.m. to 3:30 p.m. at the WSU Research Station on Pioneer Road north of Long Beach. A full day of meetings and exhibits is planned; please see the agenda enclosed. Pesticide credits will be given. Hope to see you there–it's worthwhile!

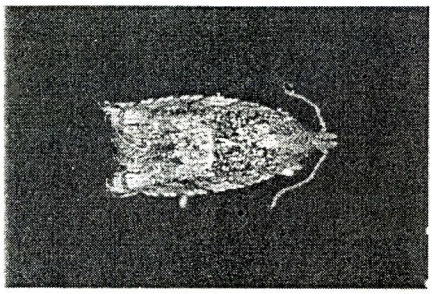
Unwanted Pesticide Turn-in: The WSDA is sponsoring a turn-in program in South Bend on August 21. You must sign up by July 24 to participate. Call Ron, 360-902-2046 or Mary Ann, 360- 902-2056 at the WSDA to find out about signing up. Remember that this the only inexpensive way to deal with pesticides that are no longer registered and have lost their tolerance on cranberries. There are no strings attached. This would included products such as Dalapon. Also, remember that some products which still have a tolerance (such as Chloro-IPC, malathion, Dyrene and Difolatan) could be revoked before you have a chance to use it again next year.

BOG MANAGEMENT

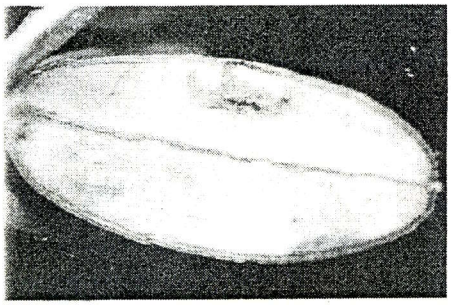
New Insects. Cranberry fruitworm and cranberry tipworm have been found on several beds over the past few years. These are not an economic problem at this time but could cause serious losses if populations increase. Pheromone traps are being used to monitor fruitworm. Look for cupping of the shoot tips as a sign of tipworm problems. Call me if you think you have a problem.

Fireworm Control. Thanks to The Cranberry Institute and the Washington State Commission on Pesticide Registration, Dr. Steven Booth and his able assistants, Brian Maupin, and Kim Patten, continue to roam the entomological horizons for new insecticides and techniques to manage blackheaded fireworm. Early season trials showed that Confirm, the new growth accelerating compound currently registered under a Section 18C in WA, substantially suppressed larval populations compared to untreated check plots. However, several other materials, including those based on the insect parasitic bacteria *Bacillus thuringiensis* (*B.t.*) (Mattch and Crymax) were also quite effective in small plot trials. Accordingly, upcoming trials against second generation larvae will focus on appropriate number and timing of Confirm and *B.t.*-based insecticides for optimum suppression.

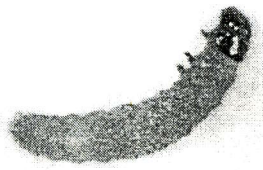
Most newer insecticides target young, exposed, and feeding larvae before they become webbed inside developing flowers or berries. Consequently, good suppression depends on hitting this "window of vulnerability". Fireworm destruction can be improved if you brush up on your fireworm searching techniques by looking for eggs and larvae in your beds before you spray. First generation moths are flying now, but length of time before eggs are laid can be extended by cool temperatures. Eggs are difficult to find, especially after larvae have hatched, but are visible through a hand lens. Very young larvae are less than ⅛" in length and hard to see, but should be sought, as this is the vulnerable life stage. Young larvae feed on exposed foliage before entering a webbed upright, where even contact pesticides do not penetrate easily. Applications of insecticides aimed at young larvae should be scheduled now for McFarlin but likely are too late for Stevens. Use safer products such as No Mate, *B.t.s* and Confirm and monitor closely. If they fail to provide control, then rely on traditional insecticides.



Adults are ~¼" long with characteristic silver and gold bands across the wings.



Yellow eggs are laid on the under side of leaves. Larvae, especially the eyes, become visible as the egg matures.



Look closely inside webbed uprights for blackheaded fireworm larvae. This is a later instar (~¼" long). Smaller larvae are very thin and yellowish.

Girdler Control. These insects can devastate a cranberry bed. So far we don't really have a good barometer for threshold levels causing damage. Thus, it is difficult to know if you really should apply Diazinon 14 G. Trap counts indicate application timings (14 days after peak flight), but are not really very meaningful for threshold data. Tradition says that applications are needed if more than 25 males are caught during the season. Additional information must be considered: history of girdler damage (once infested it make take several years to clean up a site), number of moths you see jumping up as you walk through the beds, and when you last sanded. Consider spot treating the hot spots if nothing else. We advise against spraying for moths, but using a bee safe material like Pyrenone may help. Consider temporary summer flooding (August) and/or winter sanding (1 inch of sand) as possible solutions.

Fertilizing. Fruit set is one of the most important times to apply nitrogen. Growers should try to put out 25 to 30% of their total nitrogen at this time. Adjustments in total year nitrogen should be made based on plant vigor, crop load, and weather. Vines on rich soil with light crops need very little to no nitrogen; vines on sand with a heavy crop can hardly be over fertilized, especially if they have Casoron stress.

Irrigation. Over-watering especially of new plantings, is one of the most common problems I see. If in doubt, install a tensiometer, or look for signs of over watering like liverwort, fungus gnats , marsh St. John's wort, reddish colored cranberry leaves and/or continually saturated soil. In general, it is best to irrigate in early morning to decrease the likelihood of diseases.

New Plantings: This summer is a good time to make arrangements for vines for your new planting in 1999. Don't buy something unless you know what you are getting. Consider getting DNA verification for trueness to type. Look for beds with consistently high production, free of weeds, good vigor, and little or no off-types within the beds (you can usually tell by a difference in vine color). Many of these features cannot be observed during the dormant season. Come and take a look at the variety trials at the PCCRF to make some notes on which new varieties you may or may not want to plant. We have the following varieties: Pilgrim, Ben Lear, Wilcox, Gryleski 1, 2 and 3, #35, Franklin, Howe, Stevens, Cropper, several McFarlin strains, AJ, Beckwith, and Bergman. Some are great, some are good, and some are worthless.

Red leaf spot on new beds. Rapid growth will promote this disease. It is not serious but can slow vine fill-in time. If you have a severe infestation consider an application of Mancozeb for control.

Weed Control.

Lotus. I've noticed that Lotus is still a problem on several farms. Growers who are wiping with Roundup should try switching to 1 to 2% Stinger solution

instead. It provides similar control with less risk to the vines.

Grass. A 1% Poast solution is an important clean-up tool for grass control in bearing beds, bear in mind the 60 day PHI. To avoid phytotoxicity to cranberries, don't spray on hot days, use a low rate of surfactant (0.5%), and don't spray to runoff. Vigorous stands of perennial grass may require more than one application.

Commercial Bumble Bees. Many growers have been using commercial bumble bees for pollination. Hive quality can be checked by entry/exit counts during good weather. Observe the hive for at least five minutes and across several time periods. If the average count is less than 1 per minute then the colony is weak; if it is between 2 and 4 it is adequate; and if greater than 4 it is quite good. It usually takes several weeks after placement for colonies to become strong enough to do a good job of pollination. Another thing to check is hive robbing by honey bees. Honey bees are opportunist feeders and can quickly destroy a valuable bumble bee colony. Change the location of the bumble bee colony as soon as robbers are noticed. Bumble bee colonies are also very susceptible to several parasites. By early to mid-July, many colonies in the Pacific Northwest become infested with wax moth larvae and an internal fly parasite called *Brachicoma*. These parasites will devastate your high priced colonies rather quickly. At this point nothing can be done about *Brachicoma*, but Bt's can be used for wax moth control. Based on previous work by Rod Macfarlane and I, we recommend applying a powdered Bt formulation to the nest weekly. Call me if you would like more information.

This is a good year to look at background populations of native pollinators in your beds. The winter was mild and not too wet. Most beds have a record number of bumble bees this year. When averaged over several counts, good numbers are greater than one bumble bee in 100 ft^2 (10' by 10'); poor counts are less than one bee per 1000 ft^2 (33' by 33'). These numbers are important to gather in order to track pollination problems that you may encounter.

Pollination. For good fruit set in cranberry several events must occur within a short time sequence: viable pollen must be transferred to a receptive stigma and the germinating pollen must grow down the style and fertilize a receptive ovule. Jennifer Bair, a recent graduate student, worked out those sequences for Stevens, Pilgrim and McFarlin in Washington. The table below outlines the time frames during which those events can occur for cranberries. You can use it to assess why you did or did not get good fruit set this year.

Event	Average Time Frame Across Varieties
Stigma receptive to pollen	From 3 to 20 days after flower opening
Period of ovule viability	From 0 to 14 days after flower opening
Length of pollen viability in the flower	12 days after flower opening
Length of pollen viability after shed from flower	6 to 8 hours
Length of time for pollen tube growth down style	2 days
Time period for maximum fruit set	7 to 10 days after flowers opening
Optimal pollination window	3 to 10 days after flowers opening

This appears to be one of those years when some McFarlin strains will continue to bloom well past the time of bee removal. Our data suggest that these late blooming McFarlin flowers can set fruit if pollinated and contribute to yield. If bees are being removed and there is a lot of bloom left, the best solution is to make sure that you don't kill off any of the foraging bumble bees working those beds by avoiding direct contact with insecticides. Therefore, do not spray any insecticides during the day; instead, a late evening application is advised.

MISCELLANEOUS

Wetlands: There still remains a myriad of confusion concerning what a cranberry grower can or can not do in wetlands with and without a permit. The laws and regulations are complicated; therefore, it is best to call the Army Corps of Engineers whenever you are considering doing something in wetlands (Gail Terzi at 206-764-3495, ext. 6903).

Commentary on the cost of doing business. It is becoming more and more costly to farm in today's environment The contrast is stark when you add up the

regulatory costs now compared to five years ago. To put in five new acres, a grower must now pay for wetland delineation, permit fees and mitigation plans which can easily come to $3,000. He also may have to pay for some sort of wetland mitigation. This can be several thousand dollars per acre. On top of this, he may need to pay for installing various BMP's such as sprinkler guards and ditch covering which could add another $500/acre. Furthermore, you need to consider the cost of dead time, like going to regulatory and legislative meetings to assure your right to farm.

Finally, the cost of pesticides likely will double in the next several years as we lose the organophosphate insecticides and replace them with more expensive bio-rational insecticides. Rather than $10 to $20/application/acre, look at $30 to $40/application/acre. Even growers with 50 year-old McFarlin beds will have to face some of these additional costs of farming. The take-home issue of this diatribe is that, in order to survive as farmers, new paradigms must be found. If the break-even cost was 50 to 60 bbl/acre in 1995, it could be 80 to 110 bbl/acre in 2005. Changes that you make today will assure your survival five years from now. If you plan to buy more cranberry beds, or expand or buy for the first time, your business plan should be adjusted for this higher cost of farming at a possible lower level of return on the fruit. I suspect that we will be seeing even more cranberry farms for sale as these financial pressures become reality. Only cost efficient farms will survive.

WEATHER

	Rainfall (Inches)					Growing Degree Days				
Month	1998	1997	1996	1995	20 yr av.	1998	1997	1996	1995	10 yr av.
January	18.5	14.9	9.8	14.9	10.8	58	43	51	108	40
February	11.4	5.6	13.1	7.4	9.3	69	21	86	84	55
March	10.2	16.2	3.4	8.3	9.5	97	38	108	90	72
April	3.0	6.5	12.9	7.4	5.6	99	91	190	133	116
May	3.8	4.7	4.3	2.8	3.8	265	344	231	280	216
June	1.8	5.1	1.8	3.0	2.8	350	362	315	372	323
July		1.2	1.6	0.9	1.9		476	460	516	421
August		2.7	1.0	1.6	1.7		543	440	418	440
September		6.9	2.7	3.9	4.1		477	385	514	363
October		15.6	11.5	10.0	6.5		229	245	268	217
November		6.5	14.2	17.3	11.4		144	67	183	99
December		9.0	18.4	13.7	12.6		38	20	82	41
TOTAL		94.7	94.7	91.2	80.5		2806	2598	3048	2402

COOPERATIVE EXTENSION
Washington State University
Long Beach Research and Extension Unit

Dr. Kim Patten,
Associate Horticulturist
e-mail: pattenk@coopext.cahe.wsu.edu
phone and FAX: 360-642-2031
mobile phone: 503-396-0048

COOPERATIVE EXTENSION
Washington State University
Long Beach Research and Extension Unit

TENTATIVE AGENDA
WASHINGTON STATE UNIVERSITY CRANBERRY FIELD DAY - 1998
Long Beach Research & Extension Unit
Monday, July 27, 1998

8:30	Coffee and doughnuts; Registration and Exhibitor Displays
9:00 - 10:30	Dr. Kim Patten - WSU - Long Beach: Welcome; The past 75 and future 25 years of cranberry research; Exciting new weed control options.
	Dr. Peter Bristow - WSU - Puyallup: Rose bloom - why so much this year? Low risk fungicides for cranberries.
	Dr. Deborah Henderson - E. S. Cropconsult Ltd.: Cranberry girdler - new methods to monitor this pest more accurately.
	Dr. Steve Booth - PCCRF: Softer insecticides and improved tactics to manage blackheaded fireworm.
10:20 - 10:40	Break
10:45 - 12:00	Tom Mueller - Army Corps of Engineers: What cranberry farmers can and cannot do in wetlands without a permit.
	Brian Mauza - Ocean Spray, British Columbia: Clay, sawdust and rooting cuttings - growers' experiences with new planting practices in British Columbia.
	Gary Deziel - The Cranberry Institute: FQPA and cranberry - update on the laws and progress in the field.
	Barbara Larson: Nutritional practices of British Columbia cranberry growers - An overview.
	Malcolm McPhail - PCCRF: Update.
12:00 - 1:30	Lunch - Salmon barbecue, $7.00. Sponsored by the Pacific Coast Cranberry Research Foundation (all proceeds are used to help support cranberry research on the West Coast).
1:30 - 3:00	Sue Butkewich and Andy Broaddus - Ocean Spray: Weed control with new herbicides.
	Kevin Talbot - Ocean Spray: Fireworm - what happened this year and what it means.
	Tours of research plots - variety trials, fertility and weed research.

Commercial exhibits

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