June 2008

Meetings

Cranberry Field Day, Thursday, July 31. Registration at 8:30, program 9:00 am to 2:00 pm, salmon barbecue lunch at noon and a grower potluck dinner that evening at 6 pm. A cranberry grower west coast advisory board meeting is scheduled for Friday morning.

This year's program will feature two unique agenda items. First, Ocean Spray is sponsoring a special session on bed renovation. This will include a series of speakers with expertise in cost, land preparation, irrigation systems, new vine handling and planting, fertilization, sanding, vine density, vine cost, plugs or prunings, new planting nutrition and irrigation, vine handling, renovation timing, new-planting insects, diseases and weed management, new varieties, vine purity, flower bud management, and renovation economic payback time.

This will be a comprehensive coverage on what it takes to have a state-of-the-art renovation. Speakers to date include growers from Washington, Oregon, British Columbia, and maybe back east, Nick Vorsa, the cranberry breeder from Rutgers, and Joe Deverna and Michael Grugan from Ocean Spray.

Second, we will have two legal experts on inheritance who will address how to set your farm up to hand down to the next generation with minimal tax repercussions.

Field Day 2008, Bandon, Oregon: Oregon growers have a tentative date for their Cranberry Farm Science Review for Thursday, August 28, from 8 am-12 pm. For more information call or email Linda White, OSU Extension at 541-752-5263; Linda.White@oregonstate.edu.

Pest Management

Late crop development: At this time we are at least two weeks behind in stage of crop development. Late development often coincides with reduced yields, especially with McFarlins. Growing degree days for January to April are the lowest we have ever recorded. Hopefully we will get some warmer weather in June to help catch up. This lateness has some ramifications for rose bloom, twig blight, fireworm, tipworm, girdler and weevil management. Insect hatches are later, and much more spread out.

Growers should proceed with caution using historical timings, and instead rely on scouting, sweeping and pheromone trap data. More than one application may be needed for control during an asynchronous hatch. Growers who only put out one fireworm application in early May likely missed the first generation entirely and may have a problem with second generation.

New insecticides: There are several new insecticides (Assail, Avaunt and Delegate) available for use in 2008. We don't have a large enough data base yet to make definitive inferences about their overall usefulness, but here is an overview of where they might fit in an IPM plan.

Assail: Basic information -- rates 0.8 to 3 oz of the 70 WP /ac, cost per application of $8 to $16/ac, 7 days PHI, moderately toxic to pollinators, 12 hour re-entry. Activity information – mainly works by ingestion, but reported to also work as an ovicide and has systemic activity. Based on our data, it works on fireworm and adult blackvine weevils. It also has potential to work on tipworm, but those data are pending.

Avaunt: Basic information – rate 6 oz/ac with an approximate cost per application of $32/ac, 30 days PHI, minor risk to pollinators, 12 hour re-entry. Activity information – works by ingestion. Based on our data, it has about the same level of efficacy on fireworm as Intrepid. It may have activity on blackvine weevil (data pending), but has no activity on tipworm.

Delegate: Basic information – rates 3 to 6 oz/ac with an approximate cost per application of $20 to $40/ac, 21 days PHI, moderately toxic to pollinators, 4 hour re-entry. Activity information – mainly works by ingestion, but reported to also have systemic activity. Based on our data, it works very well on fireworm. On several plots this year the chemigated high rate of Delegate performed on par with Diazinon. It also has potential to work on tipworm, but those data are pending.

What is the bottom line? The real fit of these chemistries has yet to be determined. The fact that they may have dual activity on tipworm and/or adult weevils and are more much pollinator and environmentally friendly than traditional organophosphates offers real potential. I also think that they may prove to be much better than our current reduced-risk insecticides. Our comparative data to date indicated they all work great when broadcast-applied on fireworm, but their efficacy relative to diazinon is reduced when applied through chemigation. I would encourage growers to try these insecticides and let me know what they think. Of the three, Delegate might have the edge for fireworm control, Assail, however is cheaper and provides weevil control.

Old insecticides: This is the last year to use up any remaining Diazinon 14G for girdler control. Our SLN will expire in 2009 and will not be renewed.

Weevil control: I have seen numerous beds with significant weevil damage this spring. Once you have an infestation of blackvine weevils, it is almost impossible to eradicate them using just one tool. Because one female can lay hundreds of eggs, it only takes a few rogue females to maintain damaging populations on beds. Because larvae are difficult to control, the focus should be on killing as many newly emerging adults as possible before they have a chance to lay eggs. We have numerous new management tools to help reduce weevil damage.

Here is a calendar of weevil control for you to consider.

Post-harvest to March: Admire -- provides about 50% control on peat soil, 90% in sand soil; earlier applications are better, ~$100/ac/application.

March to April: Cold-tolerant nematodes -- appear to provide up to 80 to 90% control, but are expensive at $1000/ac/application. If nothing else, consider spot-treating all affected areas. Areas of beds which are showing signs of fresh weevil injury (turning

off-color after a hot day) can be sanded to prevent those affected areas from dying.

June, when adults first emerge: Cryolite bait (~50 to 80% effective, but short field life makes repeat applications necessary, ~120^{+}/ac/application). Avaunt and/or Assail --field efficacy unknown, but our feeding studies have shown good knockdown activity. Use caution with pollinators, apply all chemicals at night and consider a morning washoff (~$16 to 32/ac/application).

July (post-bee removal): Actara, Avaunt, and/or Assail can be used to provide control of remaining actively feeding adult weevils. Because many females would have already laid the bulk of their eggs, this treatment by itself will not be adequate. Use night-sweeping data to determine if this treatment is necessary or if more than one application is required. See earlier comments on Avaunt and Assail.

Late July to August: Nematodes for control of young larvae, 0 to 90% effective depending on all the right conditions (~$400 to $1000/ac/application, depending on species). If you can't afford total coverage, use these for spot treating around all affected areas.

Take home message: if you have had serious damage, consider focusing on killing as many adults as possible before they lay eggs. This will take a concerted and repeated control effort and require frequent nighttime sweeping for proper timing.

Herbicide recommendations: The Section 3 label of Callisto is official, no more Section 18's. The Section 3 label has the same wording as the Section 18. It is available on-line at http://www.cdms.net/LDat/ld56N023.pdf).

Since growers have had lots of experience with Callisto over the past several years, I won't expand on recommendations. However, I still hear concerns about phytotoxicity during bloom. In general this hasn't been a problem, but there are exceptions. These appear to be from surfactant phytotoxicity associated with using Callisto on hot days. Some growers have told me that they have avoided this problem and gotten good weed control by leaving out the surfactant in these circumstances.

Fungicide recommendation: Our research hasn't shown major consistent advantages to early timing of fungicides to reduce fruit rot. We also have seen consistent benefits of Indar or Abound on reducing fruit rot. However, a combination of Indar and Abound applied mid-bloom is looking very promising in areas of the US with bad fruit rot (New Jersey). If you've been plagued with high rot or poor keeping quality, you may want to consider evaluating this combination mid-bloom.

I've seen a little twig blight showing up on some beds this spring. To prevent beds from being seriously infested, it is important to protect this year's growth with fungicides for at least 4-6 weeks following fruit set. The traditional chlorothalonil and mancozeb (non-copper based) fungicides all show good efficacy.

Cottonball showed up on a few farms last year. Mid-bloom timing of Indar is recommended if you have a problem. Abound also has activity on cottonball, but is less active than Indar.

Crop Management

Planning for new plantings: The increase in demand for cranberries has spurred the need for more new plantings. Based on what I've seen in the PNW over the past 15 years, the single most important factor for long-term success is careful selection of the vines. Are they the most productive vines, are they pure, and are there enough of them to fill in the ground fast?

One solution to this problem is dedicating one bed or a part of a bed for propagation only. To work best, one would want to have the vines

DNA tested to be assured of their purity and authenticity. You would then grow them to prevent fruiting (prevents off-type seedlings from coming in). One way to do this is to prune the bed using a sickle bar mower every year just below the tip to remove any fruit bud and leave plenty of uprights to next year's growth. The bed would get ample nitrogen, fungicides and insecticides and be kept weed-free.

One grower I know who does this claims he get eight tons of vines per year per acre. Thus one acre of nursery bed provides enough to plant four acres every year. He claims the sickle bar mower does not set the bed back at all compared to traditional mowing. In theory, your nursery bed would not need to be flooded and therefore could be grown in a different location than your cranberry farm.

BRIX: Cranberries grown in the PNW are blessed with the potential for higher than normal BRIX. With a payment incentive based on BRIX, it makes sense that growers should base their harvest timing and sequence on BRIX. A simple hand-held refractometer (0 to 30% or 0 to 10%) can be purchased for less than $200 (Goggle "hand-held refractometer" for purchase options) and be used to track and compare changes in BRIX.

In general, BRIX continue to increase with maturity and eventually level off sometime in October. The differences in returns for just ½% BRIX could be considerable.

Last year we tracked BRIX in McFarlin, Stevens and Pilgrim in several beds. On average each bed gained ~0.2% BRIX between 9/24/07 to 10/08/07. BRIX are normally higher for Stevens than McFarlin or Pilgrim. Based on our new variety trials, Stevens also had slightly higher BRIX than the new varieties released from New Jersey. Past history may not be a good index of BRIX as it varies dramatically by farm, year and variety.

To measure BRIX, take several handfuls of samples from a bed (not just top fruit along the edge) and squeeze juice out of a composite sample with something like a garlic or lemon press. You should take several readings from a bed.

Pollination: For reasons not entirely known, several species of bumble bees have declined (*B. mixtus*) or entirely disappeared (*B. occidentialis*) over the past ten years. This year in particular, the bumble bee populations in southwest coastal Washington are very low. In addition, honeybee colonies coming off of cranberry beds have failed to thrive and in some cases have completely collapsed. This decline of bumble bee populations, honeybee colony collapse (HBCC) and this year's late bloom will again put our problems with pollination as a major limiting contributor to low yields in Washington.

Solutions to these problems have not been forthcoming. On the bumble bee front, commercial colonies are no longer available. There are attempts to look at commercializing some native bumble bee species and utilizing non-native commercial *Bombus* species that are currently forbidden west of the Rockies. Both of these options are years away from being available.

Solitary nesting bees, like Orchard Mason bees and related species, have not done well in any of our studies. They have emerged way too early for cranberry pollination and failed to maintain their populations.

With the exception of small isolated farms, honeybees remain our only real viable pollinator. Beekeepers, however, are showing strong reluctance to supply colonies in the future. This would cause catastrophic crop failure. Consequently, many cranberry growers have made direct out-of-pocket contributions to research to help fund work on HBCC. One of those projects this year will be

helping a team of bee scientists from the USDA Honey Bee Research Center in Tucson and WSU Pullman assess how colony health is affected by foraging in and around cranberry beds.

Here are a couple of things growers can do that might help pollination: 1) practice hive saturation; 2) remove competitive pollen sources; 3) minimize opportunities for pesticide poisoning and 4) maximize nectar flow. For hive saturation, aim for an average area-wide of approximately 2 hives per acre. This may mean you will have to compensate for a neighbor who only has 1 colony/ac. The two most competitive blooms we have data for (based on percentage of pollen) have been false dandelion and blackberry. The former is easily controlled along dikes and adjacent ground; the later might be too ubiquitous to do much about. As an interesting aside, the one situation we were able to find 100% cranberry collected in pollen traps during cranberry pollination was in Bandon, Oregon, on farms totally surrounded by miles of gorse.

Acute pesticide poisoning is very rare on cranberry farms, but can occur anytime an OP insecticide is used during bloom. Use caution and converse with beekeepers about any insecticide you need to use during bloom.

Lastly, what about nectar flow? There are times during bloom when bee foraging on beds goes from trace to a whorl of buzz, and there are also years when decent bee density is never reached. Most of the fluxes in bee density are related to nectar flows, which in itself are poorly understood and usually minor in cranberries. Based on other data in flowering plants, it can be inferred that any type of stress that reduces photosynthesis would reduce nectar flow. This would include water, herbicide, and a lack of sunshine. It usually takes ***sustained*** warm weather and plenty of sunshine for most flowers to yield nectar. The first real nectar flow doesn't normally occur during early bloom. What all this means to a grower is to avoid practices that might stress vines during bloom.

WEATHER HISTORY

	Precipitation						Growing Degree Days				
Month	**2005**	**2006**	**2007**	**2008**	**20 year average**		**2005**	**2006**	**2007**	**2008**	**20 year average**
January	8.4	20.9	6.9	10.5	12.2		102	30	9	4	45
February	3.0	4.7	10.4	5.4	8.0		44	26	33	16	44
March	7.9	7.8	11.0	9.7	8.6		103	29	66	12	71
April	9.0	4.3	4.1	5.3	6.3		112	90	104	43	125
May	4.8	4.8	2.1	2.5	3.6		304	208	205	225	250
June	1.4	4.7	2.8		2.9		334	345	294		344
July	2.2	0.7	3.6		1.4		417	399	495		451
August	0.7	.03	1.8		1.7		411	332	464		457
September	1.6	1.7	1.2		1.9		238	349	323		379
October	9.1	0.0	11.1		6.8		208	177	152		224
November	11.4	22.6	6.3		11.7		25	78	53		86
December	12.2	12.4	11.4		12.1		44	36	20		37
Totals	**71.6**	**84.7**	**72.7**		**77.0**		**2342**	**2099**	**2217**		**2519**

The following article was submitted by Tom Hoffmann, Technical Assistance Specialist at WSDA:

Initiating Change by Proxy:
Who will Determine the Future of Chemigation?

By definition, action by proxy authorizes someone to act for or in place of another. Presumably, when the authority to act is conferred, the appointer is unable or incapable of acting on his or her own behalf. However, under what circumstances is authorization no longer conferred or assigned, but relegated?

Background

An adaptation to irrigation systems, applying pesticides (chemigation) or fertilizers and soil amendments (fertigation) by means of irrigation water was first practiced in the early 1970s, with widespread adoption by the 1980s. However, the assessment of irrigation systems as a suitable pesticide application apparatus is only a recent consideration.

The Advent of Federal Legislation and State Rules

As chemigation and fertigation are not new, neither are the federal legislation nor state laws and rules that govern its use. On June 5, 1980, U.S. Congress authorized the United States Environmental Protection Agency (USEPA) to write guidelines that would ensure the safe and effective use of pesticides through irrigation systems. Product registrants were required to incorporate the language into revised labels by no later than April 30, 1988.

The Washington State Chemigation Rule (WAC 16-202-1001), which is based on the federal guidelines, became effective on October 31, 1988. The Washington State Fertigation Rule, which closely parallels the Chemigation Rule, was adopted on January 7, 1991.

Synopsis of Irrigation System Inspections by WSDA Staff

Since 2000, WSDA staff has performed more than 880 inspections on irrigation systems throughout the State for compliance with pesticide label provisions and state rule. Of those, less than 15 percent of the systems were compliant. As noted above, antipollution device requirements on irrigation systems have been a requirement for almost 20 years.

Public Participation and the Prospect for Chemigation

Public involvement in mitigating contributing factors that result in agricultural chemical misapplications are being prompted by a rising awareness of community exposure and acts with the knowledge that a reasonably foreseeable consequence of the conduct would wrongfully create substantial risk or serious injury to others or would result in harm to the environment? For instance, chemigation practices are routinely performed with the knowledge that the activity is in violation of label provisions or state rule.

Major uncertainties regarding the future of chemigation reside with the Clean Water Act, Safe Drinking Water Act, Endangered Species Protection Bulletins, and air monitoring. If applicators do not steward the use of pesticides, besides additional federal statutes and state laws and rules, local legislative governances may increasingly adopt ordinances to further restrict use. Codifying of pesticide use restrictions by local governances is becoming increasingly prevalent in Western Washington.

Continued grower availability of chemigation and fertigation as a production practice will be solely determined by those who practice it. The public sector is increasingly scrutinizing these practices with regard to their impact on human safety and environmental quality. By ensuring adequate system design and maintenance, adhering to existing safeguards, and practicing operator diligence, decisions concerning conditions of use may not be relegated to others.

Contact Information: To request additional information or to schedule an inspection of your irrigation system, please contact

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