

# Cranberry

## Crop Management Newsletter

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### DIAZINON G-14

The Wisconsin Department of Agriculture, Trade, and Consumer Protection has approved the accompanying state Special Local Need (SLN) registration for Diazinon G-14 (14% granular formulation) for use against cranberry girdler. The rate is 21 pounds per acre. The application restrictions from previous SLN labels still apply, including no aerial applications and no applications within 10 feet of center or perimeter ditches. Further, the label requires that WDATCP be notified at least 24 hours before an application. Read the entire label thoroughly for usage instructions and additional restrictions.

*Dan Mahr, UW-Madison Extension  
Entomologist*

### YIELDS AND HOT WEATHER

Growers throughout Wisconsin have been wondering how this hot weather in June and July will affect yields in October. Since weather patterns are unique from year to year, it is impossible to look at individual cases and draw broad conclusions. However, a little research has been done relating weather and yield. A study in New

Jersey examined the relationship between weather and yields for the period of 1906 to 1984 and two subsets within that time. These researchers found that temperature and sunshine are two important variables. In general, warm temperatures from mid-May to late June, mid-October to mid-November and cold temperatures in early-February through March corresponded to good yields. Sunny weather in early May through mid-June also corresponded to high yields. On the other hand, hot temperatures (above 90°F) during the immediate pre-bloom period (400 to 530 GDD) or during July corresponded to lower yields.

In a two year study of hybrid cranberry cultivars in the five cranberry growing states, we found that the rate of growth of cranberry fruit was best predicted by the number of moderate temperature days, between 60 and 85°F. This accounted for more than 80% of the variation in rate of fruit growth across states. One cool year in Wisconsin slowed fruit growth by 11 days compared to a more average year the year following. Including sunlight intensity improved the prediction above 90% accuracy.

A recent study of berry scald in New Jersey found that a severe scald event in 1990 included clear skies, air temperatures above 80°F, canopy

temperatures up to 106°F, soil temperatures at 1 inch at about 80°F, dry soils from lack of rainfall **AND** dry air (dewpoints <54°F). However, growers who sprinkle irrigated during the heat of the day reported much lower incidence of scald (<0.5%) than on unirrigated beds (≈25%). The rule of thumb used by New Jersey growers is to begin irrigation when air temperatures reach 84°F. Irrigation replaces lost soil moisture and serves to cool the vines from the cooler water temperatures and from evaporative cooling.

Extreme heat is stressful to cranberry vines. Since cranberries have a rudimentary root system, replacing water lost to the air is critical. Cranberries don't have good control of the openings in the leaves that allow water to evaporate, so when the plant is having a hard time keeping up with the demand for water they can't simply "close the holes". The optimal temperature for photosynthesis in cranberries is about 75°F and the rate of photosynthesis declines as temperatures are warmer or cooler than this.

One common symptom seen during hot weather is vine yellowing. The leaves may turn yellowish between the leaf veins. This usually appears in patches. These symptoms are rarely seen during cool years. I don't know of a remedy for vine yellowing except more moderate weather. Experience suggests that yellow leaves are less productive than green ones, thus fruit number or size may be reduced.

What can growers do to alleviate the detrimental effects of extremely hot weather? Four suggestions follow:

1. Make sure soil moisture is adequate and continuous. Irrigate in the mornings to saturate the root zone. Morning or evening irrigation minimizes evaporation.
2. Check soil temperatures. Unvined areas on sand may be very hot and will lose soil moisture quickly.

3. Irrigate during the heat of the day. Vine and soil temperatures will be reduced from the cooler water temperatures as well as from evaporation (although with dew points near 70 evaporation is very slow). Cycle irrigation on for 20 to 30 minutes to conserve water. Water droplets remaining on vines **DO NOT** act like little magnifying glasses leading to scald spots on vines. This has no basis in fact!
4. Consider draining mainlines if you plan to irrigate during the heat of the day. Water sitting in aluminum pipe heats up quickly and will scald vines when it is pumped through the sprinklers.

Careful thought and good management practices will allow you to beat the heat and still produce good yields.

*Teryl Roper, UW-Madison Extension Horticulturist*

## **MACHINERY COST ESTIMATE FOR CRANBERRY BOOM SPREADERS**

When calculating the cost of making a fertilizer or pesticide application one needs to consider all of the costs, not just the cost of the material to be applied. Dr. Paul Mitchell of the UW-Madison Dept. of Applied and Agricultural Economics made some rough estimates of what the cost of operating a cantilevered boom would be. In order to make these estimates certain assumptions had to be made. Obviously the full cost of operation would be different on every farm, but these estimates can be a place to begin.

The assumptions we made were that this was for a 90 foot boom pulled by a 100 HP tractor. Depreciation and interest expense are considered fixed costs. Labor, repairs & maintenance, and fuel & lubricants were considered variable costs. We also assumed 14 trips per year over the

entire marsh and calculations were made for different sized farms of 30, 60, or 90 acres.

Depreciation was figured as straight line depreciation over 15 years. Boom depreciation was estimated at \$1000 per year. Tractor depreciation was \$3333 per year. This depreciation is spread over the annual use, so it varies by farm size (Tables 1-3). The tractor is used for other purposes as well and total use is estimated at 500 hours per year thus depreciation is  $\$3333/500 = \$6.67$  per hour. At a spray rate of 7.5 acres per hour, depreciation is \$0.89 per acre per application.

Interest cost was figured at a 6% rate. Interest on the spreader was calculated to be \$2850 per year while interest on the tractor was figured at \$2100 per year. The per acre cost varies with farm size (Tables 1-3). Interest expense on the tractor is figured at \$0.56 per acre per application.

Labor was estimated with part-time labor at \$10/hour plus 7.7% benefits. If you cover 7.5 acres per hour this labor is \$1.44 per acre per application. Operator labor is figured at \$15.00/hour plus 7.7% benefits. In addition to the 7.5 acres per hour 10% overhead is figured for managing the part-time help, thus management cost is \$2.61 per acre per application.

Repairs and maintenance are calculated based on as purchase price x a repair factor per hour of use. Repair costs also vary by marsh size (Tables 1-3). Repairs on the tractor are \$3.08 per hour or \$0.45 per acre per application.

Diesel was calculated at \$1.80 per gallon (*perhaps too low today*). A 100 HP tractor uses 4.38 gallons per hour. Lubrication is figured as 15% of fuel cost. We assumed a 10% overhead on fuel cost to allow for time to refuel and lubricate in addition to the 7.5 acre per hour rate. The final cost for fuel and lubrication is \$1.33 per acre per application.

Tables 1.3 put all of the above information together by marsh size. Remember that these are estimates. Your costs will be different. Fixed costs such as depreciation and interest you incur if the machine is used or not. Variable costs are incurred only as the equipment is used. One could argue that labor will be on the marsh anyway, but they would be doing other things if not making an application. Labor could also be considered an opportunity cost. Management costs (your labor) are also real and tangible and must be included.

The bottom line is that it costs between \$10 and \$20/acre/application to use a boom spreader. The cost of application could equal or exceed the cost of the material being applied thus both costs must be considered when deciding about the cost of application.

This analysis was based on several assumptions. If you want results for different assumptions contact Dr. Paul Mitchell at UW-Madison (608-265-6514 or pdmitchell@wisc.edu).

Table 1. Cost of operation of a 90 foot boom spreader pulled by a 100 HP tractor over 30 acres in 2005.

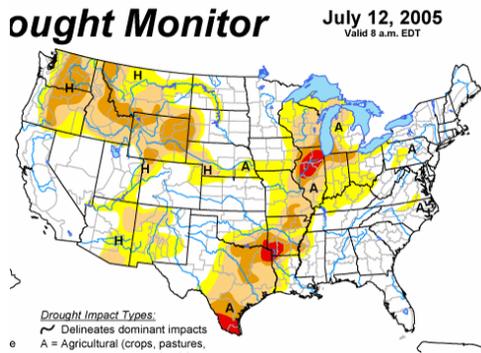
<b>Category</b>	<b>Spreader</b>	<b>Tractor</b>	<b>Total</b>
Depreciation	2.38	0.89	3.27
Interest	6.79	0.56	7.35
Labor	1.44	2.61	4.04
Fuel/Lube	0	1.33	1.33
Repairs/Maintenance	0.13	0.45	0.58
<b>Total</b>	<b>10.73</b>	<b>5.84</b>	<b>16.57</b>

Table 2. Cost of operation of a 90 foot boom spreader pulled by a 100 HP tractor over 60 acres in 2005.

Category	Spreader	Tractor	Total
Depreciation	1.19	0.89	2.08
Interest	3.39	0.56	3.95
Labor	1.44	2.61	4.04
Fuel/Lube	0	1.33	1.33
Repairs/Maintenance	0.06	0.45	0.52
Total	6.08	5.84	11.92

Table 3. Cost of operation of a 90 foot boom spreader pulled by a 100 HP tractor over 90 acres in 2005.

Category	Spreader	Tractor	Total
Depreciation	0.79	0.89	1.68
Interest	2.26	0.56	2.82
Labor	1.44	2.61	4.04
Fuel/Lube	0	1.33	1.33
Repairs/Maintenance	0.04	0.45	0.49
Total	4.53	5.84	10.37



The US drought monitor shows most of Wisconsin to be either abnormally dry or with a moderate drought.

**RESTRICTED USE PESTICIDE**

**Due to Avian and Aquatic Toxicity**

For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's Certification.

**SECTION 24 [c] REGISTRATION  
FOR DISTRIBUTION AND USE ONLY WITHIN THE STATE OF WISCONSIN**

# **DIAZINON G-14**

**EPA Reg. No. 34704-230**

**EPA SLN No. WI-050004**

**Expires: 12/31/2008**

**FOLLOW ALL APPLICABLE DIRECTIONS, RESTRICTIONS, WORKER PROTECTION STANDARD REQUIREMENTS, AND PRECAUTIONS ON THE EPA REGISTERED LABEL**

**THIS AND THE FULL EPA REGISTERED LABEL MUST BE IN POSSESSION OF USER AT THE TIME OF APPLICATION**

## **ENVIRONMENTAL HAZARDS**

This product is toxic to fish, birds, and wildlife including waterfowl. Birds and waterfowl feeding or drinking on treated areas may be killed. Do not exceed maximum permitted label rates, as higher rates significantly increase potential hazards to birds and waterfowl. Keep out of lakes, stream, ponds, tidal marshes, and estuaries. Do not apply to water that will be used for recreational purposes and human and livestock consumption. Shrimp and crab or other aquatic life are important resources. This product must not be used in areas where impact on threatened endangered species is likely. Contact the Wisconsin Department of Agriculture, Trade and Consumer Protection's Endangered Species program at 608-224-4538 for information pertaining to areas having threatened endangered species.

Regarding EPA's obligation to insure protection of federally endangered and threatened species from pesticide harm, the Wisconsin Department of Agriculture, Trade and Consumer Protection conducts an endangered species habitat program to assist growers and others with preventing harm to these species and furthering their conservation. Please see our web site ([http://www.datcp.state.wi.us/arm/environment/plants/endangered-species/photo\\_gallery.jsp](http://www.datcp.state.wi.us/arm/environment/plants/endangered-species/photo_gallery.jsp)) for species photos and information, or contact us for paper copies of this information or other help at 608/224-4538 or [ursula.petersen@datcp.state.wi.us](mailto:ursula.petersen@datcp.state.wi.us).

This pesticide is highly toxic to bees exposed to direct treatment or to residues remaining on the treated areas. Do not apply when bees are actively visiting the crop, cover crop, or weeds blooming in the treatment area. Applications should be timed to provide the maximum possible interval between treatment and the next period of bee activity.

## **DIRECTIONS FOR USE**

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

CROP	PEST	DIRECTIONS FOR USE
Cranberries	Cranberry Girdler ( <i>Chrysoteuchia topiaria</i> )	Broadcast 21 lbs. per acre (0.5 lbs. per 1000 sq. ft.), as first signs of girdler larvae appear, normally between July 21 and August 10. Growers using pheromone traps and Degree Day equipment should time their application For 180 – 200 DD (NF) after peak flight. NOTE: Be sure that granules fall into vines and are watered in by sprinkler or rainfall .

**PROHIBITIONS:**

- 1) Do not apply to bare ground.
- 2) Do not apply directly to any ditch, open water including lakes, streams or ponds. This prohibition also applies to small perimeter ditches located immediately along side production beds and center ditches in production beds. Do not apply within 10 feet of the perimeter and center ditches
- 3) Do not allow any discharge of water containing diazinon from production areas of the cranberry marsh to other surface waters for 7 days following application.
- 4) Grower MUST NOTIFY Wisconsin Department of Agriculture, Trade and Consumer Protections with in at least 24 hours prior to application of diazinon by calling (608) 224-4547.
- 5) Grower using this product under this SLN Label must allow the Department of Agriculture, Trade and Consumer Protection personnel access to properties where this product was used for the purpose of inspection and sampling of any ditch areas.
- 6) Apply only once per year.
- 7) Do Not apply within 7 days of harvest.
- 8) Application must be made on an individual bed basis.
- 9) Aerial application is prohibited.

Use in strict accordance with all other directions and cautions appearing on the full EPA label.

NOTE: Be sure that granules fall into vines and are incorporated in to the soil by sprinkler irrigation or by rainfall. Immediately after application run sprinklers for not less than 15 minutes nor more than 30 minutes. Twelve to twenty-four (12-24) hours after application run sprinklers for not less than 15 minutes nor more than 30 minutes. Except for frost protection, irrigation should be kept to a minimum for 7 days after application.

IMPORTANT: Before using the product, read and carefully observe directions, cautionary statements and other information appearing on the EPA registered product label. This product is sold subject to the Conditions of Sale, set forth on the container label.