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Cranberry Station Best Management Practices Guide - 2010 revision

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Weed Management

Hilary A. Sandler
University of Massachusetts - Amherst, hsandler@umass.edu

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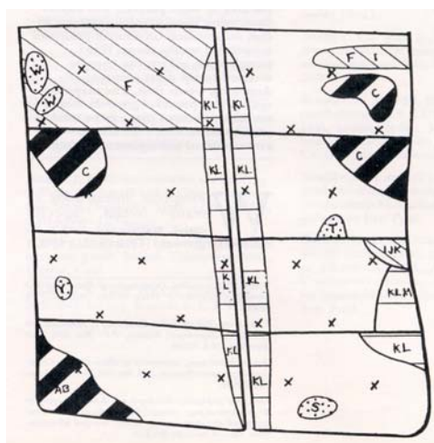
Weed Management

To select the best management practices for weed management, it is important to understand how weeds grow, how they affect cranberry yields, how weeds are affected by environmental factors, and how the various herbicides work. Often, using several strategies in an integrated program may produce better weed management than any single control measure alone.

Recommended Practices

Obtain and use weed identification guides and plant biology references.
Identification guides and general plant references are valuable resources for all cranberry growers. The success of any management strategy hinges upon the correct identification of the problem weed as well as knowledge of the plant's life cycle.

Scout for weeds and construct weed maps.
Map weeds to document weed type, severity, and location for future management decisions (treatment selection and application). Weed maps should be updated on an annual basis. For bogs with minimal or no weed infestations, notes on visual observations may serve as a suitable record.



Example of a weed map for a commercial cranberry farm. Striping and stippling indicate different priority ranks and letters denote weed species. Sprinkler heads are marked with an "x".

Know the difference between grasses, sedges and rushes. Postemergence grass herbicides, such as Poast, are only effective against true grasses. Sedges and rushes will not be controlled.

Scout often to detect the first sign of scum or algae on late water floods. If the algal infestation is severe, early withdrawal of the flood may be necessary.

Prioritize weed problems and establish a long-term management plan.
When weed problems are too numerous or severe to be dealt with in a single year, rank management priorities based on the likelihood of the weed to cause yield loss, its ability to spread, and the difficulty of control. Establish a long-term management plan for the top priority weeds. Refer to priority chart in Field Guide to Common Weeds on Cranberry Bogs in Southeastern Massachusetts as well as information in the current Cranberry Chart Book (http://scholarworks.umass.edu/cranchart/).

Make every effort to keep weeds from spreading onto the bogs. Maintain and encourage healthy vine growth to compete with weeds.

Start with a clean, weed-free bog and control weeds as they invade new bogs. Take all necessary steps to encourage good vine growth. Begin new plantings early in the season (before the end of May) if possible.

Manage weed problems when they are small and just getting established in the bog (i.e., hand-wipe or remove dewberries and sawbriers, remove dodder). Replant bare spots to keep weeds from becoming reestablished.

Mow dikes and other surrounding areas to prevent weeds and seeds from moving into the bog.

Weeds can be introduced when vines are sanded. Try to use clean sources of sand to minimize new inoculations of weed seeds.

Weed seeds that float (e.g., dodder) can be moved around in water. Consider this when making harvest plans.

Clean harvest equipment between bog systems to remove weed seeds.

Integrate different strategies for best possible dodder control.

Minimize infestations by maintaining thick, healthy vines with few weeds and bare spots. Eliminating early-season hosts, such as asters, narrow-leaf goldenrod, and loosestrife can be important.

Make preemergence herbicide applications prior to dodder emergence or soon thereafter. Scout for dodder emergence in bare spots to time herbicide applications properly. Apply the herbicide evenly and water immediately for at least 2 hours. Applications during cool/cloudy weather may be more effective.

With light infestations, hand removal of dodder early in the spring may prevent spread.

Yield losses and seed production from dodder that escapes control may be reduced by raking.

Minimize herbicide use whenever possible. Consider environmental and horticultural impacts of long-term/high rate herbicide use.

Selecting an herbicide should include consideration of environmental risks as well as other established criteria such as experience with the product and cost. Growers should consider alternating herbicides and using postemergence options.

Use the lowest effective rates. The lowest rate at which optimal weed control can be achieved may vary from bog to bog. Factors such as soil composition, weed density, and drainage can influence this rate. Spot treat if possible.

Fall applications of herbicides are generally not recommended.

Use cultural and non-chemical practices where possible.

Sanding and hand-weeding can be effective non-chemical alternatives for controlling some weeds. Use freshly excavated sand rather than stockpiled sand to minimize weed-seed contamination.

To suppress populations of weeds that prefer more alkaline soils, maintain soil pH below 5.

Remove flowers or wipe before plants go to seed to minimize production and dispersal of weed seeds.

Late water floods, summer re-floods, and fall floods reduce dewberry (running bramble) populations. Late water floods may retard the emergence of some weeds. Follow late water and summer floods with postemergence wipes in late summer to eliminate dewberries that survive the flood. Note that severe crop reduction is associated with summer floods.

Use techniques that will promote optimal application and performance.
Apply herbicides when vines and bogs are dry.

Preemergence herbicides (except Devrinol) should not be applied to new plantings for at least the first 12 months or until the vines are established. Norosac/Casoron should not be used until the vines are well established (usually the third year). Consider using postemergence herbicides and hand-pulling for control of invading grasses and perennial weeds.

Gephardt drop spreader delivering granular herbicide to the cranberry farm surface. Note white droplet of foam at left, which helps to guide the driver.

Do not apply Norosac/Casoron to bogs that will be sanded within 4-6 months or to stressed bogs. Use foam markers to insure proper application.

Water in granular herbicides (especially Norosac/ Casoron products) as soon as possible after application. Do not allow water to puddle on the soil or bog surface.

If you are unsure whether an herbicide will cause plant injury, first test the mixture on a small area. Symptoms should be visible within several days to a week or more, depending on the weather and herbicide/spray adjuvant used.

Calibrate application equipment as often as necessary to ensure proper delivery of herbicide material.
Yearly calibration is advised to check for changes in output due to wear of equipment components. Calibrate herbicide spreaders every time a new material is used.

Ground equipment is the preferred method of granular herbicide application, providing uniform coverage and minimal off-target exposure.

Consider weather and method(s) of application to minimize off-target exposure. Conditions favoring high humidity increase the potential for off-target injury with 2,4-D products. Do not apply these products when air temperatures are hot (85 F or above) to minimize herbicide volatilization and possible crop injury.

Applying postemergence grass herbicides during bloom or the heat of the day may cause plant injury. Blossoms are particularly sensitive to spray adjuvants/additives, especially crop oil.

Use check strips to evaluate herbicide performance and estimate weed pressure.
Compare treated and untreated areas to help you evaluate the performance of your herbicide and to establish the appropriate management strategy. If a small section of the bog is left untreated, a visual observation of the effectiveness of the herbicide application can be made. Check strips are also valuable in estimating actual weed pressure.

Use caution when applying fumigants.
Fumigants may be used as part of a renovation program. Do not use fumigants as a spot-treatment if any vines within a diked section will be harvested. However, if you are renovating an entire section, you can spot-treat a portion of that section with a fumigant.

Vapam and Basamid will control a variety of soilborne pests. Apply these products when 3-inch depth soil temperature is above 50°F. These materials are highly leachable so use only on bogs that can hold water. Do not allow material to get into surface water. Do not use where fumes may enter nearby houses. The fumigants, Vapam and Basamid, will kill fish if used improperly.

For removal of shallow-rooted weeds, wiping with glyphosate should be tried first. If control is not obtained (weeds persist or get worse), then consider fumigating.

Many growers have had good success fumigating in the fall. This timing is advantageous because planting can start in the early part of the next spring (early-mid April). A layer of sand (at least 3 inches) should be applied to the section after the fumigation, but before the winter flood. If you need to use heavy equipment to apply the sand, you should wait about 2 weeks after the fumigation. Otherwise, the seal may be disturbed and the vapors will be prematurely released.

Fumigating can be done in the spring. However, keep in mind that vine planting may be delayed until late May-early June or later, depending on soil conditions and weather. Do not plant until the chemical odor has disappeared from the soil (usually 2 weeks). Plant fast-growing seeds or seedlings (e.g., lettuce, beans, cabbage, or tomatoes) in a number of places in the treated area to test whether the fumigant is still in the soil. Be sure the fumigant has dissipated before planting cranberry vines.

Basamid application: Basamid is a granular material. Gas is released when the material degrades in the soil. Strip and/or rake bog surface prior to application. You may rototill the soil beforehand, but it is not necessary. The soil should be moist prior to treatment. Apply the Basamid and rototill as soon as possible. Water for 3-4 hr immediately after application.

Vapam application: Vapam is a water soluble liquid. When properly applied to the soil, the liquid is converted into a gaseous fumigant. For best results, rototill before application to loosen the soil deeply and thoroughly. One week before treatment, moisten the soil.

Vapam is typically applied through the irrigation system or by a tank truck set-up, though it may also be soil injected. If you are applying by sprinkler system, carefully read the label, paying particular attention to the 'precautions for use' section. Water in immediately for at least 3 hr to avoid evaporation. Rototilling after a Vapam application is not recommended. This may stir up new viable weed seeds which will not be controlled by the fumigant.

Keep accurate records.

Careful records of herbicide applications are essential for farm planning and performance evaluation. Use weed maps to plan long-term herbicide and weed management strategies. Herbicide application dates, impacts and responses of weeds to implemented control practices should be recorded.

For more information:

Cranberry chart book - management guide for Massachusetts. UMass Cranberry Station. http://scholarworks.umass.edu/cranchart/.

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Updated by Hilary Sandler 2010.

Weed Management Checklist

- ✓ Scout for weeds and correctly identify weeds prior to treatment.
- ✓ Use the lowest effective dose.
- ✓ Prevent introduction of weed seeds by using clean sand and plant material.
- ✓ Prioritize weed problems when numerous weeds are present on the farm.
- ✓ Calibrate application equipment yearly.
- ✓ Use untreated check strips and keep accurate records.
- ✓ Integrate chemical and cultural management options whenever possible.