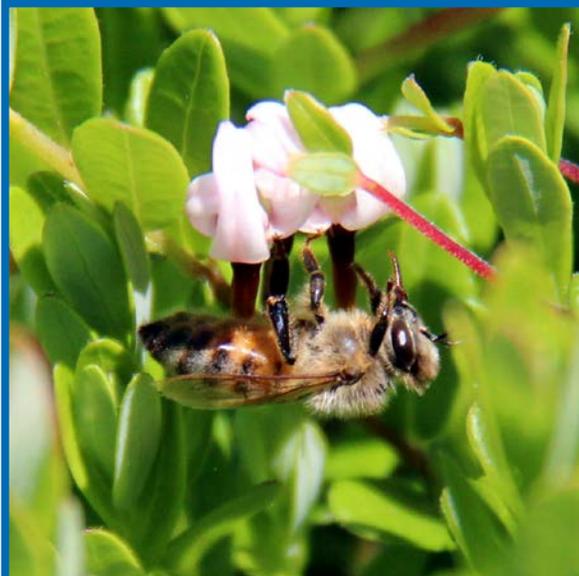


Improving Cranberry Pollination

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Successful cranberry production relies on cranberry flowers being adequately pollinated. This fact sheet discusses several strategies that can be used to optimize pollination.

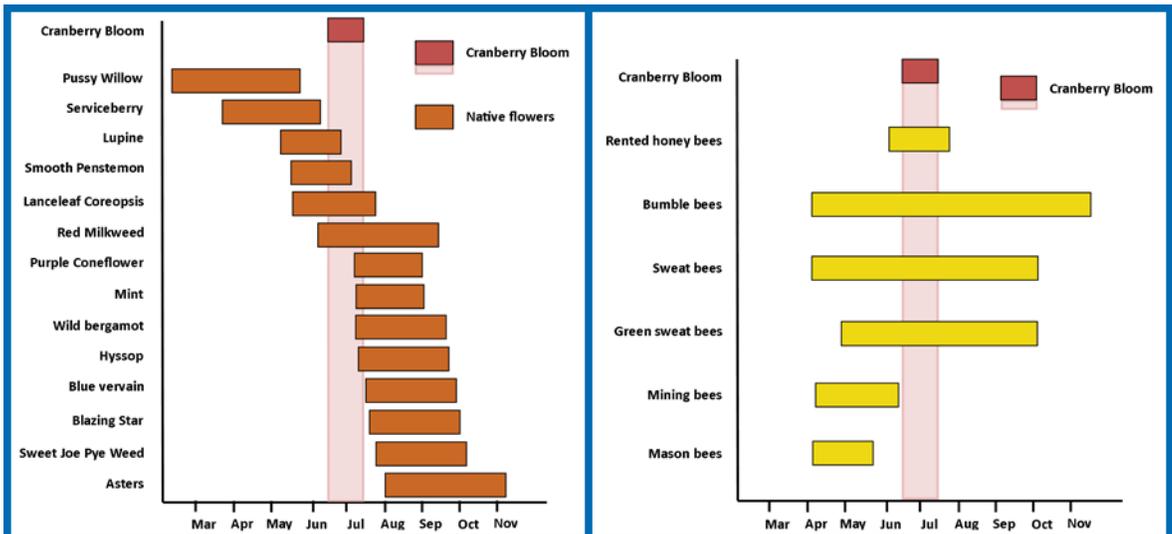


Proper pollination is important for successful cranberry production. (Photo courtesy of Johnston's Cranberry Marsh & Muskoka Lakes Winery, Ontario, Canada).

Increase and diversify plants attractive to pollinators. Having both native pollinators and honeybees on your marsh serves as an “insurance policy” to promote good fruit set. Providing diverse sources of nectar and pollen (e.g., through the use of a pollinator garden), will encourage native pollinators to establish themselves long-term near your marsh and improve the health of honeybee colonies. When planning a pollinator garden, select a site that is sunny and $\frac{1}{3}$ to one mile away from your marsh. Some common native plants to consider for a pollinator garden are listed in the figure below, with their approximate bloom times.

Promote nesting habitats for wild bees. Wild bees need places to build their nests. Approximately 70% of native bees nest underground and need areas of bare, sandy or loamy soil to build their nests. The remaining 30% build nests by tunneling into stumps or twigs, or by constructing nests in cavities (e.g., in mounds of tall grasses, in debris piles, or in deserted rodent nests). Native pollinators typically travel from $\frac{1}{3}$ to one mile from their nests to feed, so suitable nesting areas need to be within this distance of a marsh for the bees to contribute to cranberry pollination.

Several programs can assist with the costs of creating pollinator habitats. These include the USDA Environmental Quality Incentives Program, the USDA Farm Service Agency, the Wisconsin DNR Land Owner Incentive Program and the Bayer Crop Science Feed a Bee Initiative.



LEFT: Approximate bloom times for plants that are recommended to be grown near cranberry marshes as a supplemental nectar and pollen source for cranberry pollinators. **RIGHT:** Approximate flight periods for major groups of bees (including native species) found in cranberry marshes. The pink columns in both graphs represent the approximate time of cranberry bloom.



Reduce pesticide exposure: You can optimize bee health by creating a pollinator protection plan that promotes:

- **Practicing integrated pest management (IPM).** IPM, which involves monitoring for pests and using a variety of appropriate management strategies, is used by most Wisconsin cranberry growers.
- **Spraying when bees are least active.** Most bees forage from early morning until shortly before sunset. Therefore, the best time to apply a pesticide, especially during bloom (if allowed by the pesticide label), is in the late evening or at night.
- **Limiting pesticide drift.** Whether plants are blooming or not, using a boom sprayer allows for direct application of pesticides onto cranberry plants. Other methods that can reduce pesticide drift include calibrating your boom to optimize spray pressure and volume, selecting drift-reducing nozzles, avoiding pesticides with small particles that easily drift, and spraying when winds are under 10 mph and when relative humidity is above 50%.
- **Using insecticides and fungicides that have a reduced risk for bees.** See the table below for insecticides and fungicides that are least toxic for bees.

	Class (IRAC or FRAC code)	Example Active Ingredient(s)	Example Trade Names
Insecticides (IRAC code)*	diamide (28)	chlorantraniliprole	Altacor
	diacylhydrazine (18)	methoxyfenozide tebufenozide	Intrepid Confirm
	biological	<i>Bacillus thuringiensis</i>	Biobit, Dipel
Fungicides (FRAC code)*	strobilurin (11)	azoxystrobin	Abound, Evito
	chitin synthase inhibitor (19)	polyoxin D zinc salt	Oso
	biological	<i>Reynoutria sachalinensis</i>	Regalia

* Note that rotating Insecticide Resistance Action Committee (IRAC) classes and Fungicide Resistance Action Committee (FRAC) codes (modes of action) will help delay development of pesticide resistance.

Strengthen your working relationship with beekeepers. Optimal cranberry pollination requires cooperation between grower and beekeeper. In some cases, outlining expectations in a signed, written contract can be the best way to prevent misunderstandings. Topics to consider and discuss with your beekeeper can include, but are not limited to:

- **Hive inspections.** Inspecting a random sample of 10% of hives when they are brought onto a marsh can help ensure that hives are of high quality and contain healthy bees. Ideally, a third party should conduct the inspections in the presence of both beekeeper and grower.
- **Timing.** When bees are introduced onto a cranberry marsh and the duration of their stay are important factors in optimizing cranberry pollination, as well as for maintaining honeybee health. Bees should be brought onto a marsh at around 15% bloom.
- **Hive placement.** Within the limits of your bed layout and equipment needs, it is best to place hives in the center of a marsh or near marsh edges with wild habitat, but away from water reservoirs, as bees from hive near water seem to be less likely to visit cranberry plants.
- **Exposures to sprays.** Be explicit about when, how and what may be sprayed during bloom.

For more information on improving cranberry pollination: Watch for UW Extension bulletin A4155, “Practices to improve pollination and protect pollinators in Wisconsin cranberry” (available soon at <https://learningstore.uwex.edu/>), or University of Wisconsin Garden Facts XHT1213 “Pollinators” (available at <https://pddc.wisc.edu/>), or contact your county Extension agent.