

A Guide to Food Garden Pollination

by Vera Strader

Have your gardening efforts been thwarted by rows of barren corn, tomatoes and peppers that fail to set fruit, and melons and squash that are small and, well, squishy squashy? These problems are most likely due to a glitch in the pollination process.

The short story of pollination is that if a plant is to produce fruit (technically anything that's the result of a flower), somehow pollen from the male anther (part of the stamen) must make it to the female stigma (part of the pistil). Some flowers have both anthers and stigmas; others have only one or the other.

It doesn't matter if you've got a couple tomato tubs on the deck or an extensive plot on the back forty, without pollination most results will never make it to your dinner table. Different plants rely on one of three basic types of pollination.

CORN AND OTHER GRAINS ARE WIND POLLINATED. Members of the grass family, including grains like corn, are wind pollinated. Wind carries the pollen from corn anthers (produced on the tassels) hither and yon. Thus, for corn pollen to reach its target on the stigmas (on the corn silks) of other corn plants, corn must be planted in blocks rather than a few skinny rows. This principle is true of other grains as well. Weather, drought, and insects further influence pollen production and spread.

TOMATOES, PEPPERS, AND EGGPLANTS ARE SELF-POLLINATED. Pollen movement from the male to female parts of the same flower or to another flower on the same plant is self-pollination. Tomatoes, peppers, and eggplants are our most common self-pollinated garden plants. The anthers on these crops are notoriously fussy about releasing their precious pollen.

Tomato pollination is said to be more likely on sunny days with low humidity and moderate temperatures. A gentle wind during these conditions is most helpful. Blossoms may drop with night temperatures below 55 degrees or high daytime temperatures. If the humidity is too low, the pollen may not adhere to the stigma; if too high, pollen grains may clump together. Pollution (think smoke here, as in last summer's wildfires) may also discourage pollination.

What's the gardener to do? To encourage pollen release, try gently shaking your tomato and other self-pollinated plants (when they're blooming of course). I shake the entire plant, or their cage/support, whenever I pass.

A hormone spray called "Blossom Set" is marketed to encourage tomato pollination and subsequent "blossom set." These sprays reportedly may help during times of low temperatures but are useless to prevent blossom drop during high temperatures. Misshapen fruit may also result from their use.

But that's only part of the story. Read on for more about self-pollinated crops.

OTHER FLOWERING CROPS ARE ANIMAL POLLINATED. Outside help is required to pollinate melons, squash, cucumbers, pumpkins and orchard fruits including apples, apricots, and pears. With these plants, the pollen must get from the male anther on one flower to the female stigma on another flower.

Even those self-pollinated crops listed in the section above benefit from animal pollinators. Hover (syrphid) and other flies, some beetles, hummingbirds, and even humans pitch in, but it's bees that literally carry the big load here.

In recent years, we've relied on the honeybee for much garden pollination. The honey bee is a newcomer, brought to America by early settlers, and is now in serious decline due to mites, disease, and a mysterious problem called colony collapse disorder. Fortunately, the backyard grower can call in additional artillery—our own resident bees.

We are blessed with an astounding 4000 species of bees native to the United States, including 26 species of California bumblebees. Many of these creatures are also declining, but we can do much to help them prosper in our gardens.

Bumblebees are more effective pollinators of watermelons and blueberries and contribute to tomato, eggplant, and pepper pollination. Some bumblebees “buzz pollinate” by curling around the blossom and vibrating, turning themselves into “living tuning forks” while buzzing the pollen free from flowers' anthers.

You can welcome bumblebees and other pollinators by, first, refraining from using pesticides on or near your garden when your trees and plants are blooming. Better yet, skip pesticides altogether and, in time your garden will enjoy a balance between many insects, pollinators included; birds; and other critters too. Our native bees often live in ground burrows, so some unmulched, untilled open ground is helpful.

Next, entice pollinators into your yard with a supplemental flower buffet. Plant flowers that draw bees, striving for blossoms from early spring through fall. Early flowers help build up bee populations to help pollinate your garden later in the year.

Also add small annuals amongst your veggies. My favorites are zinnias, especially the Profusion Series; sweet alyssum, and borage. These are all easy to grow, well mannered, long blooming, and may self-sow so you don't have to replant next year. These blossoms all attract other beneficial insects as well. You can even toss some young borage leaves and flowers into your salads.

Stay away from pom-pom “poodle” blossoms. Pollinators need old-fashioned simple, open flowers in order to reach the pollen and nectar in the blossom's center.

Perhaps you've read about the orchard mason bee, a shiny, blue-black native bee. It is a non-aggressive and especially hard working pollinator starting early in the season during cooler weather. You can mail-order these bees, though it is preferable to support local bees. Many vendors supply bee nesting blocks for these bees, or you can build your own as shown at <http://audubonmagazine.org/audubonathome/audubonathome0601.html>

As a stop gap method for pollinating squashes and pumpkins, *you* can become the pollinator. Using a soft brush, Q-tip, or a feather, gently brush the yellow pollen from freshly opened male flowers (the ones with the long stem) on to the female flowers (with a short stem and miniature fruit at the base of flower).

Learn more about how to help bees and other native pollinators at <http://nature.berkeley.edu/urbanbeegardens/> and www.xerces.org. The Pollinator Conservation Handbook, A Guide to Understanding, Protecting, and Providing Habitat for Native Pollinator Insects is available for \$23 from the Xerces Society at the aforementioned web site or by mail at 4828 Southeast Hawthorne Blvd., Portland, Oregon 97235.

Native manzanitas, California lilacs, and winter-flowering currents (Ribes) are currently inviting early pollinators to Vera Strader's Sonora garden. Rosemary too is in full bloom.