

Problem: Pollination Problems



Description: There is a lot of confusion concerning pollination in many crops. It is important to know how different crops are pollinated. Sweet corn is wind pollinated -- by pollen falling from the tassel (male) to the silk (female) part of the plant. Tomatoes, peppers, eggplant, beans, and peas are nearly completely self-pollinated. The flowers of these plants are arranged so that the flowers are pollinated by the natural growth process of the flower shedding pollen from the male to female parts. It is the vine crops -- including squash, pumpkins, cucumbers, muskmelons, watermelons and gourds -- that are bee pollinated. These plants all produce separate male and female flowers and bees are necessary to transfer pollen from one to the other. Bees only work on bright sunny days and are easily injured by insecticide sprays applied during the time the bees work (from sun-up to mid-afternoon). If bees fail to pollinize these flowers, the fruit will start to develop but shrivel and fall off. If bees pollinize the flowers only sparingly, the fruit may develop but be misshapen or poorly filled.

Many questions also arise regarding cross-pollination of plants in the garden. This usually comes in the form of "I planted my X next to my Y and now all of my X's taste just like Y's !" We get more questions regarding crossing in the vine crop (cucumber, muskmelon, watermelon, pumpkin, and squash) family than any others. For all practical purposes, this does NOT happen. Each of these crops has different chromosome numbers which means they will not cross with one another even if you tried. Cucumbers cross only with other cucumbers, etc. In addition, you would not see the result of any cross until you planted the seed from a fruit produced this year and grew out the resultant fruit in the next generation next year. Remember self-pollinized crops do not cross with anything else. The vine crops are insect pollinized so that crossing might happen ONLY for crosses within the crop and ONLY if you save your seed for next year's crop.

Another common question is "why do flowers drop off after blooming?" In plants that are self pollinized, this is not a problem with bees. Many plants set more flowers than

the plant can develop fruit. Tomatoes, for example, may produce 15 to 20 flowers in a cluster of blooms but only 5 to 6 of those can develop into a fruit. The rest abort or fall off and it's a good thing they do; otherwise, the tomatoes would be small and there would be breakage of the plant as a result. Extensive vine growth is usually associated with poor blossom set. Anything that creates lush vine conditions usually discourages bloom set. The most common 'culprit' is excessive fertilization -- especially with nitrogen (N) fertilization. In areas that have had generous manure applications or areas where extensive N fertilizers have been applied, there is usually a corresponding decline in the failure of plants to bloom properly and some flower abortion. This is often corrected as the season progresses and some of that excessive fertilization is used up or leached from the plant root zone.

Of course, many crops develop their edible portions without any relation to flowering. These include potatoes, sweet potatoes, leafy green crops, cabbage and rhubarb. A few crops are grown for their large, edible flowers including broccoli and cauliflower but pollination is not involved. So, there is your lesson about the 'birds and the bees' in horticulture -- without much about birds!

Recommendations: Sweet corn: Ears may have missing kernels if the plants go through a hot, dry period. Keeping the corn well watered will help maximize pollination but heat alone can interfere with pollination.

Tomatoes: Tomatoes won't set fruit unless night temperatures stay at 55 degrees or above at least part of the night. They also won't set if temperatures stay above 75° at night. The heat causes the blossoms to drop. There is little that can be done other than waiting for temperatures to moderate.

Vine crops: Check to make sure that you have bees working the flowers. Insecticides should only be used late in the day to avoid injuring the bees.

References:

1. [Poor Blossom and Fruit Set of Vegetables](#), University of Maryland Extension
2. [Poor Fruit Set in the Vegetable Garden](#), Iowa State University

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