

Flower and Fruit Drop

Many factors influence the reproductive success of plants. Whether the gardener is growing for flowers, fruits, or seeds, the factors listed below can alter plant performance. Understanding the biotic and abiotic processes involved will help the gardener develop realistic expectations and/or take the appropriate steps to facilitate the myriad of processes involved.

Pollination

Both external and internal factors influence plant pollination, which initiates the reproduction cycle and results in fruit and/or seeds. Pollination failure is an interruption or stopping of the process causing a loss of flower and/or fruit from the plant. This is called fruit drop or flower blasting and is an aborting of the horticultural reproductive process.

Pollination involves the movement of pollen from the male flower to the female flower to fertilize the ovule. In most cases, flowering is the initial reproductive stage, and the flower is the part of the plant where the fruit or seed develops following pollination.

Since so many factors can influence pollination in plants, it is sometimes difficult to identify the specific cause of the problems. Insects, diseases, too much or too little fertilizer, weed killers, excess moisture, sudden temperature change, high temperatures, high light intensity, physiological differences in plants and faulty pollination affect the physiological processes of plants. The following conditions, most often cause failure of blossoms and fruit to develop to full maturity.

Climatic Factors

Freezing Temperatures

Plants blooming during periods of freezing temperatures are subjected to varying degrees of injury. Duration and the number of degrees below freezing are important factors in the amount of flower damage. Frost can damage anthers (pollen producing parts of flower) and pistils (female part). Injury to flowers results in blossom drop or deformed fruit. Peach and strawberry often produce “nubbins” (double fruit) or

misshapen small fruit. In plants such as tomato and melon, low temperatures above freezing will prevent complete or adequate pollination, resulting in misshapen fruits, catfacing, scarred fruit or fruit not setting.

High Temperatures

Vegetable plants suffer from adverse temperature conditions. Tomato and snap bean will drop their blooms when temperatures range above 95°F. Blossom drop is more of a problem in tomato when nighttime temperatures remain high, 75°F and above. Cherry type tomatoes can set fruit over a wider temperature range than most large fruited types. The corn tassel (pollen producing part of the plant) is often killed when temperatures are above 100°F. Injury to the tassel can prevent development of kernels in the ear (female part of the plant) as each corn silk thread must be pollinated.

Flower blossoms exposed to hot, drying winds will suffer from petal burn, causing the marginal petal areas to turn black. Intense daytime sunshine alone can cause rose petals to “burn” whenever possible, attempt to locate these sensitive plants in more protected areas.

Fertilization

Low soil fertility during blooming aggravates blossom and fruit drop. Temperature conditions may be favorable, but a great reduction in the number of blooms and fruit will be evident if a plant is in a starved condition; citrus and other fruit trees fall into this category. Applying fertilizer at the time of bloom is not effective in stimulating a heavy set. Apply fertilizers at least four to six weeks prior to the onset of bloom. Early application of fertilizer will permit the plants to absorb the mineral nutrients and be vigorous at the time of blooming.

Watering



Watering during the blooming period requires special attention. High salt levels in soil can make it difficult for plants to pick up moisture from the soil. This will result in a moisture stress, adversely affecting blossom set. Overwatering or starving the plants for water during the bloom period is not recommended. Maintain a constant irrigation regimen as you normally would during the entire growing season. Abrupt changes in irrigation practices can aggravate the blossom and fruit drop. Creating a slight moisture stress in plants such as tomato and melon can increase fruit set under certain conditions.

Light

Lack of adequate sunlight can prevent plants such as tomato and begonia from initiating flowers, or cause flower drop. The begonia need winter sun in the lower Arizona desert elevations are not suited for the hot summers.

Need for Pollination

Some fruit trees are not self-fruitful because of sterile or incompatible pollen. In this case it will be necessary to have another variety planted nearby to serve as a pollinator tree. Check with your nursery or you county extension office when selecting fruit varieties for home plantings.

Some plant varieties, grown under the stressful conditions of low humidity and high light intensity, have inherently weak pollen.

Squash, cucumber, cantaloupe, and watermelon have male and female flowers on the same plant but separated from each other. The female flower can be identified by the small fruit below the flower. In most cases, crops will fail unless bees or other insects transfer pollen from the male to the female flower.

Lack of Bee and Insect Activity

Some plants do not attract bees as well as other plants. Weather conditions that prevent adequate bee activity can prevent adequate pollination of flowers. Hot, dry or cold winds and rain during morning hours particularly limit bee activity. Bees are most active during midmorning hours; avoid any harmful insecticide applications during these periods.

Wind Pollination

Wind and other mechanical action causing the plant flowers to move will result in the pollen moving from the male to the female part of flower in self-pollinating types of plants. Plants in this group include tomato, pepper, and snap bean. Pecan also are wind pollinated. In greenhouses bees are often introduced to facilitate pollination.

Physiological Differences

Vegetable and melon plants that require the transfer of pollen from separate male to female flowers (such as squash, cucumber, and cantaloupe) need both male and female flowers to be open at the same time. Some recent varieties have all or mostly female flowers. Under these conditions 10-15 percent of plants of another variety, with a higher percentage of male flowers in its normal flowering pattern, must be present and open to obtain adequate pollination.

In some situations, stress to the growing plants of predominantly female flowering varieties (particularly pickling cucumber) may cause female flowers to revert to male before completion of development. If no pollination occurs, the female flowers drop off or become misshapen. Sometimes small fruit will form but will be yellow and dry. This is also a symptom of poor pollination.

Various types of stress can prevent growing flowers from becoming fertilized because of unavailable, unviable or weak pollen form the length of time required, and the flowers will drop off. Some varieties of plants have been developed as parthnocarpic, meaning they do not require male flower pollen to become fertilized, and will develop fruit without pollination.

Physiological Fruit Drop

Many fruit trees including apple, citrus, and plum will normally drop a percentage of the small fruit which were set during the spring. This is called "June drop" and is nature's normal way of thinning a heavy fruit load from the plant. Some species of fruit and nut trees, for example, mandarin, apple, and pecan, normally set a heavier crop in alternate years.

Summary

Many of the adverse conditions associated with blossom and fruit drop in plants can be minimized if the gardener is aware of environmental and cultural needs. A little extra time and care may be required to overcome some of the serious problems, but this will pay dividends in the end by the presence of abundant flowers or fruit. Be aware of the specific requirements for plants used in home plantings.

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<http://extension.arizona.edu/yavapai>

Adapted from: [Flower and Fruit Drop](#), Fred Harper, Vegetable Agent, and Allen Boettcher, Agricultural Agent, Maricopa County, 1984

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