

Why Flowering Shrubs Fail To Bloom

“My shrub/tree does not flower – how come?” This is a common inquiry received by staff at the Horticulture Diagnostic Labs. It is sometimes difficult to determine just why a particular plant will fail to set flower buds or will set them and then not develop flowers. Many agree that the failure of trees and shrubs to bloom on Long Island is usually related to one of six (or a combination of) causes: the age of the plant, temperature (winter injury), alternate year flowering, insufficient sunlight, nutrition, or pruning practices.

Age (Plant Immaturity)

All plants including trees and shrubs must be physiologically mature before they are capable of blooming. Early in the life of a plant it will go through a juvenile stage where it will not flower. During this stage plants are strictly vegetative and will not bloom. This can last for two or three years on some flowering shrubs or five to ten or more years on certain tree species. Simple patience is required by the gardener when plants are not mature enough to flower. Apple and other fruit trees in gardens may take four to six years to bloom and fruit. Lilacs may not bloom for five or more years after planting. Plants that are grafted may have flowering hastened or delayed depending on the type of rootstock on which the plant was grafted. In general, rootstocks which restrict growth (dwarf rootstock) produce plants which flower at a younger age in comparison to rootstocks which do not limit growth. This is commonly seen with dwarf fruit trees.

Temperature (Winter Injury)

A certain amount of cold temperature (usually at least as low as 45° F.) is required for many plants to flower properly. This is referred to as vernalization. Ordinarily for spring flowering trees and shrubs that have flower buds fully formed in the fall at least 6 weeks of cold temperatures are necessary before the flower buds will break dormancy.

But cold temperatures during the winter can be responsible for killing flower buds also. In general flower buds are less hardy in comparison to leaf buds. Therefore low winter temperatures may kill flower buds and not leaf buds. The minimum temperature required to kill flower buds will vary among different species, varieties and cultivars of trees or shrubs. Flower buds killed by cold winter temperatures usually are brown or black in color. Some flowering shrubs may bloom only on the lower part of their stems/branches which were protected by snow cover during the low temperature period that occurred during the winter.

During some spring seasons on Long Island it is not uncommon for low temperatures or late frosts to occur when flowers are close to opening and/or in bloom. Again depending on species flowers exposed to such conditions may be damaged.

Alternate Year Flowering

Some trees such as fruit trees, crabapples, and dogwoods will bloom heavily one year and then bloom sparsely the following year. When this occurs the fruit crop will be sparse in the off year as well. This is common on Kousa dogwood and certain apple cultivars to name a few. It is common for oak trees to produce prolific crops of acorns one year and then produce minimal crops for several years. With fruit trees hand thinning to reduce excess fruit loads may help reduce alternate year flowering and fruiting. For most plants this is a natural phenomenon and selecting plants that do not exhibit such traits is your best option.

Insufficient Sunlight (Too much shade)

In general a good majority of trees and shrubs are going to require at least 6-8 hours of continuous direct sunlight each day to bloom properly. As the level of shade (insufficient sunlight) increases you will usually see a decrease in the number of flowers produced on trees or shrubs growing in such a site. It is common for trees and shrubs growing in a shady site to produce healthy leaves, but the number of flowers produced can be significantly less compared to the same species growing in full sunlight. Lilac for example is a plant we receive inquiries on that does not produce lots of flowers in a shady site. Some plants that are listed as “shade tolerant” will grow fine but produce fewer flowers in heavy shade.

Nutrition (Promoting Vigorous Vegetative Growth)

It is reported that trees and shrubs that are growing vigorously with a great deal of foliage and new shoots (growth) will fail to bloom or produce less flowers. Such vigorous growth may be the result of applying excessive amounts of nitrogen for a particular plant or site. Nitrogen is usually required by plants in larger amounts when compared to other nutrients. It promotes vegetative growth rather than flowering. If too much is applied it may result in excessive vegetative growth, which may reduce flowering. If trees and shrubs are growing well and have leaves with good color then fertilizing such plant may not be necessary that season. If you suspect fertilizer is needed it is recommended that such applications be made based on soil nutrient tests and sometimes on foliage nutrient tests. If you apply fertilizer make the application at the recommended rate – Read the label – Do not guess.

Pruning

Many woody shrubs that flower in the spring produce those flowers from buds that were formed on the previous season's new wood (growth). Examples of such shrubs are forsythia, lilac, rhododendron and some of the hydrangea species. If you prune such shrubs in the late summer, fall or early spring chances are you will be pruning off the branches where these flower buds were set. It is not possible for such a plant to flower in the spring if all off the branches containing flower buds have been removed. For this reason it is commonly recommended that pruning of flowering trees and shrubs be delayed until immediately after flowering. In most cases this will insure adequate time for new growth to occur and flower buds to be set on this new growth.

Conclusion

In many cases the above mentioned conditions will account for the majority of reasons why a woody tree or shrub may not produce flowers during a particular season. It is important to keep in mind that plants are complex organisms and that flowering in plants is controlled by many factors in the environment. So even though you address the above mentioned factors there will still be some plants in your landscape that refuse to flower. Good plant selection, proper planting and after care techniques, proper site selection and sometimes patience is needed to ensure successful flowering in your trees and shrubs.

References: Fox, R.T. *Forcing Shrubs and Trees for Indoor Bloom*. New York State College of Agriculture. Cornell University. 9/96; Mason, Sandra. *Failure of Trees and Shrubs to Bloom*. University of Illinois Extension. 3/8/03; Perry, Leonard P. *Why Plants Fail to Bloom OH 40*. University of Vermont Extension System, Department of Plant and Soil Science. 3/31/97.

Prepared by Thomas Kowalsick, Senior Horticulture Consultant, Cornell Cooperative Extension – Suffolk County, 11/2008.

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