



Nursery News

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Spring Hopes Eternal The Early Flowering Trees & Shrubs



Why do some plants flower in Early Spring? Do they somehow know that we desperately need some beauty and color after a long cold winter? I like to think that they do, but as always, plants have their own motivations and the spring floral display has to do with phenology - the relationship between a regularly occurring biological event and the environmental factors that influence it.

Why are there more flowers in some years?

The amount of flowers that emerge in spring depends on environmental factors including the temperature and rainfall from the previous year.

- ❁ Extreme cold in the winter may kill some flower buds.
- ❁ Warm weather followed by sudden drop to subzero temperatures can severely stress plants.
- ❁ Flowering also depends on water available to the tree, with abundant flowers after good spring rains, and less flowering after drought.



Why isn't my tree or shrub flowering?

Flowering also depends on the type of plant, and age.

- ❁ Woody plants go through a juvenile stage, the length of which differs by species and environmental factors. After the plant is past the juvenile phase, flowering will be a seasonal event. Vigorous trees in their preferred site will pass through the juvenile phase earlier, and flower at an earlier age.
- ❁ Some trees, including some flowering crabapples have alternate blooming, meaning they flower heavily one year and fail to flower for one or two years after.
- ❁ Woody plants that bloom in early spring set flower buds in the previous fall. Pruning in the fall or early spring would result in less flowers.



How do they know when it's Spring?

Plants have a natural clock to ensure they do the right things at right time, and avoid exposing vulnerable growth to harmful environmental conditions. This clock is different for not only by species, but by locations. Plants in the warmer part of their range will flower earlier, and those in urban areas or other protected areas can flower 1-2 weeks earlier. The rising temperature in spring is the main trigger for flowering, but even if temps are unseasonable, the tree will not flower until Day-length is right.

There will always be unpredictable seasonal variation, with spring coming early or late, but the order of flowering will be the same. An unseasonably warm winter may trigger some early flowers that may be lost for spring, but it will usually not affect the long-term health of most plants.

Did you know...

Some plants dress for the weather. Plants that flower extremely early in the spring, such as *Hamamelis vernalis*, have mechanisms to protect the flowers from the cold. The Vernal Witchazel can roll up its petals cold days to protect them from freezing.

To be able to bloom in spring requires that the plant can store energy in the fall. This means it is important the plant does not waste energy on flowering in the fall, so the plant has certain genes that repress flowering. The prolonged cold of winter triggers a process that effectively switches off the flower-blocking genes. The plant uses its natural clock to count enough cold days to make sure that warm weather is actually spring.

Plants have a permanent genetic memory of the environmental cues that control flowering, and coordinate flowering with different seasons based the environment they originated from. For example, some plants cannot flower without a cold treatment- plants native to colder regions may have trouble flowering in warmer regions. Plants grown in warmer climates might misjudge the arrival of spring in cooler climates, risking damage to flowers that opened too soon.





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Why do they wake up so early?

Blooming in early spring has the advantage of avoiding competition for pollinators and increases the chances for reproductive success. Richard Amasino, (Howard Hughes Medical Institute Professor and UW-Madison professor of biochemistry) is researching how plants bloom at the right time of year. His studies examine the genetics and environmental triggers for flowering (<http://www.news.wisc.edu/12755.html>), and suggests that flowering at certain times is about competition.



Why are some flowers so pretty, and others just make me sneeze?

The floral display has a lot to do the plant's method of pollination-wind, or pollinators including insects, birds, and others. The showier early spring flowers are designed to attract pollinators. These plants usually occur naturally in the understory or open edges of the forest where the insects can find them.

Pollinator visits, however, are correlated with temperature, with few visits below 60°F. Early spring flowering forest trees are faced with pollinator unpredictability, and must rely on a mixed system to ensure reproductive success. Many forest trees rely on wind to spread their pollen, and developed simple open flowers that hang in clusters from the bare branches in early spring. Without the need to attract pollinators, wind pollinated flowers can be small, green, and without petals or scent.

Early Blooming Trees and Shrubs

That Herald the Spring

March- Parrotia, Filbert

Late March- Early april- Willow

April- Boxwood, Magnolia, Prunus, Redbud, Cornus mas, Forsythia, Ribes species, Birch, Alder

April-May- Maple, Sumac, Viburnum-Allegheny, Doublefile, Serviceberry, Prunus, Rhododendron, Grefsheim Spirea, Oaks, Some Crabapples, Pocahontas Lilac, Hackberry

May -Norway Maple, Hawthorn, Fothergilla, Spirea- Vanhoutte, Tor, Lilac, Crabapples



For plants that do rely on pollinators, there are many methods of attraction. (see [Marketing 'Scents'](#))

- ❁ Aster-like flowers act as a bulls-eye to draw attention to the display.
- ❁ Some plants with 'Carrion flowers' simulate rotting meat by producing a bad smell and purplish flower parts to attract beetles and carrion flies that are fooled into pollinating the flower.
- ❁ 'Moth-pollinated flowers' are usually white with a strong scent to attract night moths.
- ❁ 'Hummingbird-pollinated flowers' are red, a color that is obvious to birds but not so much to insects, and designed so the hummingbird picks up the pollen on its body. Hummingbirds do not have a well-developed sense of smell, so flowers they pollinate usually do not have a strong scent.
- ❁ Flowers with *Complex structures* that bloom at a particular time rely on bees to pollinate. Bees are relatively smart and strong insects and are able to not only find the flowers, but also push their way into the flowers that are not accessible to other insects. (see [Bees-A Declaration of InterDependence](#)),
- ❁ *Relatively simple flowers* with no special structures can be pollinated by correspondingly not so smart beetles.

