



Nursery News

August 2007 - Research & Development

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FINDING A NICHE... Fall Flowering Plants

Most plants in our area flower in spring or summer, and some have very long flowering that extends into fall until frosts hit. A few plants wait to flower until fall, at a time of year that it would seem conditions are not optimal for reproduction. A good example of this is **Hamamelis virginiana** – **Common Witch hazel**, a native to the US. Many plants in the genus **Hamamelis** flower at extreme times, but all other species flower in early spring to early summer. **Hamamelis virginiana** flowers in late fall, usually after leaves fall and during freezing or below freezing temperatures.

Common Witch hazel produces abundant flowers with a light

fragrance and lots of sticky pollen to attract bee and fly pollinators, some of which are still active in the fall. There are a lot fewer pollinators in the fall, but also a lot less competition for them. The pollen that is transferred in the fall sits until spring before fertilization occurs, around when leaves come out. Fruits then develop over the growing season, ripen and hang on even after the next flowers emerge. With all of the obstacles to overcome, it is no surprise that



Common Witch hazel have a very low fruit set (1% of flowers set fruit), but they seem to manage to reproduce. It is thought that **Hamamelis virginiana** adapted to fall flowering to avoid competition for pollinators with the closely related **Hamamelis vernalis**. When **Hamamelis vernalis** flowers late and **Hamamelis virginiana** flowers early, and the flowering overlaps, it has been seen that pollinators prefer vernalis.

Crabapples blooming in September?

Have you seen the occasional lone **crabapple**, **lilac**, or **viburnum** bloom in the fall, and wondered what the plant was thinking? Woody plants can sometimes enter a period of shallow dormancy after the heat and drought of summer or defoliation from disease. Improved growing conditions in the fall can trick a few buds into opening. This typically does not harm the plant, and there are usually plenty more buds for the next year. The main thing to worry about in the fall is excessive vegetative growth too late, which can be a problem for hardening off.



How are flowers made? Let me count the ways...

1. Many Annuals sold as bedding plants convert all the tips of their stems into flowering branches over the growing season. After reproduction is complete, the stems die, unable to convert back to leaf producing stems, and the plant's life cycle is completed. This is why deadheading was invented.
2. Some Australian plants in the Myrtle family can convert their flowering stems back into leafy stems after fruiting.
3. Most perennials, shrubs, and trees do something in between the above two. Flowering stems are produced on secondary branches, which die after reproduction is complete, but the plant keeps it's primary stems, allowing it to continue to grow. Primary stems are not only the trunks and branches of woody plants, but the bulbs, corms, tuber, or rhizomes of perennials.

How do the plants know when to make flowers?

Until the plants were seriously studied, in many cultures around the world it was thought to be the work of gods or spirits that caused plants to bloom. Scientists in the twentieth century that studied the environmental triggers of flowering found that plants

respond by producing buds and opening flowers after a period of weeks or months of repetitive cycles of environmental cues. The cues have an effect on hormones in the plant, either making new ones or suppressing current ones. Plants that follow the same cues may have peak flowering all at the same time, creating spectacular shows.

Synchronizing their flowering may have benefits for plants by attracting more pollinators to the area.

Inquiries or more information is available by contacting **McHenry County Nursery Propagator Mary McClelland**
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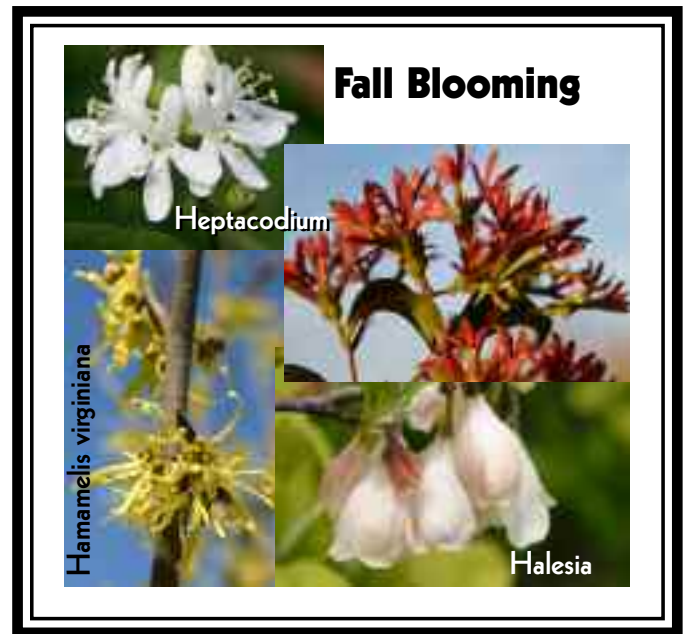
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The most influential trigger for flowering in our area of the world is light and dark cycles, and plants that respond to these are either short-day or long-day plants. Short day plants bloom in early spring or fall, responding to shorter days with less than 14 hours of light. Long day plants bloom in the summer, triggered by the greater numbers of daylight hours. Plants that evolved in areas of the world where every day is a long-day, may not be able to flower in our shorter summers.



Many of our woody plants use a double cycle, with two different triggers at different times. The first trigger cues the production of flower buds, and the second cues the buds to open. For example, long days of summer trigger Spring flowering trees to produce buds, which lie in wait until a certain period of cold weather triggers the flowers swell and open the next spring.

Resources:

The Rose's Kiss- A Natural History of Flowers by Peter Bernhardt
<http://www.press.uchicago.edu/Misc/Chicago/044408.html>

The Botany of Desire: A Plant's-Eye View of the World by Michael Pollan