



Light Treatments Enhance Bumblebee Survival

by Michele Warmund

Declining bee populations are a concern for fruit and vegetable crops that require insects to pollinate flowers. Researchers at the University of London recently found that treating bumblebee colonies with red light had less mortality than those that did not receive a red light treatment at 670 nm. Another important finding was that bees treated with imidacloprid insecticide were protected by exposing them to infrared light. Bees exposed to red light were active and flew normally, whereas insecticide-treated insects did not fly and were silent when disturbed.

Imidacloprid is a pesticide that can be applied to control sucking insects, such as aphids, thrips, whiteflies, Japanese beetles, termites, etc. on landscape trees, turfgrass, and fruit nut trees. Imidacloprid is classified as a neonicotinoid pesticide, which can overstimulate bumblebee nerve cells, resulting in impaired visual functioning, insect immobility, and eventual death because they are unable to feed.

In this experiment, four treatments were used. Two groups of bumblebees were treated with insecticide for ten days, with one group also receiving 15 minutes



of near infrared light at 670 nm twice daily. The other two treatments were no red light exposure (control) or the infrared light exposure for the same time period. The mobility of the bees treated with insecticide declined rapidly, as well as their survival rate. However, the red light exposure corrected the insecticide-induced damage to the bees and allowed them to survive just as well as bees that had not been treated with imidacloprid.

As a result of this study, researchers are now developing a red light-emitting device that can be placed within a hive to help save bees. Such a device might also be used in the future to prevent premature mortality when bees are inadvertently exposed to neonicotinoid pesticides, as long as red light treatment begins within a few days after the insecticide is applied.

In This Issue

Light Treatments Enhance Bumblebee Survival.....	1
Amaryllis: A Cure for the Winter Blahs.....	2
January Gardening Calendar.....	3



Amaryllis: A Cure for the Winter Blahs

by David Trinklein

Cold, dreary winter days can lead to a serious case of the winter “blahs”, especially for avid gardeners. There are few better ways to cure the blahs than to have a plant burst into colorful bloom in your home, when the weather outdoors is gloomy. Enter the amaryllis. Its huge blooms are spectacular and come in many colors including bright, cheerful red. In addition to being very colorful, it has the added attraction of being relatively easy to re-bloom and can continue to give pleasure to its caretaker for many years. December is a good month to start amaryllis for mid-winter bloom.

The plant commonly sold as amaryllis actually is misnamed and is a member of the genus *Hippeastrum*, not *Amaryllis*. *Hippeastrum* is native to the tropical Americas whereas the true *Amaryllis* is native to Africa. Both are members of the *Amaryllidaceae* family. “*Hippeastrum*” comes from the Greek word meaning “horseman’s star”; a name most likely selected for this plant because of the resemblance of its flowers to a medieval weapon used by horseman. For simplicity’s sake we will continue to refer to the plant as amaryllis in this article.

Most of the amaryllis sold today are hybrids developed by the Dutch and selected for their huge, showy flowers and forcing ease. It is not unusual for a vigorous bulb to produce up to six flowers per scape (flower stalk). Since amaryllis is native to the subtropical and tropical Americas, their tender nature forces us to treat them as greenhouse or house plants here in the Midwest. These traits cause amaryllis to maintain a small but constant share of the potted plant market, especially around the holidays.

Amaryllis production for the hobbyist is relatively straight-forward. During the fall and early winter, bulbs are readily available from yard and garden stores as well as other retail outlets. Choose healthy bulbs that have their original roots intact. Bulbs with all roots removed to the bulb plate will display inferior performance during their first year of growth, even though they may bloom. Bulbs should be planted in a well-drained, highly organic potting mix that retains adequate moisture. A mixture of sphagnum peat, vermiculite and perlite works well. Maintaining this medium in a slightly acidic state is desirable.

Containers for amaryllis production should be at least two inches wider than the diameter of the bulb. Keep the growing medium uniformly moist but do not allow water to stand for extended periods of time, except for severely root-bound plants. Amaryllis should be fed using a complete, water-soluble fertilizer after flower emergence. Follow recommendations on the label for rates.

The bulb one purchases will already have a primordial scape formed. Exposure to proper temperatures will cause this scape to elongate, mature and flower. Since amaryllis is tropical by nature, plants respond well to warm temperatures (both day and night). A minimum of 70 degrees F. during the day and 60 degrees at night is ideal during the growth cycle of the plants. Temperatures

lower than 50 degrees can be injurious and should be avoided. Amaryllis requires, on the average, from six to eight weeks from the beginning of forcing to the production of flowers.

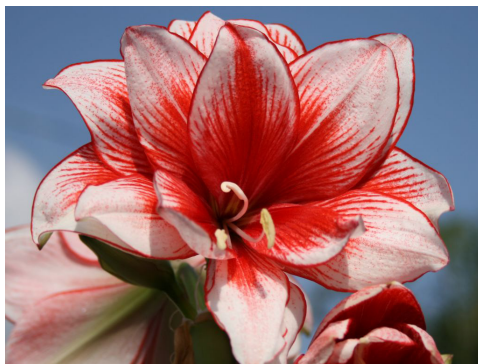
Re-blooming amaryllis is relatively easy, but the plant must be allowed to manufacture and store food in its bulb in preparation for the process. This is accomplished by exposing the plant to light as bright as possible during the growth period that occurs after

flowering has ended. Adequate water and fertilizer are essential for maximum food production during this period. Moving the plant out-of-doors after the danger of cool temperatures has passed will facilitate growth and improve subsequent blooming.

In September, the plant should be brought in from outside at which time watering should be discontinued. This will induce dormancy, which should be maintained for several months. During its dormant phase, an amaryllis should be kept on the cool side and should not receive water. The leaves will wither and dry during this phase and may be removed.

The growth cycle (along with blooming) can be repeated by forcing the plant out of dormancy by watering and subjecting it to warm temperatures as described above. Repotting may be necessary if the bulb has outgrown its original container.

Amaryllis bulbs make practical gifts and are readily available at this time of the year. Their huge blooms represent a fitting reward for plant lovers of all ages. Additionally, amaryllis offers an excellent, “hands-on” learning experience for youngsters.



JANUARY GARDENING CALENDAR

Gardening Calendar supplied by the staff of the William T. Kemper Center for Home Gardening located at the Missouri Botanical Garden in St. Louis, Missouri. (www.GardeningHelp.org)

Category	Week				Activity
	1	2	3	4	
Houseplants	x	x	x	x	To clean heavily encrusted clay pots, scrub them with a steel wool pad after they have soaked overnight in a solution consisting of one gallon water to which one cup of white vinegar has been added. After the deposits are removed rinse the pots in clear water. A brief soak in a solution of one gallon of water to which one cup household bleach has been added will help sanitize the pots.
	x	x	x	x	Some plants are sensitive to the fluorine and chlorine in tap water. Water containers should stand overnight to allow these gases to dissipate before using on plants.
	x	x	x	x	Wash the dust off of houseplant leaves on a regular basis. This allows the leaves to gather light more efficiently and will result in better growth.
	x	x	x	x	Set the pots of humidity-loving houseplants on trays filled with pebbles and water. Pots should sit on the pebbles, not in the water.
	x	x	x	x	Allow tap water to warm to room temperature before using on houseplants.
	x	x	x	x	Fluffy, white mealy bugs on houseplants are easily killed by touching them with a cotton swab soaked in rubbing alcohol.
	x	x	x	x	Insecticidal soap sprays can be safely applied to most houseplants for the control of many insect pests.
	x	x			Quarantine new gift plants to be sure they do not harbor any insect pests.
			x	x	Amaryllis aftercare: Remove spent flower after blooming. Set the plant in a bright sunny window to allow the leaves to fully develop. Keep the soil evenly moist, not soggy. Fertilize occasionally with a general purpose houseplant formulation.
	Ornamentals	x	x	x	x
x		x	x	x	Limbs damaged by ice or snow should be pruned off promptly to prevent bark from tearing.
x		x	x	x	Check stored summer bulbs such as dahlias, cannas and gladioli to be sure they are not rotting or drying out.
x		x	x	x	To reduce injury, allow ice to melt naturally from plants. Attempting to remove ice may damage plants further.
x		x	x	x	Use sand, bird seed, sawdust or vermiculite to gain traction on icy paths. Avoid salt or ice melters as these may injure plants.
x		x	x	x	Make an inventory of the plants in your home landscape. Note their location and past performance. Plan changes on paper now.
			x	x	Sow pansy seeds indoors now.

JANUARY GARDENING CALENDAR

Category	Week				Activity
	1	2	3	4	
Miscellaneous	x	x	x	x	Avoid foot traffic on frozen lawns as this may injure turf grasses.
	x	x	x	x	Make a resolution to keep records of your garden this year.
	x	x	x	x	Store wood ashes in sealed, fireproof containers. Apply a dusting around lilacs, baby's breath, asters, lilies and roses in spring. Do not apply to acid-loving plants. Excess ashes may be composted.
	x	x	x	x	Check all fruit trees for evidence of rodent injury to bark. Use baits or traps where necessary.
	x	x	x	x	Cakes of suet hung in trees will attract insect-hunting woodpeckers to your garden.
	x	x	x	x	Brightly colored paints applied to the handles of tools will make them easier to locate in the garden.
	x	x			Seed and nursery catalogs arrive. While reviewing garden catalogs, look for plants with improved insect, disease and drought-tolerance.
	x	x			Old Christmas trees can be recycled outdoors as a feeding station for birds. String garlands of peanuts, popcorn, cranberries, fruits and suet through their boughs.
	x				Christmas tree boughs can be used to mulch garden perennials.
	x				If you didn't get your bulbs planted before the ground froze, plant them immediately in individual peat pots and place the pots in flats. Set them outside where it is cold and bury the bulbs under thick blankets of leaves. Transplant them into the garden any time weather permits.
		x	x	x	Try sprouting a test sample of left over seeds before ordering new seeds for spring. (Roll up 10 seeds in a damp paper towel. Keep moist and warm. Check for germination in a week. If fewer than half sprout, order fresh seed.)
				x	Swap seeds and plant information with your gardening friends.

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