



Propagation protocol for

CANADA LILY

(*Lilium canadense*)

Peter Heus |

KEY WORDS

seed propagation, double dormancy, scaling, vegetative propagation, Liliaceae

NOMENCLATURE

ITIS (2002)

Located south of Hinton, West Virginia, Enchanter's Garden is situated in a hollow that drains into the Greenbrier River. The beauty and abundance of native wildflowers here beckoned me down the path to learn their identities, habitats, and how to use them in landscapes. One of the most beautiful species I propagate is Canada lily (*Lilium canadense* L. [Liliaceae]).

Canada lily is native to eastern North America, and is found from Quebec south to Alabama. Small populations are found on the western edge of its range from North Dakota south to Nebraska and Arkansas. Two subspecies are recognized: *L. canadense* ssp. *canadense* L. and *L. canadense* ssp. *editorum* Fern. (Wherry). Both are found in Virginia and inhabit wet prairies and meadows, damp forest edges, and clearings. It is a common species in a prairie remnant in Virginia (Heus 2003). The species is never abundant and is considered rare in portions of its range. Wild bulbs should never be collected.

The nodding yellow to orange to red flowers have slightly arched tepals and are attached to a long peduncle. Six stamens and a 3-lobed stigma accentuate the spectacular tepals which are spotted red-brown. To see one in flower in its natural habitat is simply a breathtaking experience. Canada lily blooms in June

Opposite: Canada lily
(*Lilium canadense* L. [Liliaceae]).

Photo by Joseph G. Strauch Jr.

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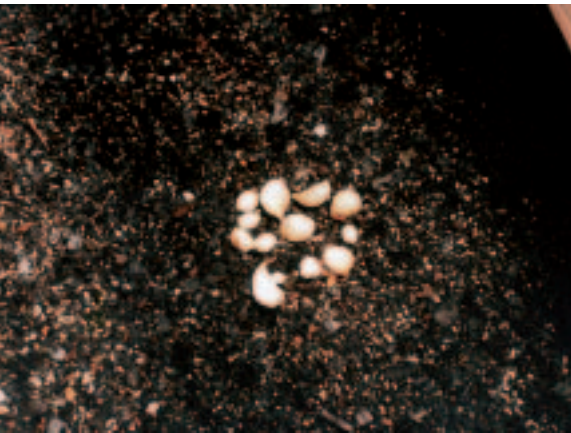


Figure 1. Using 4-y-old bulbs (top), the outer 2 layers of scales can be removed (middle), and planted about 1.25 cm (0.5 in) deep (bottom). The bulblets will produce roots and new plants.

Photos by Peter Heus

and July and are visited by a variety of pollinators, including the Ruby-Throated Hummingbird (*Archilochus colubris* L) [Trochilidae]). Following pollination, the fruit develops into a dry dehiscent capsule of 3 cells, each with 2 rows of dozens of seeds in each cell.

SEED PROPAGATION

Seeds are collected in the fall just as the capsules begin to split along the sutures. Seeds do not require further cleaning and can be easily shaken out of the capsule in closed paper bags.

Canada lily seeds have a double dormancy and require both a warm and cold stratification. If sown directly in flats outdoors in fall, seeds will lay dormant until the first growing season, in which a small bulb is produced by fall. A single leaf emerges the second growing season followed by a whorl of leaves by the end of the third growing season. I am able to trim off 1 y of this process by artificially stratifying the seeds. Fresh seeds are sown in moistened germination media such as Scott's Metro Mix 360 (The Scott's Company, Marysville, Ohio) 1:1 (v:v) mix of coarse perlite and vermiculite or I use composted leaf mold. I water the medium, sown with seeds, sparingly until slightly damp and place it in an airtight container at 21 to 23 °C (70 to 75 °F) for 120 d after which the small bulb is produced. Next, I place them under refrigeration at 4 °C (40 °F) for 60 d and finally sow the bulblets in sterilized outdoor raised beds or in open flats of germination medium in early May. Plants produce a single leaf that emerges 1 to 2 w after sowing. Once seedlings emerge and are established, I transplant them out of the flats into individual containers using a growing medium of 60% rotted pine bark, 30% sphagnum peat moss, 5% perlite, and 5% local shale gravel (v:v:v:v). I incorporate Osmocote Plus with minors (15N:9P₂O₅: 11K₂O; The Scott's Company, Marysville, Ohio) at the

approximate rate of 2 g per 1 l (1 qt) container volume of medium and add 0.5 g of bone meal near the bottom of the container.

I replot my nursery stock every 2 y, starting with quart size containers and ultimately potting them into 3-l (1-gal) containers. It takes about 5 y to produce saleable Canada lilies from seeds. At this stage, bulbs produce a single flower but are capable of producing multiple flowers within another year or two.

VEGETATIVE PROPAGATION

Lilies have scaly bulbs that are characterized by the scales being separate and attached to the basal plate. They are easily damaged and will dry out quickly since they do not have a protective tunic like other bulbs, so it is necessary to handle them more carefully. Another interesting feature of lily bulbs is that they have contractile roots; these are short, thickened fleshy roots that pull the bulb to a deeper depth in the soil profile over the years.

Sizable nursery stock capable of flowering can be obtained in 4 y by scaling mature Canada lily bulbs. I lift mature bulb stock from raised nursery beds either in early spring or preferably in late summer or fall after flowering (Figure 1). About half of the outer layer of scales is removed from the mother bulb and inserted into open flats filled with the germination medium as described for seed propagation. A small adventitious bulblet with roots will form at the base of the scale by the end of the first growing season. I transplant bulblets into individual containers at the beginning of the second growing season using the same medium and fertilizer as described for seed propagation.

Canada lily is one of the few native lilies that are somewhat rhizomatous and naturally increases from lateral bulblets produced from the main rhizome-like bulb. These lateral bulbs can be easily divided from seed propagated stock

plants that are 7 to 8 y old and potted individually. Nursery stock can be divided in early spring or fall.

OTHER CONCERNS

Voles and chipmunks are a serious problem to propagating native lilies. Since I have a hefty time investment in obtaining nursery stock, I fence the lily propagation beds and the container stock area with mesh poultry wire and line them with concrete blocks bedded with broken glass as a deterrent.

A grave concern to the well being of our native North American lilies and fritillaries (*Fritillaria* spp. L. [Liliaceae]) is the recent introduction of the Asian lily leaf beetle (*Lilioceris lili* Scopoli [Coleoptera: Chrysomelidae]) (Cullina 2000). It is a small red beetle that was introduced into the northeastern US in the mid 1990s and is of great concern and may seriously threaten our wild populations of

Lilium species. Although I have not seen the beetle in my area, I believe that it is important to inform people about the spread of this serious pest.

SUMMARY

Canada lily is one of the most spectacular flowers in eastern North America. Although propagating this species requires patience, growers are rewarded with stunning flowers whose beauty surpasses any *Lilium* cultivar. Seed propagation requires a 120-d warm stratification followed by a 60-d cold stratification to overcome double dormancy. Seeds are sown in May and a small bulblet is produced the first year, followed by a whorl of leaves by the third year and flowers by the fifth year. Flowering nursery stock can be obtained in 4 y by scaling mature bulbs, much in the same manner as used for commercial lilies. Canada lily is some-

what rhizomatous and lateral bulbs can be divided from mature nursery stock.

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