

Forcing Spring Bulbs to Bloom

Grades: K - 6

Time: 12 - 16 weeks



Lesson summary:

This project is about growing flowering plants from bulbs.

What's the big idea? ??

- Bulbs usually emerge in early spring after a cold winter, bringing us leaves and lovely flowers. Can we get bulbs to bloom at other times? Bulbs can be “forced” to grow and flower in winter if they are chilled for a number of weeks, followed by giving them growing conditions that mimic springtime.

Outcomes or purpose:

- Bulbs can be forced to grow leaves and flowers in winter.



Teacher background:

Plants that grow from a bulb and not a seed are fascinating. So, what is a bulb anyway?

A bulb is thick and fleshy (unlike a seed) and is usually oval or round in shape. If bulbs remind you of onions, that's not surprising because onions are bulbs too. A bulb is actually a food storage system. Bulbs contain food reserves that help it to survive tough conditions like cold and winter, when the bulb is dormant or asleep. When they wake up in spring, they use these food reserves to grow again.

In Canada, spring flowering bulbs are usually planted in the garden outdoors in early fall before the ground freezes. There is just enough time for them to grow roots from the bottom of the bulb before the deep cold sets into the soil. After a long winter, they emerge in early spring and bring us flowers like crocus, siberian squill, muscari, tulips and daffodils.

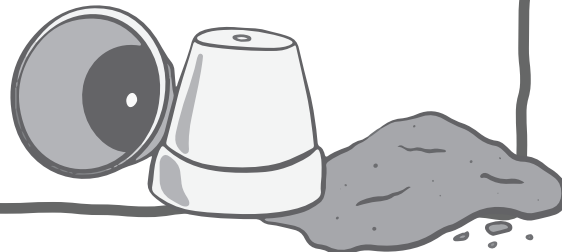
It is possible to make bulbs grow and flower at other times. This is called “forcing” bulbs and is often used to grow bulbs indoors during the winter. The process of forcing bulbs means giving them a cold treatment for a while followed by warm soil, water and light which trigger the bulb to grow leaves and flowers.

Other bulbs like amaryllis and paperwhites cannot tolerate cold at all and won't overwinter in the garden, but they still make great classroom plant projects.

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Materials needed:

- Pots
- Potting soil (*soiless medium that contains peat moss, vermiculite and perlite*)
- Bulbs of your choice



| Bulb Type | Pot Size | # of Bulbs per Pot | Planting Depth | Notes |
|---|---|--------------------|---|---|
| <ul style="list-style-type: none"> • Crocus • Muscari • Snowdrops • Siberian squill | 4" Pot | 3 - 5 | Plant about 3 cm below the soil line. | Easiest to grow, fastest to bloom, least expensive. Store bulbs in dry peat in paper bags and chill in a fridge for 8 - 10 weeks. Then plant into containers, water and place in a warm, sunny spot. Bulbs will bloom 2-4 weeks after planting. |
| • Tulip | 5" Pot | 3 - 4 | Allow only the tip of the bulb to show above the soil line. | Choose short, early blooming varieties of tulip. Plant into pots and then chill the bulbs in their pots for at least 10 - 14 weeks. |
| • Daffodil | 5" Pot | 3 - 4 | Plant so about 1/2 of the bulb shows above the soil line. | Plant into pots and then chill the bulbs in their pots for at least 10 - 14 weeks. |
| • Amaryllis | 5" Pot | 1 | Plant so that 1/3 of the bulb is above the soil. | Very easy, fast growing. Plant directly in pots. They do not tolerate frost and do not need a cold treatment to bloom. |
| • Paperwhites | 5" Pot | 3 - 5 | Plant so about 1/2 of the bulb shows above the soil line. | Very easy, fast growing. Plant directly in pots. They do not tolerate frost and do not need a cold treatment to bloom. |
| • Hyacinth | Not recommended for young students. Bulb is toxic if eaten, and can cause rash and discomfort when handled. | | | |

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Step by step instructions:

1.

Shop when school starts! Most spring flowering bulbs are only available for purchase for a few months in the fall, usually starting in September. Find them at local garden centres or over the internet. Use the chart to calculate the number of bulbs and pots you need for your class.

2.

Cold treatment depends on the bulb!

- Crocus, muscari, snowdrops and siberian squill are small bulbs or corms which don't absolutely need to be planted in pots during their cold treatment. Instead, loosely pack the bulbs in dry peat in paper bags and store them in the crisper in the fridge where they take up very little space. Don't store them with apples which give off ethylene gas that will harm the bulbs. Store them cold for at least 8 weeks before planting them in pots.
- You will have more success forcing tulips and daffodils if they are planted in pots when they are getting the cold treatment. (See planting directions #3) If your whole class grows one pot apiece, a fridge may not be a suitable chilling spot! A root cellar, cold basement or other cool, dark space where the temperature stays between 0° - 5°C is more practical. Chill the pots for 10 - 14 weeks. When you see roots peeking from the drainage holes of the pots, you'll know your bulbs have had sufficient chilling time.
- Lastly, amaryllis and paperwhites are usually sold in stores from October to December. These bulbs cannot tolerate frost and do not need a chilling period. Plant them directly into pots and watch them grow!

3.

Planting: Read the directions on the chart to find out how deeply to plant the bulbs. Some bulbs need to be completely covered, others need to be partially above the soil level. Notice that most bulbs have a flat end and a pointy end. Plant the pointy end facing up. Begin by partially filling the pot with soil. Place the bulbs on top and adjust the height as needed. Add more soil and adjust the soil level according to the directions.

4.

After the bulbs have been chilled (except for amaryllis and paperwhites) move the pots into the classroom and put them under normal indoor light for a week. Keep them watered but do not fertilize. Remember that bulbs have their own food reserves.

5.

After a week, put them under your indoor garden lights or onto a windowsill. They should bloom in two to four weeks. Once they have begun blooming, remove them from the bright lights of the indoor garden to encourage a longer bloom period.

6.

Forcing takes a lot out of bulbs and they need a long recovery period before they can be forced again. It's fine to discard the plants after the flowers fade. Add them to your compost pile if you have one.

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Discussion questions

- Why don't you need fertilizer for bulbs?
- How are bulbs the same as seeds?
- How are bulbs different?

Expand the learning:

- Try starting this project in time for Mother's Day with small bulbs like crocus, muscari, snowdrop or siberian squill. These bulbs (corms) can safely be kept chilled in dry peat in paper bags in the crisper until needed. Plant them into pots about 3 weeks before Mother's Day for students to take home as gifts they grew themselves. If you're growing amaryllis, take daily measurements of the height of the plant, especially when the flowerstalk emerges. Your students will be amazed at how quickly it grows.

