



## Using your Harvest Bin All Year

### *What can you do with your Harvest Bins over the late fall, winter, and early spring?*

Harvest Bins can be utilized by classes year-round! There are a few things to consider before starting to utilize your Harvest Bin all year.

- Growing Zone: Where your school is located within the province will determine what can be grown and when. Check the [growing zone](#) for your area before you start.
- Varieties: Not all varieties of veggies are the same, so be sure to check variety characteristics to determine which one to grow. Some plants varieties can also be planted in the late fall, overwinter and then start producing in the early spring.
- Location: Where your Harvest Bins are located on your school's property can also influence your success. Are they located south facing protected by a building? Are they protected from the wind?

Utilizing your Harvest Bins on the "off season" is a fun learning experience for your students.



## Overwintering

Overwintering is the process by which some organisms pass through or wait out the winter season. They can also pass through a period of the year when "winter" conditions (cold or sub-zero temperatures, ice, snow, limited food supplies) make normal activity or even survival difficult or near impossible.

Overwintering usually refers to the practice of leaving cold-hardy, healthy, established crops in the ground in the fall with the expectation that they will provide harvests through the months of winter. During the coldest months of the year, crop selection is very limited and plant growth is much slower than during the principal part of the growing season. Once the day length increases to 10 hours a day in the early spring, these plants will start to grow again, often providing an abundant spring harvest well before spring planted crops have even been put in the ground.

An example of this would be leeks. They can be directly seeded in late summer, grow slowly throughout the fall and winter and can be ready to harvest in early spring.

There are many advantages of overwintering crops:

- Garden space that might normally sit vacant with the soil exposed to drying winds and winter weather, can be used to produce crops.
- The harvest window of edible crops can be extended into the fall and winter or even the whole year.



Tips for successful overwinter crop management:

1. Plant crops on time: depending on the crop, overwintered varieties should be planted between mid-summer and early fall. Garlic can be planted anytime in October through November or before the soil freezes.
2. Keep crops protected: watch for them becoming too cold, having too much moisture, or drying out.
3. Watch for pest damage: winter is a very active time for slugs, wireworms and vermin.



Slug damage



Wireworm (larva), click beetle and potato damage



Vole and mice damage

Recommendations of crops to overwinter:

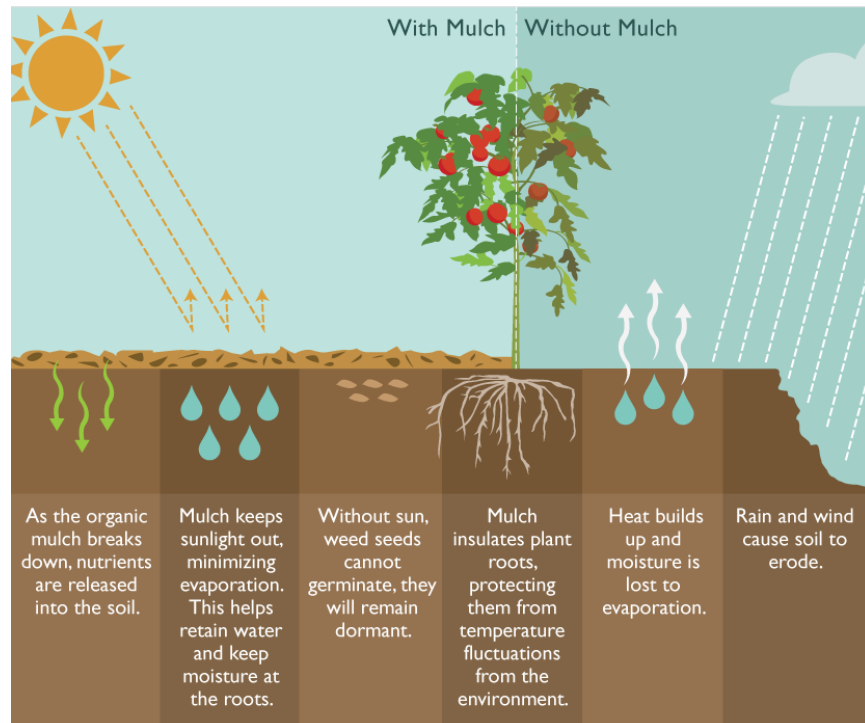
- Onions: Start seeds in trays indoors in late June and early July. Transplant by the middle of August where they are to remain until harvest the following June. (Try the *Walla Walla* variety)
- Broad Beans: Sow seeds in October and November for harvest the following April and May. (Try the *Windsor Broad Bean* variety)
- Cabbage: Start in July for transplanting mid to late August. Some cabbages are hardy down to Zone 3, and many have improved flavour during cold weather. (Try the *Deadon* and *Danish Ballhead* varieties)
- Garlic: Sow seed garlic in September and October for harvesting from July-September. (Try the *Red Russian* or *Yugoslavian* variety)
- Beets, carrots, turnip: Sow your favorite variety seeds in summer to harvest throughout the winter months. As you overwinter these root crops, the cold temperatures cause a phenomenon known as chill-sweetening, where the plants convert starches into sugars. The accumulation of sugars helps protect the crops from freezing. It also keeps these vegetables crisp, snappy and tasting extra sweet.
- Greens (kale, spinach, sorrel, mache): Sow seeds in late summer up until early fall to harvest throughout the winter or early spring. (Try *Claytonia* or “miners’ lettuce”)



## [How to Protect Overwintering Crops](#)

### **Mulching**

The easiest overwintering technique is to use a mulch of straw or shredded leaves. This requires a slightly earlier planting date, as mulched plants will come through the winter better if they are at least semi-mature. Therefore, sow seeds four to six weeks before the average [first frost day](#). Then, when the temperature is hovering near freezing on a regular basis, mulch the young plants with about 30 centimeters (deep) of organic materials. Cover with a row cover or bed sheet to keep the leaves and straw from blowing away.



## Floating Row Cover

Floating row cover, also known as garden fabric, is a white, thin, light piece of material used to shelter crops. It has several uses, but it most well known for frost protection.

It is typically made from polypropylene or polyester and does not absorb moisture. It allows for rainfall and sunlight to pass through. One piece can last multiple seasons, depending on how extensively it is used each year. By draping row cover, sheets or even blankets over growing crops in the fall a microclimate can be created underneath the cover.



Reasons to use a row cover:

1. To protect warm season crops against frost – this will give the opportunity to set out heat loving, long season crops, like tomatoes, peppers, and eggplant earlier than usual. Peppers especially need warmer temperatures to thrive, so employing garden fabric can really make a difference.
2. The protective cloth also allows for summer crops to be protective from the cooler temperatures of the fall season, extending the survival time of these crops later into the season.
3. Keep pests like insects, rabbits, and deer out - it is important to secure material well with staples, soil, or large rocks.

Tips for successful use of row covers:

1. Check plants often: Pull back the row cover and inspect the plants for pest damage.
2. Regular weekly assessments: Check moisture levels, temperature, air circulation, and weed growth.
3. Weed regularly: weeds too love the protected environment created by the row cover. Remove weeds weekly when they are small.

## Hoop House

A hoop house is a structure that is built using a hooping or bending system. A hoop house can be as small as a frame structure hooped over a Harvest Bin, or as big as a full sized, commercial greenhouse. Other names for these structures include polytunnel or cold frame.

There are countless benefits to a hoop house. Perhaps the most common reason for building them is to extend the growing season. By covering up your plants in the fall, you are protecting them from frost. When made from the right material, these covers work as cold frames, and can be so effective at keeping roots warm, that crops can be grown year-round in mild winter zones.

These handy and quick-to-build structures can be used all year long: in early spring to get a jump start on the garden, in mid-summer they can be covered with shade cloth to delay bolting of leafy green crops or fine netting to keep insect pests and birds away, and in winter they create a microclimate around crops.



Advantages to using a Hoop House:

1. Frost protection.
2. Structures are easily constructed from readily available materials.

3. Hoop houses can be used to start trays of vegetable seedlings early in the season and then be planted with heat-loving crops that are allowed to grow to maturity.
4. Hoop/plastic covering can be manipulated and/or removed to control internal temperatures.

#### Disadvantages of Using a Hoop House:

1. Relatively high cost per square foot of growing space.
2. Internal temperatures can rise quickly on cool sunny days and scorch plants unless the plastic covering is adjusted to allow for adequate ventilation.
3. Plastic covering typically will only last 1 to 2 years

#### Ways to construct a Hoop House:

For instructions on how to build a hoop house step-by-step

<https://www.finegardening.com/article/hoop-house-style-raised-bed-frost-protection>

For instructions on how to build a hinged hoop house step-by-step

<https://www.theartofdoingstuff.com/make-a-hinged-hoop-house/>

For instructions on how to build a removable hoop house with handles step-by-step

<https://misfitgardening.com/how-to-build-a-hoop-house-for-raised-beds/>

#### Tips for successfully using a hoop house:

1. Watering: To water lift one end or roll up one side of the hoop house for access. Ensure the soil gets moist and not just at surface level. A typical winter watering schedule may look like this:
  - October and November: Water once every week or every other week. 2.5 gallons per 4'x4' Harvest Bin
  - December and January: Water 1-2 times per month. 2.5 gallons per 4'x4' Harvest Bin
  - February and March: Water once per week or every other week. 2.5 gallons per 4'x4' Harvest Bin. If it is a particularly warm spring, you may need to water twice a week.
2. As evaporation occurs, moisture will collect on the inside of the frame. To prevent crops from molding be sure to allow the moisture to vent during the day.
3. It will be important to remove any snow on top of your hoop house. This will prevent breaking under the weight of the snow and ice and will allow for vents to be opened should there be a particularly warm day.





## Cover Crops

Cover crops are grown when harvesting plants are not being grown. The crop is planted not to be harvested but instead to:

- manage soil erosion
- increase soil fertility
- improve soil quality
- increase moisture retention
- control weeds, pest, and diseases

Soil erosion is reduced as the cover crop keeps the soil covered during winter when heavy rains can wash the soil away. The cover crop also takes up the nutrients that would be lost due to winter rains and reduces excess nutrients from running off into surface water or ground water.

Planting a cover crop is great for the environment as it uses the organic materials produced to feed the soil which limits the need to purchase fertilizers.

The plant roots provide natural aeration of the soil to increase the amount of air in the soil for future plant growth.

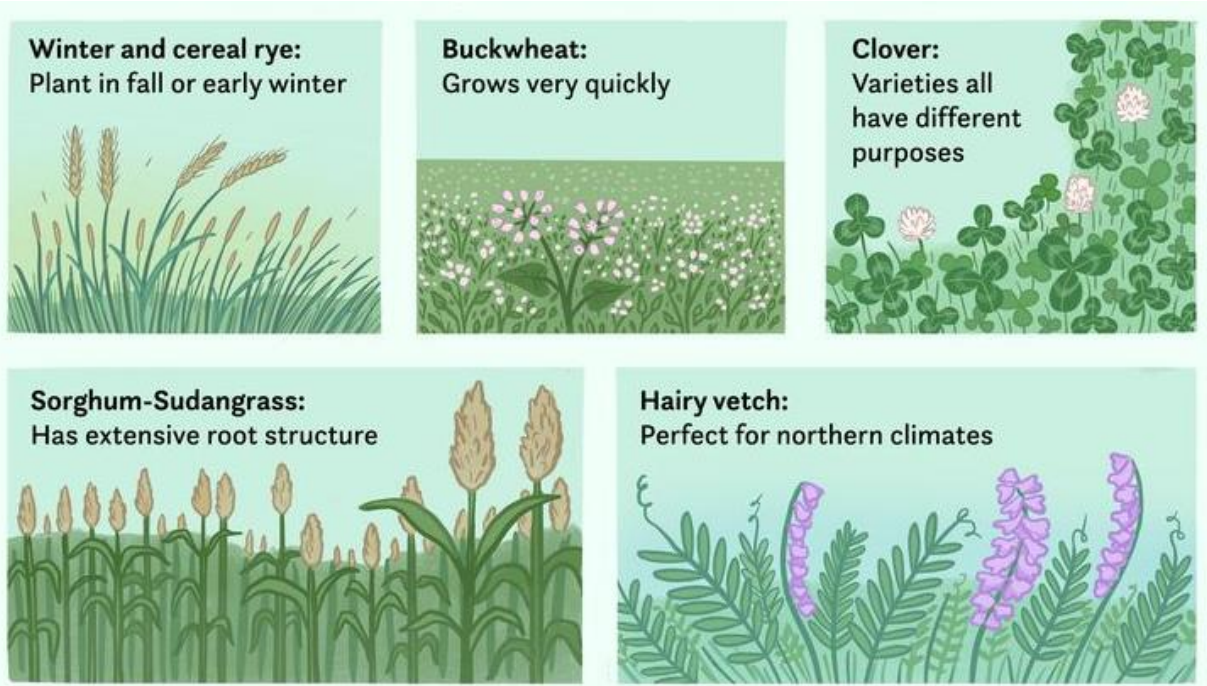
Weeds are controlled by the cover crop taking away the exposed soil for weeds to establish.

This [chart](#) contains information about different cover crop varieties, their benefits and when to plant them.

When you are ready to replant your Harvest Bins in the spring, the cover crop can be removed, pulled, turned under or cut back. Cover crops can die off over winter or start growing when temperatures increase in the spring. Crops that die off over the winter months are best for early season planting, while later crops can have the protection of cover crop active growth before plants start to grow in late spring, early summer.

**Don't let the cover crop plant go to seed, once seeds are produced, they become "weedy", the plant can be difficult to control.**





Many organic and sustainable farmers incorporate cover crops in small, medium, and even large crop operations. With increasing ecological concerns about the impact of herbicides, pesticides, and chemical fertilizers, conventional farmers are beginning to adopt these techniques, too.

## Activities for Students

### Grow, Compare, Evaluate!

- Select a vegetable that can be overwintered in your area.
- Plant the same vegetable seeds in three different ways, such as:
  - Unprotected in the Harvest Bin
  - With row cover or mulch
  - Cold frame, greenhouse, or milk jug greenhouse
- Each month, from fall to late May, keep a log to identify the condition of the plant (plant vigor, height etc.) in the three different planting methods.
- At the end of May (or when your plants are mature) determine which of the three growing methods was the most effective and why. Ask: *Do they taste the same? Are they the same size? What would you do the following fall to improve the health and quality of the vegetables that were grown?*
- Experiment with different varieties of plants and different overwintering care practices to determine what works best for your location.



### DIY Milk Jug Greenhouses

- Supplies needed:
  1. Clean plastic milk jugs or to-go containers.
  2. Scissors
  3. Potting soil
  4. Seeds (lettuce, cilantro, peas, broad beans, kale, snapdragon, or sweet peas)
  5. Marker or a way to identify the seed being grown and student's name on the container
  6. Duct tape
- Steps: (start in January, later in colder climates)
  1. Gather clean plastic milk jugs, or to-go containers with a dome lid.
  2. Have students make their own mini greenhouse or have small groups work together.
  3. Cut the milk jug container horizontally to make a bottom and top, leave a part uncut to be the hinge under the handle. Put holes in the bottom to drain excess water. Remove the milk jug lid. If using a to-go container, make holes in the lid.
  4. Label the container.
  5. Dampen potting soil.
  6. Add 7-10 centimeters of potting soil.

7. Sow seeds according to package instructions. Seeds need to be exposed to the cold for 30-60 days before germination.
8. Tape the top and bottom of the container together.
9. Put containers outside.
10. If the soil dries out, dampen the soil but only when required. Allow rain to enter the container.
11. Once seeds germinate add more holes to increase air circulation.
12. When the weather warms remove the lids during the day and close them at night.
13. After the risk of frost is over, remove the lid.
14. Transplant seedlings into the garden or Harvest Bins and grow until harvest time.
15. Have students log their experience and the results of their project.



## Resources and photo sources

Growing Zone: <https://www.westcoastseeds.com/blogs/wcs-academy/zone>

Frost Date Finder: <https://www.almanac.com/gardening/frostdates>

Cover Crop Information: <https://www.johnnyseeds.com/growers-library/farm-seed-cover-crops/farm-seed-comparison-chart-pdf.html>

Milk Jug Greenhouses: <https://thereidhomestead.com/seed-starting-101-winter-sowing/>

Floating row cover: <https://gardenerspath.com/how-to/greenhouses-and-coldframes/floating-row-covers/>

Vegetables that will grow in winter: <https://savvygardening.com/overwinter-crops/>

Hoop house construction ideas: <https://www.epicgardening.com/raised-bed-hoop-house/>

Over winter plants to grow: <https://growfully.com/plants-to-overwinter/>

Vole and mice information: <https://www.missouribotanicalgarden.org/gardens-gardening/your-garden/help-for-the-home-gardener/advice-tips-resources/pests-and-problems/animals/voles>

Wireworm information: <https://agriculture.canada.ca/en/agricultural-production/agricultural-pest-management/agricultural-pest-management-resources/reduced-risk-wireworm-management-potato>

How to grow winter onions: <https://www.gardeningknowhow.com/edible/vegetables/onion/growing-winter-onions.htm>

Winter sowing: <https://www.homefortheharvest.com/winter-sowing/>

West Coast Seeds Fall and Winter Harvest Guide: [SM120\\_2019-Fall-Winter-Guide\\_Final.pdf](https://www.shopify.com/files/bin/assets/images/document/SM120_2019-Fall-Winter-Guide_Final.pdf)  
([shopify.com](https://www.shopify.com))

Extend growing season with raised beds: <https://www.betterfarm.org/blog/2016/4/1/extending-your-growing-season-hoop-houses-row-covers-and-cold-frames>

How to control slugs: <https://www.lovetoknow.com/home/garden/how-get-rid-garden-slugs>

Growing cabbage: <https://www.almanac.com/plant/cabbage>

Growing winter onions <https://www.gardeningknowhow.com/edible/vegetables/onion/growing-winter-onions.htm>

How to store carrots in the ground: <https://gardenerspath.com/plants/vegetables/overwintering-carrots/>

Mulching tips: <https://arenteiro.com/reason-for-mulching-your-garden/>

Cover crop examples: <https://www.treehugger.com/cover-crops-for-your-small-farm-3016670>

Buckwheat cover crop use in raised beds: <https://nwdistrict.ifas.ufl.edu/hort/2020/09/28/using-a-buckwheat-cover-crop-in-raised-bed-gardens/>

How to start seeds in milk jug greenhouses: <https://www.gardeningknowhow.com/garden-how-to/propagation/seeds/milk-jug-winter-sowing.htm>

Raised beds covers: <https://www.epicgardening.com/raised-bed-covers/>

Farm 2 School Fall Harvest Crop Cards- <https://farmtoschoolbc.ca/wp-content/uploads/sites/3/2022/05/Fall-Crop-Cards-2022-2.pdf>

Farm 2 School Crop Planning Chart : <https://farmtoschoolbc.ca/wp-content/uploads/sites/3/2022/03/Coastal-BC-Crop-Planning-Chart.pdf>