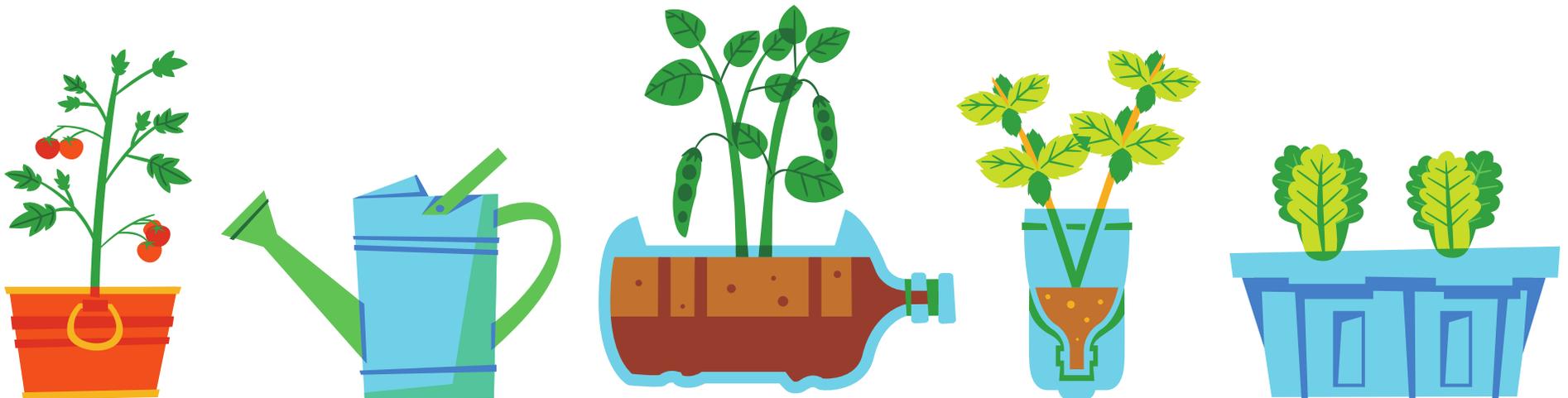




Northwest Education Services

# SCHOOL GARDEN GUIDE

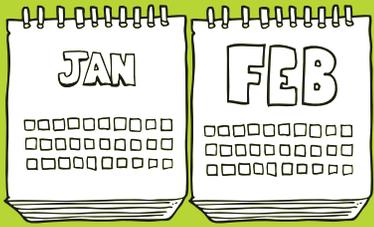


# TABLE OF CONTENTS

Introduction.....	1
Garden Planning.....	2
Three Waves of Spring Planting.....	3
Starting Seedlings in the Classroom.....	4
Spring Garden Bed Preparation.....	7
First Cold Crop Planting.....	8
Second Cold Crop Planting.....	9
Planting Lessons and Activities.....	10
Hot Crop Planting.....	11
Flowers.....	12
Planting a Three Sisters Garden.....	13
Caring for your Garden.....	14
Planting for Fall.....	16
Additional Resources.....	19

*Every gardener has their own methods and tricks that they develop over time. This guide is meant to be simply that - a guide. None of the methods or dates here are exact, nor are they the only way to do it.*

*The earth is dynamic, and so is gardening! This guide is designed specifically for the Northwest Lower Michigan region, and includes tips about planning your garden around the school year. For any questions, please contact Elena Mosher, Farm to School Coordinator, [emosher@northwested.org](mailto:emosher@northwested.org).*



# GARDEN PLANNING

*January/February*

Now is the time to choose what seeds you want to plant and where they will go. It's best to get some student input on this. You may also want to consult with food service staff if you are planning to use garden produce in the school lunch. Don't forget to include some flowers as well!

Draw a sketch of your garden on graph paper and make copies. Using the spacing and timing tables to plan how you might arrange your garden. This can be a great activity to do with older students to practice measuring and scale! Be sure to check the previous year's records so that you can rotate crops.



## *Lessons*

- [A Patchwork Garden Quilt](#) - 4th grade, FoodCorps
- [Garden Grids](#) - 4th grade, FoodCorps
- [Square Foot Gardening](#) - 3rd-5thNorth Ed website/FC

*Order seeds in January or February to make sure they have plenty of time to ship!*

Here are a few great seed suppliers:

- Bakers Creek Heirloom Seeds
- Nature & Nurture Seeds
- Johnny's
- Seed Savers Exchange

# THREE WAVES OF SPRING PLANTING

## Overview

We all know that Michigan weather can be temperamental, so make sure you are checking the weather as you plan planting! The dates in this guide are based on historical weather patterns for Traverse City.



### Early April

Direct Sow: carrots, onion sets, spinach, snap peas, radishes

Start Seedlings Indoors: Lettuce, bok choy, brassicas (broccoli, cabbage, cauliflower, kale)



### Early May

Direct Sow: beets, carrots, cilantro, potatoes, turnips, Bachelor Button flowers

Start Indoors: Cucumbers, squash, melon (or direct sow later)

Transplant outdoors: lettuce, bok choy, brassicas



### Early June

Direct Sow: beans, cucumber, dill, melons, okra, summer squash, winter squash

Transplant outdoors: basil, parsley, peppers, tomatoes, most flowers, and cucumber, melons, squash IF started indoors.



# STARTING SEEDLINGS IN THE CLASSROOM

*April-May*

Some plants do better when they are started indoors and then transplanted into the garden. This is also a way to get a jump on our short growing season. The chart below shows which plants are best started as seedlings, direct sown outside, or can go either way. Some of these should be started as soon as you get back from Spring Break (early April) - see next page for details.

START SEEDLINGS INDOORS	DIRECT SOW OUTSIDE	EITHER WAY
Basil	Beets	Beans
Broccoli	Carrots	Bok Choy
Cabbage	Kale (baby)	Corn
Cauliflower	Baby Lettuce	Cucumbers
Collards	Onion SETS	Cilantro
Kale	Peas	Dill
Lettuce Heads	Potatoes	Melon
Parsley	Radishes	Okra
Peppers	Turnips	Spinach
Scallions (green onions)	Sunflowers	Summer Squash
Tomatoes		Winter Squash
		Most Flowers

**Notes:** Beans, cucumbers, summer squash, and winter squash all have very large seeds (easy for kiddos to handle) and germinate very quickly and easily, which make them great seedling projects. However, their roots are very delicate and can easily get shocked during transplanting. Biodegradable pots work well for these, and a fun experiment could be to start them inside AND outside and see which does better!



# STARTING SEEDLINGS IN THE CLASSROOM CONTINUED

*Early April (mostly)*

When you are deciding which seeds to start in the classroom, consider growth speed and conditions needed. Some seedlings will do much better with a heat mat. Some need to be started really early, so you need to consider Spring Break timing. Lettuce heads and bok choy are fast growers that might give you a harvest before school is out if conditions are right!

PLANT	START SEEDS INDOORS	WEEKS TO TRANSPLANT	TRANSPLANT OUTDOORS
Parsley	Late March	8-10	June
Peppers	Late March	8-10	June
Scallions (green onions)	Late March	8-10	Mid May
Basil	Early April	6-8	June
Bok Choy	Early April	4	Early May
Broccoli	Early April	4-6	Early May
Cabbage	Early April	4-6	Early May
Cauliflower	Early April	4-6	Early May
Collards	Early April	4-6	Early May
Kale	Early April	4-6	Early May
Lettuce Heads	Early April	4-6	Early May
Tomatoes	Early April	6-8	June
Okra	Early April	6-8	June
Corn	Late April/early May	4-5	June
Cucumbers	Late April/early May	3-4	June
Melon	Late April/early May	3-4	June
Summer Squash	Late April/early May	3-4	June
Winter Squash	Late April/early May	3-4	June

### *What you will need:*

- A sunny window or a grow light with timer
- A tray or something to catch draining water
- Planting cells, paper cups, or another DIY planter
- Some plants will do better with a heating pad
- Seeds
- Seed starting soil
- Small watering can or spray bottle
- Small fan
- Popsicle sticks or other labels

**A note on heat pads:** Some seedlings will grow faster/better with a heat pad. Generally, heat loving plants that are planted outside after the last frost will do better with a heat pad. Alternatively, you can keep your seedlings in a warm part of the room and/or use a clear humidity dome to help keep them warm.

### Lessons about Seed Starting

- [Journey to the Center of a Seed](#) - K-5, LifeLab
- [Seed Planting](#) - 3-5, Alaska Ag
- [Up, Up, Up We Grow](#) - K-2, FoodCorps (about what plants need to grow)

# PLANTING SEEDLINGS, STEP-BY-STEP

## Step 1: Fill Containers with soil

Use plant trays or DIY planters with holes poked in the bottom. Fill containers to the top with growing medium (use a seedling mix) and gently press down. Place containers on a tray to catch draining water. Water the soil thoroughly BEFORE planting.



## Step 2: Plant the seeds

Plant 1-2 seeds in each container or cell. Refer to the seed package or this planting guide for appropriate depth. Cover the seeds with soil and very gently pat them down.

## Step 3: Label your plants!

Use a popsicle stick or another type of marker to label your plants with the variety and planting date.



## Step 4: Gently water

Use a spray bottle or small watering can to gently water the seeds.



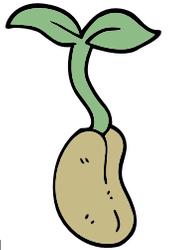
## Step 5: Let there be light!

Place the trays in a sunny, south-facing window or under grow lights. Place the lights 2-4 inches from the seedlings, and move the lights up as the seedlings grow so that the light stays a couple inches above the tallest seedling. Set the lights on a timer to be on for 14-16 hours.



## Step 6: Care for your babies

Keep soil moist with a spray bottle until seeds germinate. Then, water when soil begins to look dry, usually once a day. After about 2 weeks sprinkle a tiny bit of top dress fertilizer on your plants. As you water them, it will seep into the soil

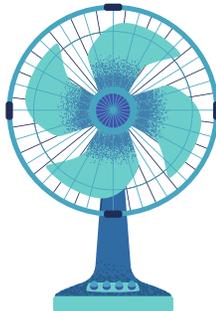


## Step 7: Thin seedlings

Once plants have one set of true leaves, thin so there is just 1 plant per container. Choose the weaker plant in containers with more than one plant growing, and snip it at soil level with scissors. Do NOT pull up the discarded seedling - this will disturb the roots of the one you want to keep!

## Step 8: Set up a fan

Using a fan on your seedlings will help the plants grow stronger as they "learn" to withstand wind. It will also help prevent mold growth. Set up a small fan on the lowest setting pointed toward your seedlings. They should be gently fluttering, not bending over. You may consider turning the fan off on the weekend if it tends to dry the soil out quickly.



## Step 9: Hardening off

Before transplanting, seedlings need to get used to outdoor weather. A week before transplanting, place seedlings outside on a warm day for a few hours. Gradually increase time outside throughout the week. If temps are not too cold, you can leave them outside overnight after at least 5 days of gradual hardening off.





# SPRING GARDEN BED PREPARATION

*April*

*Once the snow thaws and the ground is workable, it's time to prep your garden for the planting season!*

## *Garden Prep Checklist:*

- Clean up any infrastructure that got left out
- Use your soil test results from last fall (or early spring) and add fertilizer based on the test's recommendations. Generally, you will always at least want to spread 2-3 inches of compost in the spring (about one 5 gallon bucket per 4' x 8' bed)
- Turn or till compost/fertilizer into the soil
- Repair any broken raised beds
- Consider setting up a trellis for snap peas



# FIRST COLD CROP PLANTING

*April (as soon as ground can be worked)*

*If planted early, radishes should produce a harvest before school is out! Peas and spinach might too, if we're lucky. Carrots and onions will take longer.*

All of these crops are DIRECT SOW crops, meaning you plant the seed directly in the ground. They can be planted as soon as the ground can be worked. I recommend using seed tape (see lesson below) to get the correct spacing for tiny seeds!

PLANT	DEPTH	SPACING	ROW SPACING	NOTES
Carrots	1/4"	1-2"	12"	Seed every 2-3 weeks for continuous harvest. Consider using SEED TAPE.
Snap Peas	1"	2"	18-24"	Most varieties need a trellis.
Onion sets	1"	4"	12"	"Sets" are small onion bulbs used for planting. They will mature faster than starting from seed, and you can plant earlier without worrying about frost.
Radishes	1/4"	2"	12"	Radishes love cold and grow quickly, so if you get them planted early they will probably be ready to harvest before school is out! Direct sow spring radishes in several small successions for a continuous harvest. Frost hardy and the leaves are delicious and nutritious greens.
Spinach	1/2"	6"	12"	Direct sow in early spring and late summer. High summer heat makes spinach go to seed (bolt). Soil should not be more than 70 degrees for germination.

## Lessons

- [Seed Tape](#) - 2nd and up
- [Seed Tape youtube video](#)
- [Planting a Tops and Bottoms Bed](#) - 1st-2nd, FoodCorps



# SECOND COLD CROP PLANTING

*First week of May*

These should be planted around 2-4 weeks before the average last frost date. Many of these plants will take a long time to mature, so keep in mind how much space you want them to take up. Baby bok choy, kohlrabi, lettuce heads, and turnips grow quickly though, and may mature before school lets out!

PLANT	TRANSPLANT SEEDLINGS	DIRECT SOW OUTSIDE	DEPTH	PLANT SPACING	ROW SPACING	NOTES
Beets		x	1/2"	2"	12"	
Baby Bok choy	x	x		4"	12-18"	Can be started indoors or direct sown, but start indoors to get a jump on the season and get a harvest before school is out. The mini or baby variety grows quickly and is extra tender.
Broccoli	x			18"	36"	
Brussels Sprouts	x			18"	36"	
Cabbage	x			18"	36"	
Cauliflower	x			18"	36"	
Cilantro		x	1/4"		12"	Make a trough 1/4-1/2" deep and sprinkle cilantro seeds throughout
Collards	x			18"	36"	
Kale	x	x		18"	36"	You can direct sow for baby kale.
Kohlrabi	x	x		6"	12"	
Lettuce	x	x	1/4"	6"	12"	If planting lettuce heads, it's best to start seeds indoors. You can also direct sow lettuce by drawing a shallow trough and sprinkling lettuce seed throughout. This will give you baby lettuce instead of heads.
Potatoes		x	6"	12"	36"	Dig a 6" deep trough and spread a layer of compost at the bottom. Place seed potatoes every 12" with eyes facing up and cover. Mound soil around potato plants up to their bottom leaves every couple of weeks.
Turnips		x	1/4"-1/2"	2"	12"	The small "salad turnip" variety is sweet & creamy and grows quickly!

# PLANTING LESSONS & ACTIVITIES

## Planting/Transplanting Lessons:

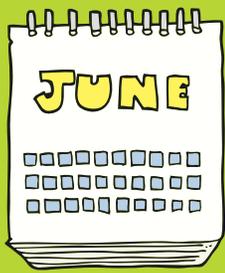
- Transplanting, "Let's Move Em Out!" - LifeLab (in *The Growing Classroom* book)
- Let Us Grow Lettuce! - K-2, FoodCorps
- Planting a Tops and Bottoms Bed - 1st-2nd, FoodCorps

## Lessons/activities about Plant Parts:

- Imaginary Plants - FoodCorps
- Plant Part Mystery - FoodCorps
- Plant Parts Song with physical activity - Banana Slug String Band

## Lessons/activities about What Plants Need to Grow:

- What do Plants Eat? - 5th, FoodCorps
- Up, Up, Up We Grow! - K-2, FoodCorps
- Soil, Water, Air, and Light song. (to the tune of head shoulders knees and toes!)



# HOT CROP PLANTING

*First or Second week of June*

These are all "hot crops" so they like hot weather and cannot tolerate being frosted. Plant after the danger of frost has passed!

PLANT	TRANSPLANT SEEDLINGS	DIRECT SOW OUTSIDE	DEPTH	PLANT SPACING	ROW SPACING	NOTES
Basil	x			8"	12-18"	
Beans	x	x	1"	2-4"	Bush: 18" Pole: 36"	Pole Bean varieties will need a trellis; Bush Bean varieties do NOT need a trellis.
Corn	x	x	1"	4" (thin to 12")	30"	Plant corn in a 3 Sisters Garden or in a block (many short rows instead of a few long ones). Plant at least 10-20 plants for pollination to work properly.
Cucumber		x	1/2"	Bush: 36" Vine: 12"	Bush: 36" Vine: 36"	Vining cucumbers need a trellis and can be planted closer together. Bush cucumbers will spread widely and need more space. They can be planted in rows or mounds.
Dill		x	1/4"		6"	Draw a shallow trough in the soil and sprinkle dill seeds throughout the trough (not too thick)
Melons	x	x	1"	36"	36-48"	
Okra	x	x	1/2"	18"	36"	Soak seeds overnight to speed germination!
Parsley	x	x	1/2"	6"	12"	Parsley is a slow germinator so don't worry if you don't see them pop up for a couple weeks. Soak seeds overnight to speed germination.
Peppers	x			18"	36"	
Summer squash	x	x		24"	36"	
Tomatoes	x			24"	36"	
Winter Squash	x	x		36"	6 ft	Can be grown in mounds or in a Three Sisters garden.

# FLOWERS

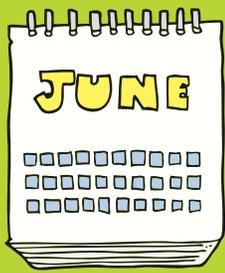
*Early June (mostly)*

Flowers are often overlooked, but they are important players in any garden! They are important for attracting pollinators and can provide great companion services for many of our veggies! There are many types of flowers that are great to plant, but these are just a few annuals that are beautiful and useful.

PLANT	TRANSPLANT SEEDLINGS	DIRECT SOW OUTSIDE	DEPTH	PLANT SPACING	ROW SPACING	NOTES
Bachelor Buttons	x	x	1/4"	3"	12"	Direct sow in early spring (April or May) or start indoors 6 weeks before last frost.
Calendula	x	x	1/4"	6"	12"	Direct sow after last frost (June). Or start indoors 6-8 weeks before last frost.
Marigold	x	x	1/4"	8"	12"	Sow in containers indoors 4-6 weeks before last frost, or direct sow after last frost.
Nasturtium	x	x	1/2"	8"	12"	Direct sow outdoors <b>2 weeks before last frost</b> (mid to late May) or start indoors 4-6 weeks before last frost and transplant outdoors after last frost. Can use a trellis to train them upward, or plant above ground in a pot or raised bed and let them trail downward.
Sunflower		x	1/2"	18"	24"	Direct so outdoors after after last frost.
Zinnia	x	x	1/4"	8"	12"	Sow in containers indoors 4 weeks before last frost or direct sow after last frost.

## *Resources*

- [Companion planting guide](#)
- [Pollinator lesson plan kit](#) (3 lesson plans from KidsGardening)
- [Pollinator lessons and resources from LifeLab](#)



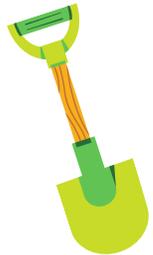
# PLANTING A 3 SISTERS GARDEN

*First or Second week of June*

The Three Sisters Garden is a Native American practice that was used by tribes across what is now the U.S. The legend describes how corn, beans, and squash help each other grow. If you want to do a Three Sisters garden, consider collaborating with your school's Indigenous Education instructor, or reaching out to local tribal members.

## *Step 1: Start Corn seeds indoors*

Start corn seeds indoors in early May. The corn needs a head start so that it is strong and tall enough to support the beans as they climb. Sow the seeds about 1" deep in containers in a sunny window or under a grow light.

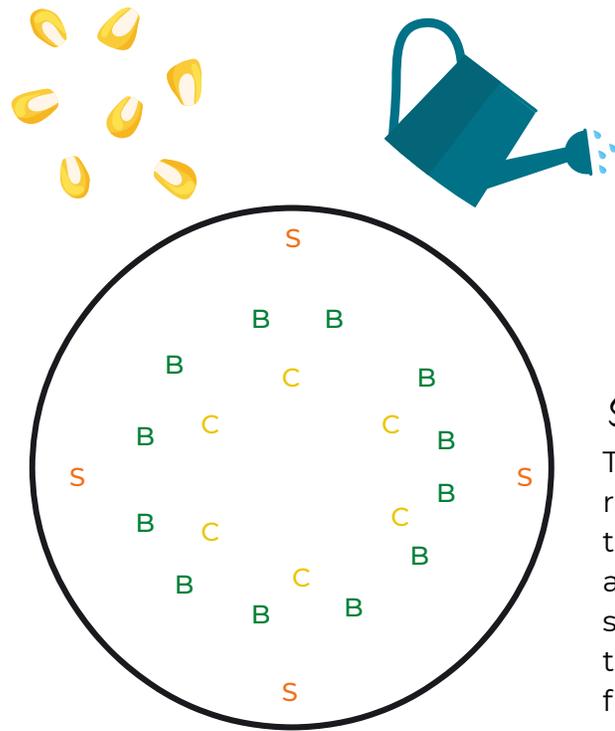


## *Step 2: Make Garden Mounds*

In early June, use a shovel or rake to move the soil into mounds about 6" high and 2'-3' wide. Leave about 4' between mounds.

## *Step 3: Plant the Three Sisters*

Plant about 6 corn seedlings about 10" apart in a circle. Plant 2-3 bean seeds around each corn stalk, about 4" away. Finally, plant 4 squash seeds around the perimeter of each mound, evenly spaced.



## *Step 4: Care for your garden*

Keep them watered along with the rest of the garden, and monitor for pests like squash beetles. It shouldn't require much weeding once the squash is established, but you may want to weed around it while the plants are still young.

## *Step 5: Harvest (fall)*

The Three Sisters garden will be ready to harvest in the fall. Wait until the beans and corn are mostly dead and dry before you harvest. The squash should be harvested when the vines die, before you get a heavy frost.



## *Notes & Resources*

- Corn is wind pollinated, so they need at least 10-20 plants to pollinate. The more the better!
- Make sure you select a pole (climbing) bean. Dry beans work best for this, because they can be harvested in the fall with everything else.
- [Planting the Three Sisters lesson](#) - 3rd, FoodCorps

# CARING FOR YOUR GARDEN



## Watering

The best rule of thumb is to water your garden when it looks/feels dry. To check, stick your finger in the soil about an inch down. If the soil is dry 1 inch below the surface, it needs water! If you have a sprinkler with a timer, set it to water early in the morning for about an hour every other day. Delay the sprinkler when it rains - it IS possible to overwater your garden. Or, water by hand about three times a week. Drip irrigation is the best way to water automatically if it is an option!

## Weeding

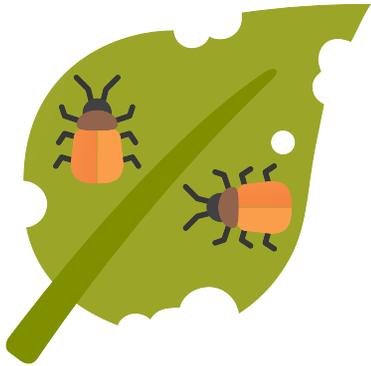
It is most important to weed around your plants when they are young and getting established. Show students how to pull from the base of the weed to get the roots out. Discard weeds away from the garden. If you have a larger garden, you can eliminate small weeds with a scuffle hoe. Weeding close to young plants can cause them stress, so be very careful and consider watering your plants after weeding.



## Fertilizing

At the beginning of the season and any time you do a new round of planting, you should apply a couple inches of compost to the soil. Some plants also benefit from additional fertilizer throughout the growing season. There is too much info about fertilizing to put in this guide, but if you choose to fertilize make sure you follow the instructions on the package and do NOT add more fertilizer than recommended. Plants can be damaged by too much fertilizer. Also, make sure that you use nontoxic, natural fertilizers! Check out this [Farmer's Almanac page](#) to learn more about fertilizing your vegetable garden.

# CARING FOR YOUR GARDEN



## *Pest Control*

There are many different pests that can affect a vegetable garden. Make sure you only use natural, nontoxic pest control methods for school gardens. One of the most common pests is aphids, which can affect most vegetables. A natural remedy is to mix 1 tbsp of mild dish soap with a quart of water in a spray bottle and cover every surface of the infected plants with the solution. Repeat daily for at least a week. Other common pests are tomato worms and potato beetles and the best way to get rid of them is to hunt them down (and their eggs) and kill them frequently! If you have heavy pest issues, call your local MSU-Extension for assistance.



Aphids



Tomato Hornworm

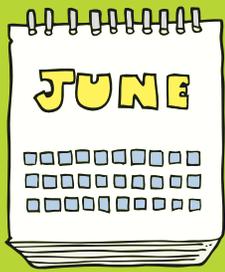


Colorado Potato Beetle

## *Harvesting*

Every plant is different in the way it should be harvested and how to know when it's ready. If you're not sure, a quick google search will tell you what you need to know!



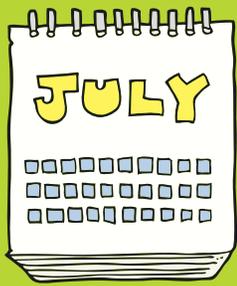


# PLANTING FOR FALL

*Last Week of June*

Consider doing summer plantings so that harvests are ready when kids get back to school! Some seedlings may not be readily available later in the summer, but if they are, chances are they'll be on sale! If planting seedlings, be sure to plant on an overcast day or in the evening. Intense summer sunlight and heat can scorch baby plants before they even get a chance!

PLANT	TRANSPLANT SEEDLINGS	DIRECT SOW OUTSIDE	DEPTH	PLANT SPACING	ROW SPACING	NOTES
Beans		x	1"	2-4"	Bush: 18" Pole: 36"	Pole Bean varieties will need a trellis; Bush Bean varieties do NOT need a trellis.
Brussels Sprouts	x			18"	36"	Once Brussels sprouts are mature, you can let them freeze and harvest them late into the winter!
Cucumber		x	1/2"	12"	Bush: 36" Vine: 12"	If using seedlings, grow them in biodegradable pots because their roots are very delicate. Direct sowing also works well and they grow very quickly.
Melons (small varieties)		x	1"	36"		Large varieties probably won't have time to mature, so choose small varieties!
Summer squash	x	x				



# PLANTING FOR FALL...CONTINUED

*Early to Mid July*

PLANT	TRANSPLANT SEEDLINGS	DIRECT SOW OUTSIDE	LATEST PLANTING DATE	NOTES
Beets		x	Mid August	
Broccoli	x		Mid July	
Cabbage	x		Mid July	
Carrots		x	Late July	Carrots take a long time to grow, but they get sweeter in cold temperatures! Sowing carrots in July will bring you a late fall harvest. You can even leave mature carrots in the ground over the winter!
Cauliflower	x		Mid July	
Kale	x		Mid August	
Potatoes		x	Mid July	



# PLANTING FOR FALL...CONTINUED

*Early August*

PLANT	TRANSPLANT SEEDLINGS	DIRECT SOW OUTSIDE	LATEST PLANTING DATE	NOTES
Kohlrabi		x	Mid August	
Lettuce		x	Late August	
Peas		x	Late July	Fall peas usually don't do as well as spring peas, but it's worth a try!
Radishes		x	Late August	
Spinach		x	Early Sept.	Spinach needs cool temperatures, so it might not grow well at the height of summer. Spinach planted outdoors in the fall may need row cover to help insulate from hard frosts (though it is very frost hardy).
Turnips		x	Late August	

# ADDITIONAL RESOURCES

*We hope this guide is helpful for your school garden project! If you have additional questions, please feel free to contact Elena Mosher, Farm to School Coordinator, with the contact info below. A few other information sources are below as well. Youtube and Google are great resources for any of your gardening questions as well! Just make sure you are searching for information that is specific to our region/climate.*

Elena Mosher, Farm to School Coordinator: [emosher@northwested.org](mailto:emosher@northwested.org); (231) 633-7418

[Michigan State University Extension - Leelanau](#)

[Michigan State University Extension - Grand Traverse](#)

[The Old Farmer's Almanac](#)

*Happy Gardening!*