



# Planting Guide

for School Gardens in the **Foothills**  
and **Mountains** of North Carolina

# Reaching

## into the earth...

and pulling out a potato can feel like a treasure hunt to a young person who has never experienced a garden. With their red, purple, yellow and brown skins, potatoes can be viewed as art, botany, and food with a history. This guide is designed to get teachers started with planning a school vegetable garden to enhance student learning.

Growing a school garden opens the door for students to understand where their food comes from and why it is important to eat fruits and vegetables. Studies have shown that youth involved in gardening consume more fruits and vegetables than youth who have not experienced a garden. School gardens can also nurture young leaders by helping students to develop proficiency in critical thinking, problem-solving, responsibility, and communication. Growing a school garden can foster positive attitudes toward science, grow a strong sense of curiosity, and cultivate environmental stewardship among students.

A school garden transforms learning by engaging students in activities that bring the classroom curriculum to life. The garden is an integrative space where many subjects can be explored. Connections among classroom subjects can be taught in the garden and furthered. For example, students can understand how plants grow and develop by sowing seeds and watching them change from sprouts to mature plants that bloom and turn back to seeds. Math skills can also be applied by planning the spacing needed for plants to grow or graphing the amount of yield produced based on a specific nutrient treatment. Social studies can be incorporated by exposing students to cultural practices within North Carolina, connecting students with the historical and current relevance of agriculture to the state.



# Geographic Range

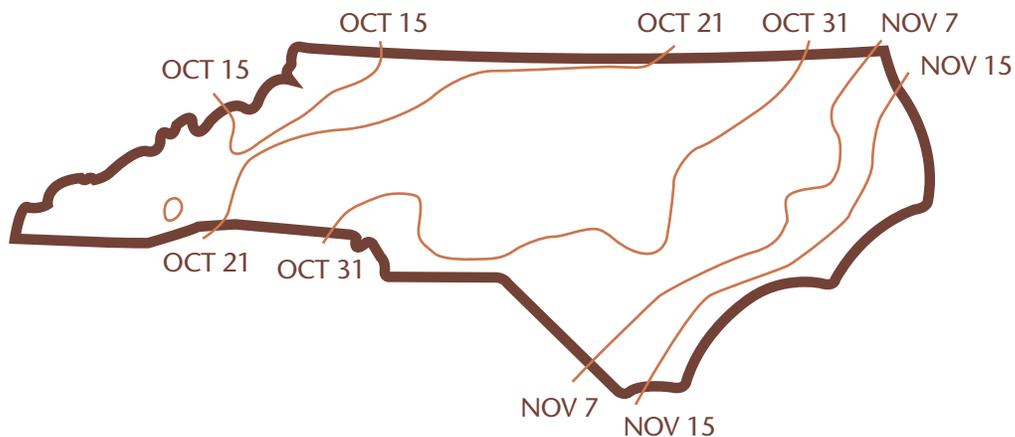
The first step toward planning a school garden is deciding what to plant, when to plant it, and how long it takes to mature. This guide is a starting place that will help you to get growing.

**This planting guide includes information on growing in the Foothills and Mountains.**

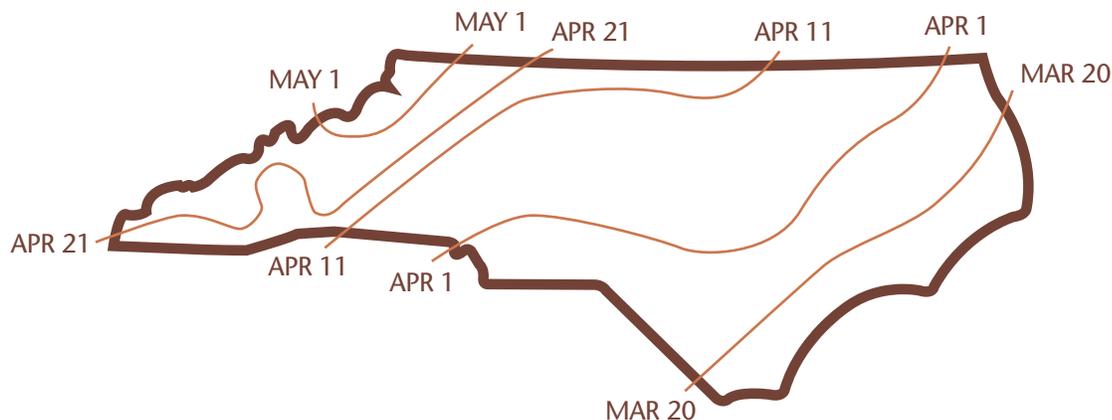
The west growing region includes the N.C. Foothills and Mountains. The region begins in the foothills at elevations above 1,500 feet and extends west to the Appalachian Mountains.

Some areas within the growing regions experience pockets of warmer or colder weather, so this guide should be used as a starting point for planning. Your county Cooperative Extension center can provide specific information for your location. For the most accurate planting schedule, consult **FIGURE 1** to determine the average date of the first killing frost in the fall and **FIGURE 2** to determine the average date of the last freeze in the spring. For fall plantings, count backwards from the frost date, using the number of days to crop maturity to determine the best time to plant in your area. In the spring, use the last freeze date as a time to begin planting seeds or transplants in the ground.

**FIGURE 1: FIRST FROST OF THE FALL**



**FIGURE 2: LAST FREEZE OF THE SPRING**



# Table Categories

The rest of this document contains a table that provides research-based information on vegetables commonly grown in North Carolina. Each of the following categories corresponds to a column of information in the table. You will need this information to successfully grow a school vegetable garden.

## Spring and Fall Planting Dates

North Carolina has a long growing season that is ideal for growing crops. Cool springs, warm summers, and mild winters enable gardeners to have three seasons in which to produce a bounty of crops. Many vegetables can be planted twice during the year. For example, plants in the cabbage family, such as broccoli, cabbage, collards, kale and kohlrabi, can be grown during the spring and again in the fall and into winter. Some warm-season crops, such as tomatoes, squash, pepper and beans, can be grown only in months when there is no danger of freezing temperatures. Understanding the climate and length of growing season in your location will help you decide when to plant a garden.

## Planting Method

Depending on the crop and length of growing season at your location, gardeners can directly sow seeds of some crops into the ground (think pumpkin, squash, beans, lettuce, carrots), while other crops perform best if started indoors (for example, tomatoes, peppers, kale, leeks). Crops that do not transplant well should be sown directly into the garden beds. These crops are labeled in the planting guide as “direct seed.” To grow transplants by planting seeds indoors, fill a growing container with a peat-based potting media. Sow seeds to the depth given in the planting guide, and grow transplants in a sunny window or under grow lights for the time listed in the planting guide.

## Plant Indoors

For crops that will be sown indoors, this column lists the number of weeks you need to plan for until seedlings are ready to be transplanted into the garden. Use the planting date, and count backwards by the number of weeks a seedling needs to be indoors to determine the sowing date.

## Days to Harvest

Crops have a broad range of days they need to grow until they are ready for harvest. For example, radishes might take only 30 days, whereas an asparagus crown takes nearly three years to mature and produce spears that are ready for picking. Climatic conditions and cultivar choices can also have a big influence on the number of days to harvest.

## Planting Depth

A common rule of thumb is to plant seeds at a depth that is two to three times the width of the seed. Most seeds prefer to be covered by soil at the recommended depth. But some seeds, such as carrots and turnips, only need to be gently pressed into the soil with a bare covering of soil.

## Plants per Square Foot

This column lists the number of plants or seeds per square foot to plant in order to ensure optimal growth and development. Place the number of plants or seeds evenly in the square foot. Many seeds have variable germination percentages and rates and can be sown closer together and later thinned to proper spacing.

## SPRING AND FALL CROPS

Arugula	Cilantro	Parsnips
Beets	Dill	Peas
Broccoli	Kale	Radishes
Cabbage	Kohlrabi	Spinach
Carrots	Lettuce	Swiss chard
Cauliflower	Mustard	Turnips
Chard	Parsley	

## SUMMER CROPS

Basil	Southern peas
Snap beans	Peppers
Lima beans	Pumpkins
Cantaloupe	Squash
Cucumber	Tomatoes
Eggplant	Watermelons
Okra	

## Cultural practices for common crops in N.C. Foothills and Mountains

CROP	Visual description	Spring planting date	Fall planting date	Planting method	Plant indoors Weeks before transplanting to the garden	Days to harvest	Planting depth and plants per square foot	Nutrient info
<b>Arugula</b>		April 1- June 1	August 1- October 1	Direct seed	X	20-40	Depth 0.25 in Plants 16	Vit. A & C, calcium, folate, fiber
<b>Asparagus</b>		February 1- May 15	X	Plant crowns	X	2 years	Depth 6 in Plants 1	Vit. A, C, folate
<b>Basil</b>		May 10- July 15	X	Direct seed/ Transplant	5-7	30-80	Depth 0.25 in Plants 2	Vit. A, C, K, iron, calcium, manganese, magnesium, potassium
<b>Beans, Snap</b>		March 1- July 15	X	Direct seed	X	50-55	Depth 1 in Plants 9	Vit. C, B <sub>1</sub> , B <sub>6</sub> , folate, fiber, magnesium, potassium
<b>Beans, Lima</b>		May 15- June 15	X	Direct seed	X	65-80	Depth 1.5 in Plants 9	Vit. C, B <sub>3</sub> , B <sub>5</sub> , folate, copper, potassium, zinc, manganese, fiber
<b>Beets</b>		April 1- May 15	July 1- August 15	Direct seed	5-6	55-60	Depth 0.5 in Plants 9	Folate
<b>Broccoli</b>		April 1- April 30	July 15- August 15	Transplant	5-7	70-80	Depth 0.5 in Plants 1	Vit. C, K, potassium, folate, fiber
<b>Brussels Sprouts</b>		X	July 1- August 1	Transplant	5-7	90-100	Depth 0.5 in Plants 1	Vit. C, folate, fiber
<b>Cabbage</b>		March 1- April 15	July 1- August 15	Transplant	8	70-80	Depth 0.5 in Plants 1	Vit. C, K, fiber

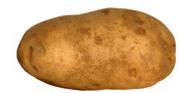
## Cultural practices for common crops in N.C. Foothills and Mountains

CROP	Visual description	Spring planting date	Fall planting date	Planting method	Plant indoors Weeks before transplanting to the garden	Days to harvest	Planting depth and plants per square foot	Nutrient info
<b>Cantaloupe</b>		May 15- July 15	X	Direct seed	X	85-100	Depth 1 in Plants 1	Vit. A, C, folate
<b>Carrots</b>		March 1- June 1	July 15- August 15	Direct seed	X	85-95	Depth 0.25 in Plants 16	Vit. A, C,
<b>Cauliflower</b>		April 1- April 30	July 15- August 15	Transplant	5-7	55-65	Depth 0.5 in Plants 1	Vit. C, folate
<b>Celery</b>		April 15- June 30	X	Transplant	10-12	80-100	Depth 0.125 in Plants 2	Vit. A, C
<b>Cilantro/ Coriander</b>		April 1- July 15	X	Direct seed/ Transplant	5-7	leaf 50-55 seed 90-105	Depth 0.5 in Plants 9	Fiber, iron, magnesium, manganese
<b>Collards</b>		April 1- August 15	X	Transplant	5-7	60-100	Depth 0.5 in Plants 4	Vit. A, C, folate, calcium, fiber
<b>Corn</b>		April 15- July 1	X	Direct seed/ Transplant	3-4	85-90	Depth 1.5 in Plants 2	Vit. C
<b>Cucumber</b>		May 15- July 31	X	Direct seed	3-4	50-65	Depth 1 in Plants 2	Vit. C
<b>Dill</b>		April 1- April 15	X	Direct seed/ Transplant	5-6	leaf 40-55 seed 85-105	Depth 0.25 in Plants 9	Calcium, manganese, iron

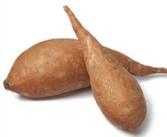
## Cultural practices for common crops in N.C. Foothills and Mountains

CROP	Visual description	Spring planting date	Fall planting date	Planting method	Plant indoors Weeks before transplanting to the garden	Days to harvest	Planting depth and plants per square foot	Nutrient info
<b>Eggplant</b>		May 15- July 15	X	Transplant	6-8	80-85	Depth 0.5 in Plants 1	Fiber
<b>Garlic</b>		X	September 1- November 1	Plant clove	X	210-240	Depth 1.25 in Plants 4	Vit. C, B6, manganese, selenium
<b>Kale</b>		March 1- May 1	August 1- September 1	Transplant	5-7	40-50	Depth 0.5 in Plants 2	Vit. A, C, K, calcium, manganese
<b>Kohlrabi</b>		April 1- June 15	July 15- August 15	Transplant	5-7	50-60	Depth 0.5 in Plants 4	Vit. C, fiber
<b>Leeks</b>		April 1- August 15	X	Transplant	8-10	50-120	Depth 0.5 in Plants 6	Vit. A, C, folate
<b>Lettuce</b>		March 15- April 15	August 1- September 1	Direct seed/ Transplant	4-5	70-85	Depth 0.25 in Plants 4	Vit. A, C, K, folate
<b>Mustard</b>		March 15- May 1	July 15- September 1	Direct seed/ Transplant	5-6	30-40	Depth 5 in Plants 16	Vit. A
<b>Okra</b>		May 15- July 31	X	Direct seed/ Transplant	4-5	60-70	Depth 1 in Plants 1	Vit. C, magnesium, folate, fiber
<b>Onions</b>		February 15- April 15	August 15- September 30	Transplant sets	10-12	60-80	Depth 2 in Plants 9	Vit. C, fiber

## Cultural practices for common crops in N.C. Foothills and Mountains

CROP	Visual description	Spring planting date	Fall planting date	Planting method	Plant indoors Weeks before transplanting to the garden	Days to harvest	Planting depth and plants per square foot	Nutrient info
Parsley		April 1- August 15	X	Transplant	6-8	75-85	Depth 0.25 in Plants 2	Vit. A, C, K
Parsnips		April 1- August 15	X	Direct seed	X	110-120	Depth 0.5 in Plants 9	Vit. A, C, folate, fiber
Peas, Garden		February 15- April 15	X	Direct seed	X	65-70	Depth 1 in Plants 8	Vit. A, C, folate, fiber
Peas, Southern		May 1- June 30	X	Direct seed	X	55-65	Depth 1 in Plants 4	Folate, fiber
Peppers		May 15- June 15	X	Transplant	6-8	75-80	Depth 0.5 in Plants 1	Vit. A, C
Potatoes		March 15- April 15	X	Plant tuber	X	95-120	Depth 5 in Plants 1	Vit. C, potassium
Pumpkins		May 15- June 30	X	Direct seed/ Transplant	3-4	115-120	Depth 1.5 in Plants 1	Vit. A, C
Radishes		March 1- May 1	August 1- August 30	Direct seed	X	25-30	Depth 0.5 in Plants 16	Vit. C, K, B6
Rutabagas		March 1- April 15	July 15- August 30	Direct seed	X	25-30	Depth 0.5 in Plants 4	Vit. C, fiber

## Cultural practices for common crops in N.C. Foothills and Mountains

CROP	Visual description	Spring planting date	Fall planting date	Planting method	Plant indoors Weeks before transplanting to the garden	Days to harvest	Planting depth and plants per square foot	Nutrient info
<b>Spinach</b>		March 1– June 1	August 1– September 1	Direct seed	X	50-60	Depth 0.5 in Plants 9	Vit. A, C, K, iron, folate, fiber, magnesium
<b>Squash, Summer</b>		May 15– July 31	X	Direct seed/ Transplant	3-4	70-95	Depth 1.5 in Plants 1	Vit. C, zinc, manganese
<b>Squash, Winter</b>		May 15– June 30	X	Direct seed/ Transplant	3-4	70-95	Depth 1 in Plants 1	Vit. A
<b>Sweet Potatoes</b>		May 25– June 30	X	Plant root/ Transplant slips	X	95-125	Depth X Plants 1	Vit. A, C, fiber, potassium, manganese, zinc
<b>Swiss Chard</b>		March 15– April 30	July 15– August 15	Direct seed/ Transplant	5-6	60-70	Depth 0.5 in Plants 2	Vit. A, C, magnesium
<b>Tomatoes</b>		May 10– June 30	X	Transplant	5-7	75-85	Depth 0.5 in Plants 1	Vit. A, C, potassium
<b>Turnips</b>		March 1– May 1	July 15– August 15	Direct seed	X	55-60	Depth 0.5 in Plants 9	Vit. C
<b>Watermelons</b>		May 15– June 30	X	Direct seed/ Transplant	3-4	90-100	Depth 1.5 in Plants 1	Vit. A, C

# Resources

Listed below are the sources used to collect the data for this publication.

## North Carolina Cooperative Extension

Contact your county Extension center to find out the first and last frost dates for your location. North Carolina Cooperative Extension centers are listed on this Web site  
<http://www.ces.ncsu.edu/local-county-center/>

## These sources provide detailed information on cultural requirements for commonly grown vegetables

Evans, E. Vegetable Garden Planting Guide Spring. Raleigh N.C. State University, Department of Horticultural Science.

<http://www.ces.ncsu.edu/depts/hort/consumer/quickref/vegetable/plantingguide.html>

Evans, E. (1999). Growing a Fall Vegetable Garden (HIL – 8100). Raleigh N.C. State University, Department of Horticultural Science. <http://www.ces.ncsu.edu/depts/hort/hil/hil – 8001.html>

Jones, D. and D. Roos. (2012). Planting and Harvesting Guide for Piedmont Vegetables and Herbs. Pittsboro, N.C.: Chatham County Center, N.C. Cooperative Extension.  
<http://www.ces.ncsu.edu/chatham/ag/SustAg/plantingguide.html>

Southeastern Vegetable Extension Workers Group (SEVEW). (2012). Vegetable Crop Handbook For Southeastern United States. Lincolnshire, Ill.: Vance Publishing Corp.  
[www.thegrower.com/south-east-vegetable-guide](http://www.thegrower.com/south-east-vegetable-guide)

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