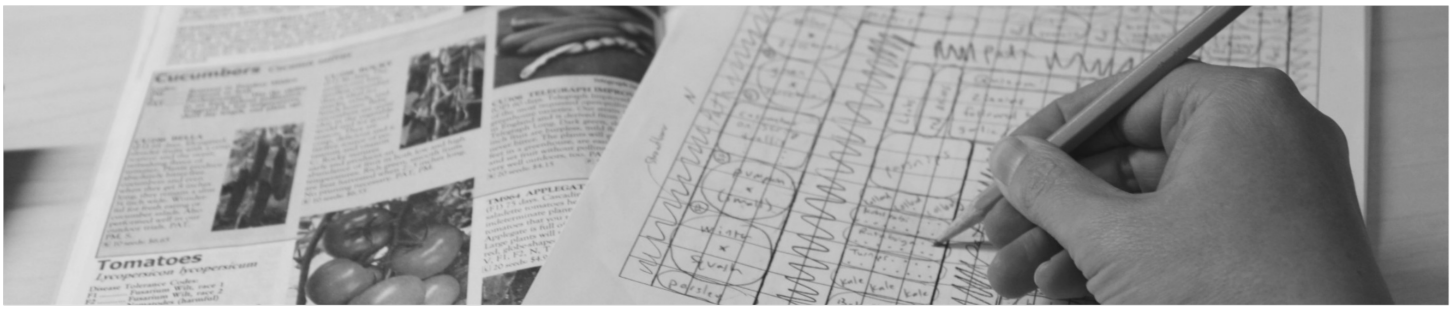


Chapter 1: Planning your Garden

TOPICS IN THIS CHAPTER:

- Making a planting plan
- Crop rotation by plant family
- Making a planting map
- Common crop chart
- Sample planting maps
- Personal planting plan
- Personal planting map

Before making your garden beds, you must first decide what plants to grow and where to put them. As you make your choices, use the Personal Planting Plan chart and graph paper on pages 10-12 to map out your garden.

Making a planting plan

Deciding what to grow

What do you enjoy? First, make a list of the vegetables that your family likes to eat or would like to try. Grow what you enjoy eating!

What is realistic? Most people do not have the space or time to grow everything they want, so you may need to narrow down your choices. Start by thinking about what grows well in our climate. You may love sweet potatoes, but they are a warm-weather crop and are not well suited to our cool northeastern climate. The Common Crop Chart on page 7 lists many crops that grow well in our region.

What is cost-effective? Given the time and effort you will put into your garden, you may want to grow crops that give you the most "bang for your buck."

For example, radishes and lettuce are easy to grow from seed, and seeds are less expensive than starts. Radishes and lettuce also grow quickly, so you can sow and harvest them several times in a season. And the plants do not take up much room in the garden. This makes them a good value.

This is an extraction from the Seed to Supper course book with permission from the NYS Seed to Supper Program.

On the other hand, one pumpkin plant uses a lot of garden space, takes a long time to grow, and produces only a few pumpkins. Pumpkins can be inexpensive to buy at the store, so they are a less cost-effective choice in a small garden.

The Common Crop Chart on page 7 is a useful tool for making cost-effective choices. Consider the expected yield per plan and column.

How much space will it take? Finally, think about the amount of space that each vegetable will take up in the garden (also called a crop's "footprint"). This is important because most gardeners have only a limited amount of space.

Considering the time and effort you will put into your garden, you may choose to grow crops that will give you the most "bang for your buck."

To find the "footprint" sizes of many garden vegetables, see the Common Crop Chart on page 7.

Choosing varieties

After you decide which vegetables to plant, you need to choose the varieties, or specific types of each plant. Some varieties do particularly well in our area.

Getting your seeds or plant starts from a local company like Fruition Seeds, Hudson Valley Seed Library, Turtle Seeds, Fedco, Harris, or Johnny's means you get plants that were bred for the Northeast. CCE Extension also provides an annual "Vegetable Varieties For Gardeners" list to help you choose.

Planting dates

Planting your seeds or plant starts at the right time reduces the risk of damage from frost or hot weather. For ideal times to plant, look at "planting windows" in the Common Crop Chart on page 7.

Seed packets and seed catalogs also have information about planting dates. They may mention the last and first frost dates. The map on page 5 shows average frost dates for different parts of upstate New York.

Seed packets and the Common Crop Chart also tell you "days until harvest," or the number of days from planting a seed or plant start until that crop is ready for harvest. This lets you work backward from the first frost date. For example, if your tomatoes need 80 days until harvest, and the first average frost date is only 50 days away, it is too late to plant tomatoes this season. The tomatoes will not have enough time to ripen before the frost hits. Many seed packets also give you information about length of harvest, or the number of days the crop continues to produce food.

CCE Extension's Recommended Vegetable Varieties list helps you choose vegetable varieties that will succeed in our climate.

Charts, seed packets, and seed catalogs may list a long planting window, but remember that plants do not "read" charts. Plants respond to soil temperature and weather conditions. Seeds will germinate (start to grow) when the soil is moist and the temperature is warm enough. The seed packet tells you what the temperature should be. A soil thermometer will tell you if the soil really has reached that temperature. See page 31 for more information about soil temperature and seed germination.

For more information

CCE Extension
Vegetable Varieties For Gardeners

Available at:
http://gardening.cornell.edu

Succession planting

2-week succession. Some plants grow quickly and have such a long planting window that you can plant them every 2 weeks during the growing season. This gives you a long harvest of fresh vegetables. Short-season crops like lettuce, beets, and carrots work well planted in 2-week succession.

Two or more crops in succession. Some plants mature quickly and can be replaced by a different crop midseason. For example, sow peas or cilantro in spring, then sow kale in summer when the peas or cilantro are finished. This method lets you to grow more than one crop in the same space during different times of the year.

Crop rotation by plant family

A plant family is a grouping of plants that are similar. Most common vegetables can be grouped into just nine plant families (see the chart on the right). Crop rotation by plant family—or changing the location of plant families from season to season—can help prevent disease, pest problems, and loss of nutrients from the soil.

As you plan your garden, think about grouping your crops by family and rotating each family into a different space every year. Avoid planting crops from the same family in the same place 2 years in a row. When possible, wait 4 years or more before rotating a family back into the same spot. If your space does not allow for crop rotation, you can still keep your garden healthy. Do it by building up your soil with compost, growing cover crops, keeping the garden clean, and choosing disease-resistant plant varieties.

For an example of a garden grouped by plant family, see the Sample Planting Map for a 20 x 20-foot garden space on pages 8 and 9. The plant groups in the outer beds are designed to move clockwise to the next bed space every year. Each plant family on this map will return to its original space after 7 years.

Making a planting map

Once you fill in your Personal Planting Plan with the crops and varieties you want to grow, use it to map out your garden.

Sketch your space. Start by drawing a rough sketch of your garden area. Be sure to mark things like outdoor water faucets, fences, buildings and sheds, and any large trees or shrubs. Also, mark which directions are north, south, east, and west. Include the rough dimensions of your planting space or beds. Your sketch should be simple, like the example on the next page.

To learn more about frost dates in your area, contact your local Cornell Cooperative Extension (www.cce.cornell.edu).

Map out your planting area. Use a blank sheet of paper (or the graph paper on pages 11 and 12) to draw just your planting space or beds and to mark the paths. Use one square on the graph paper to indicate 1 square foot of garden space. Indicate north, south, east, and west on your map. Now you are ready to choose the locations for your crops. You can use the rough sketch you made earlier to make sure you put your crops in the best locations. For example, be sure that sun-loving crops are out of the shadow of buildings or trees.

Plant spacing

Plants need plenty of space above and below the ground. Plant leaves need enough room to reach sunlight and natural breezes, which keep them dry and help prevent disease. Leaves use sunlight to create their own energy, so plants grown in full sun produce larger vegetables and sweeter fruit than plants grown in the shade.

Plant roots also need room to reach the water, air, and nutrients in the soil. Plants that are too close together will not thrive because they are competing with each other.

Succession planting	
Pull up	**Replace with**
Peas →	Carrots
Broccoli →	Salad greens
Spinach →	Collard greens
Lettuce →	Radishes
Tomatoes →	Garlic
Beets →	Kale
Salad greens →	Leeks

For a list of crops to plant in two-week succession, see the Common Crop Chart on page 7.

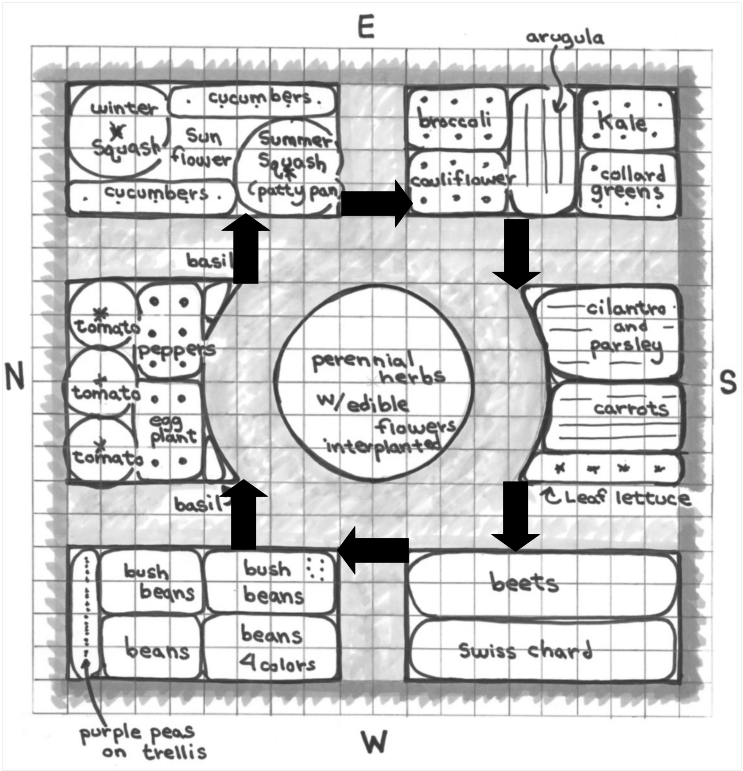
Your plants might look too far apart when they are small, but they will use up the space when they reach full size. As you arrange your garden, plan for the proper width and height of your plants at maturity.

Plan for the "footprint" of your plants at maturity. Plant starts and seedlings are tiny, but healthy, full-grown plants can be large. A well-designed garden plan will account for the width of a full-grown crop, also called its "footprint."

Imagine looking at a full-grown tomato plant from above. When a tomato is staked, it is about 36 inches wide by 36 inches deep (3 feet by 3 feet)—this is its footprint. Drawing out the footprints of your crops on your map will give you a better idea of how many plant starts you need or how many seeds to use. Seed packets and planting calendars may give instructions for "seed spacing" (the space between seeds), "row spacing" (the space between rows), and "thinning" (the space between full-grown plants in the rows). The footprint takes all of these into account and helps you picture the space a full-grown plant will need.

Plan for the height of your plants at maturity and for the shadows they will cast. The full height of a mature plant is important, because tall crops can shade out short crops.

In North America, the sun always shines from the south, casting shadows to the north. Plant your tall or trellised crops like corn and tomatoes on the north side of the garden so they do not shade shorter vegetables. Put shade-tolerant plants under or near tall plants.

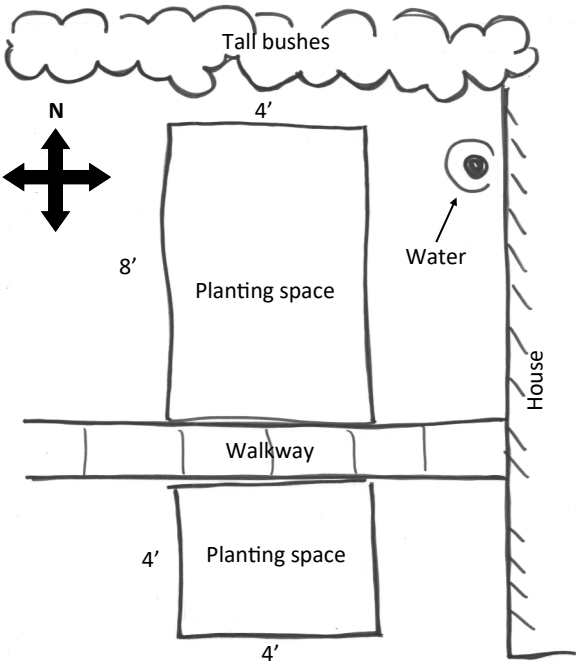


This map shows crops grouped by plant family. Each family rotates into a new space every year. (Larger map on pages 8 and 9.)

Plant families	
Plant family	**Crops**
Beet family (Amaranthaceae)	Beets Chard Spinach
Cabbage family (Brassicaceae)	Broccoli Cabbage Cauliflower Collard greens Kale Radishes Turnips
Carrot family (Apiaceae)	Carrots Cilantro Parsnips Parsley
Grass family (Poaceae)	Corn
Legume family (Fabaceae)	Beans Peas
Nightshade family (Solanaceae)	Eggplant Peppers Potatoes Tomatillos Tomatoes
Onion family (Liliaceae)	Garlic Leeks Onions
Squash family (Cucurbitaceae)	Cucumbers Summer squash Zucchini Winter squash Pumpkins Watermelon
Sunflower family (Asteraceae)	Lettuce Sunflowers Artichoke

Make a map for every season. Because your plantings change from season to season, you may need more than one map. For

example, you could have one map for spring plantings and another for summer plantings. Or you could have a map that shows succession planting. Your map could have an arrow showing the change from one crop to another, such as peas in spring and summer switching to garlic in fall.

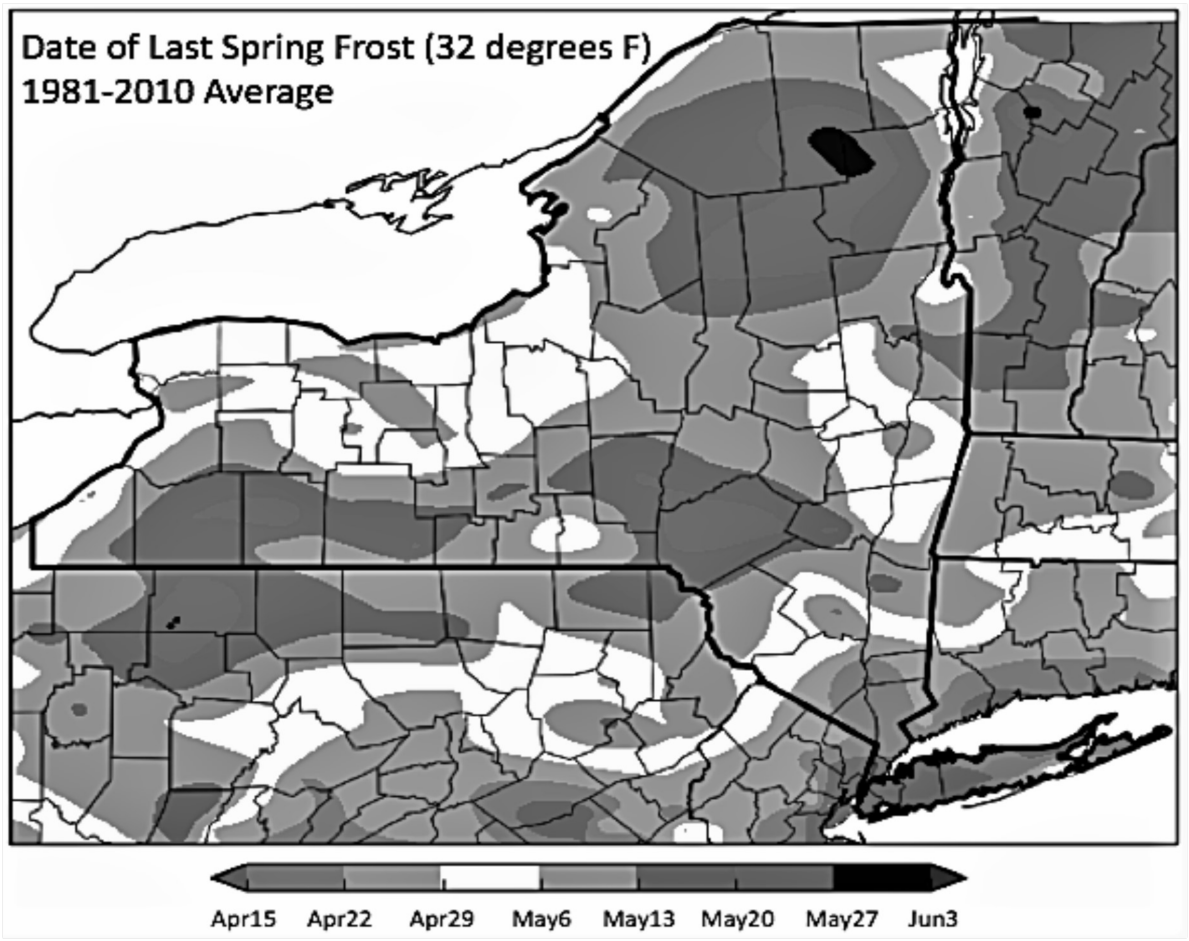


For more information

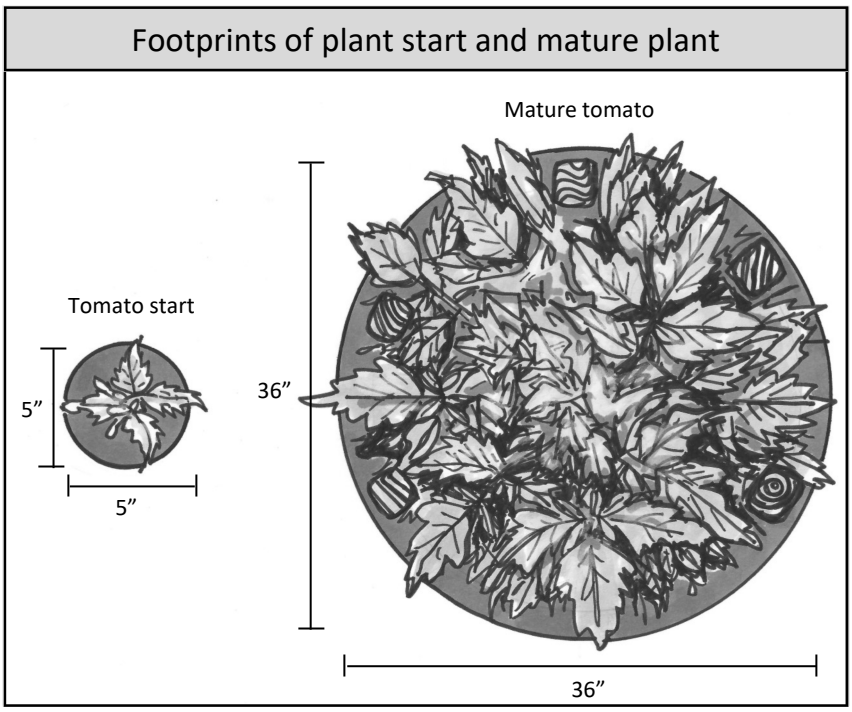
Weeds and your garden

Available at:

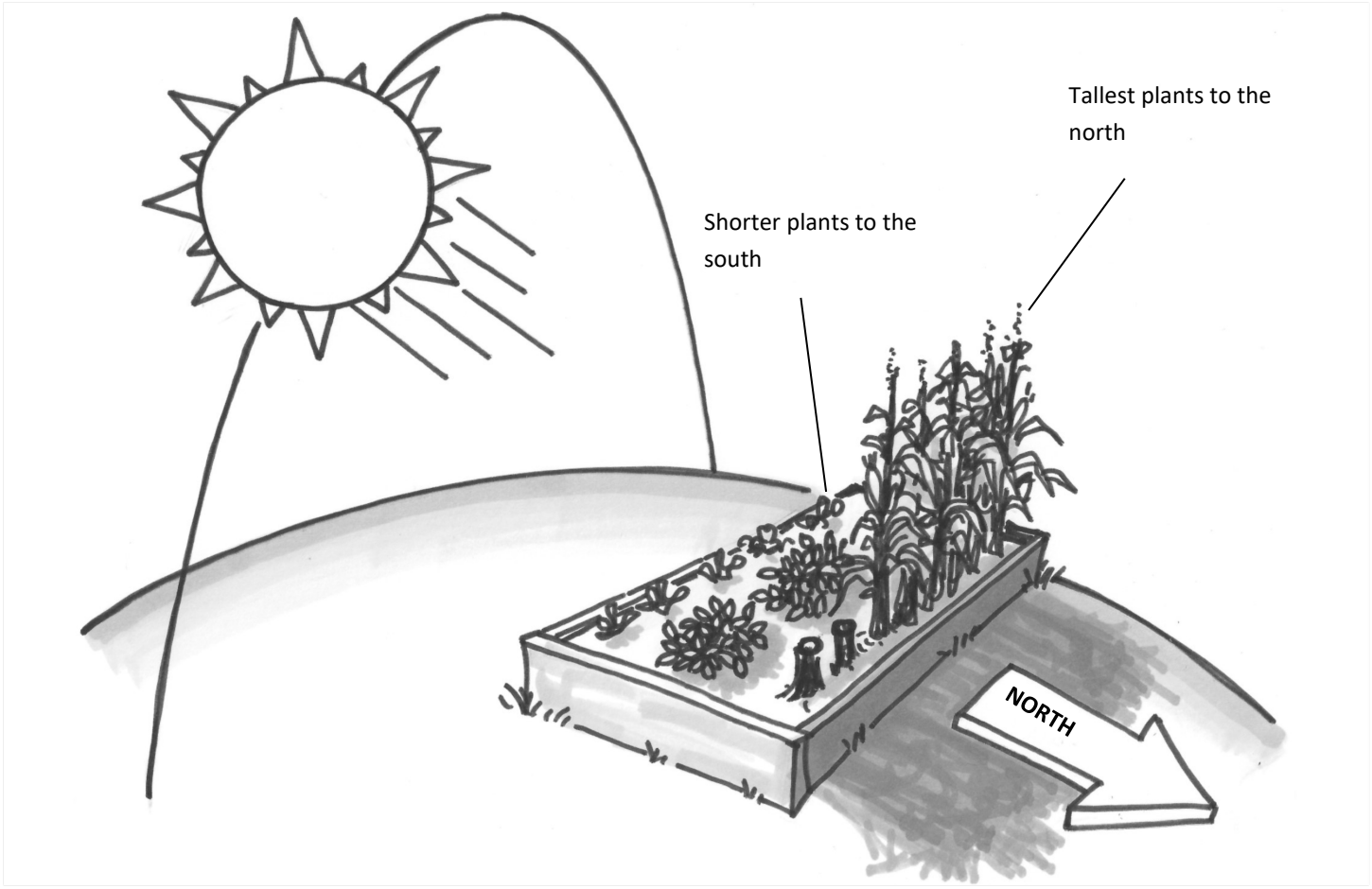
https://ecommons.cornell.edu/handle/1813/43859



These historical averages last spring frost time frames may show increasing variability with continual climate change. Use them as a rough guide and supplement to local observations.



A well-designed garden plan will account for a crop’s space needs at maturity, also called its “footprint.”



Plant your tall or trellised crops like corn and tomatoes on the north side of the garden so they do not shade shorter vegetables.

Common Crop Chart

Crop	Planting Window	Footprint	Planting method	Height	Days to harvest	Expected Yield per plant	Notes
Asparagus	April-June	36" x 36"	Transplant- 1-year old crowns	Tall	2 years	8-13 ounces	
Beans, snap (bush)	May-July	12" x 12"*	Row or banded	Medium	60-70	4 ounces	
Beans, snap (pole)	May-June	4" x 4" trellised	Row or banded	Tall	70-90	11 ounces	
Beets	April-June	4" x 4"	Row or banded	Short	50-80	5 ounces	
Broccoli	April-Aug	12" x 12"	Transplant	Medium	55-90	19 ounces	
Brussels Sprouts	May-June	12" x 12"	Transplant	Medium	110-120	1 1/2 pounds	
Cabbage	April-June	12" x 12"	Transplant	Medium	80-90	2 pounds	
Carrots	April-July 15	3" x 3"	Row or banded	Short	70-90	2 ounces	
Cauliflower	April-July 15	12" x 12"	Transplant	Medium	90-150	1 3/4 pounds	
Chard	April-July	12" x 12"	Transplant or row	Medium	50-60	1 1/2 pounds	
Collard greens	May-July	12" x 12"	Transplant	Medium	80-100	2 pounds	
Corn (sweet)	April-June	12" x 12"	Row	Tall	70-110	1 ear	
Cucumbers	May-June	6" x 6" trellised	Transplant or hill	Medium	55-75	4 fruit	
Eggplant	May-June	12" x 12"	Transplant	Medium	70-75	2 to 3 fruit	
Garlic	Sept-Oct	4" x 4"	Row	Short	220-300	1 bulb	
Herbs (Annual)	April-June	12" x 12"	Transplant	Short	60-90	1 plant	
Herbs (perennial)	Fall or spring	24'' x 24'' variable	Transplant or hill	Medium	Perennial	1 plant	
Kale	May-July	12" x 12"	Transplant	Medium	60-70	1 1/2 pounds	
Leeks	April-May	4" x 4"	Transplant or row	Short	120	1 stem	
Lettuce	April-Sept	6" x 6"	Row or banded	Short	65-80	1 plant	
Melons	June-July	6" x 6"	Transplant or hill	Medium	55-85	2 to 3 melons	
Onions	April-May	4" x 4"	Transplant	Short	100-120	1 bulb	
Peas	March-May	4" x 4" trellised	Row or banded	Medium	75-100	3 ounces	
Peppers	May-June	12" x 12"	Transplant or hill	Medium	80-100	4 pounds	
Potatoes	April-June	12" x 12"	Hill	Medium	70-120	2 to 3 pounds	
Radishes	March-Sept	3" x 3"	Row or banded	Short	25-35	1 root	
Spinach	April & Sept	4" x 4"	Row or banded	Short	40-50	2 ounces	
Squash, summer	May-June	36" x 36"	Transplant or hill	Medium	55-70	4 to 5 fruit	
Squash, winter	May	6' x 6' vine	Transplant or hill	Medium	90-150	10 pounds	
Tomatoes	May	36" x 36"	Transplant	Tall	60-85	10 to 20 pounds	
Turnips and Parsnips	April-May	3" x 3"	Row or banded	Short	110-120	5-8 ounces	

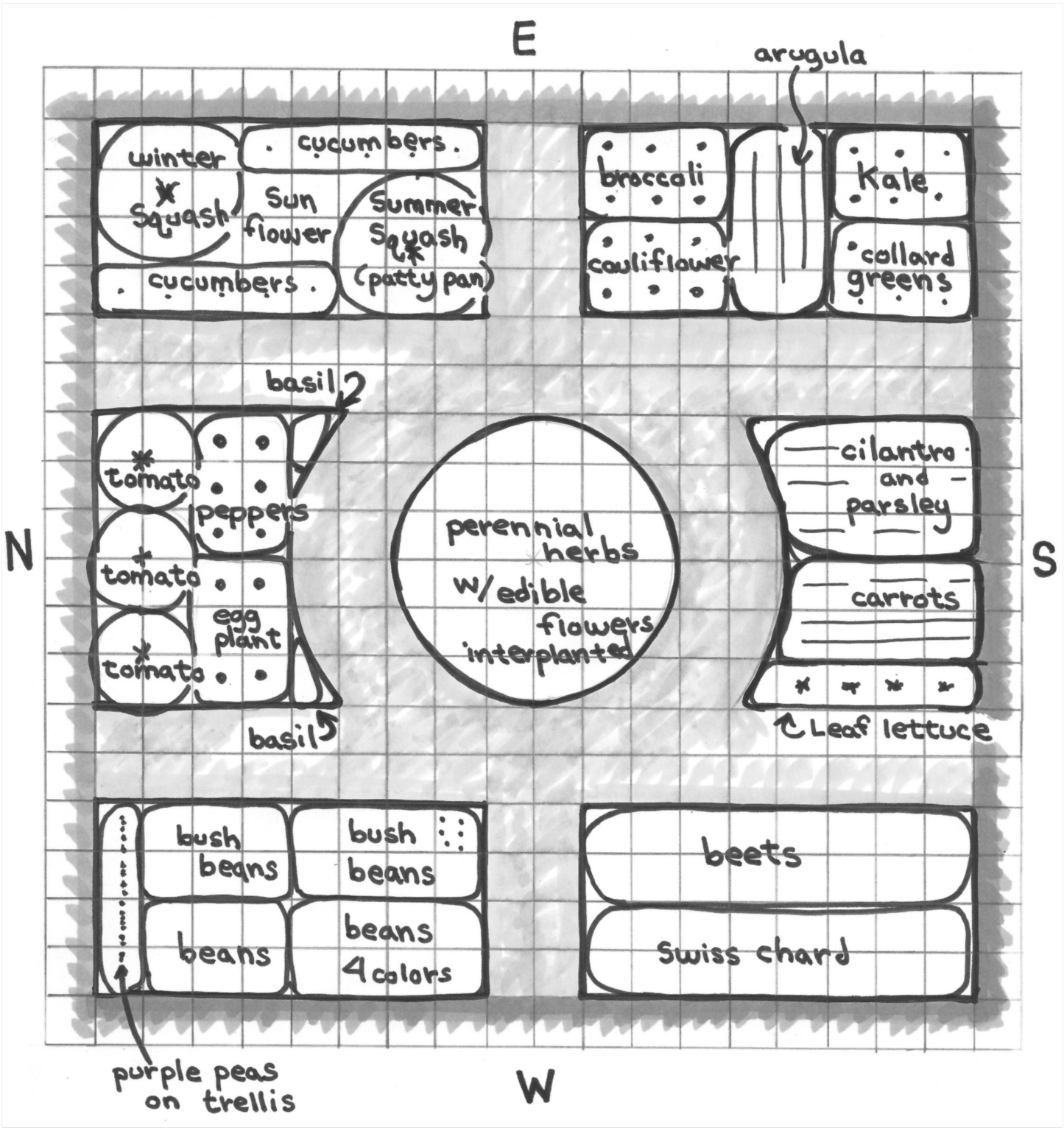
KEY	Planting method		Height	Short	Under 12''
	Transplant	Transplant into garden as a start		Medium	12'' - 35''
	Row, banded, hill	See Chapter 3, "Direct Seeding"		Tall	36'' or taller

Sources: http://cceonondaga.org/gardening/food-gardening/lastplanting-dates http://www.gardening.cornell.edu/homegardening

Sample Planting Map

20’ x 20’ garden space with pathways

1 square = 1 square foot

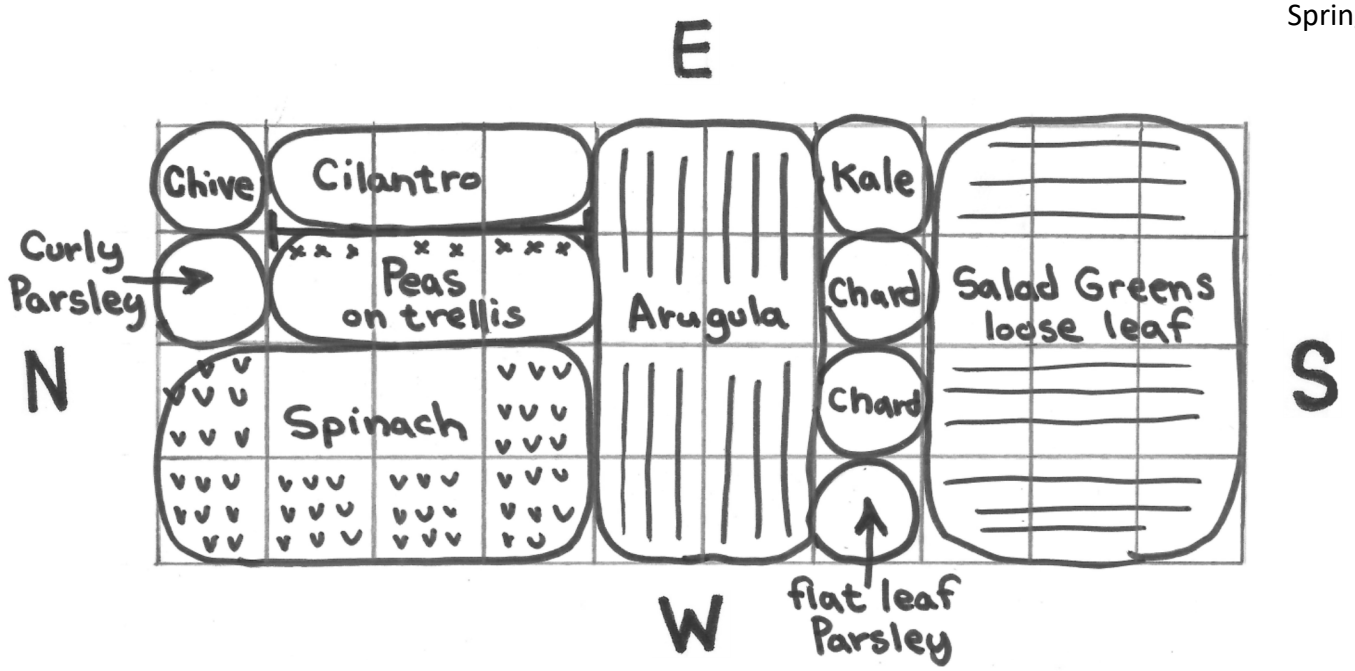


Sample Planting Map

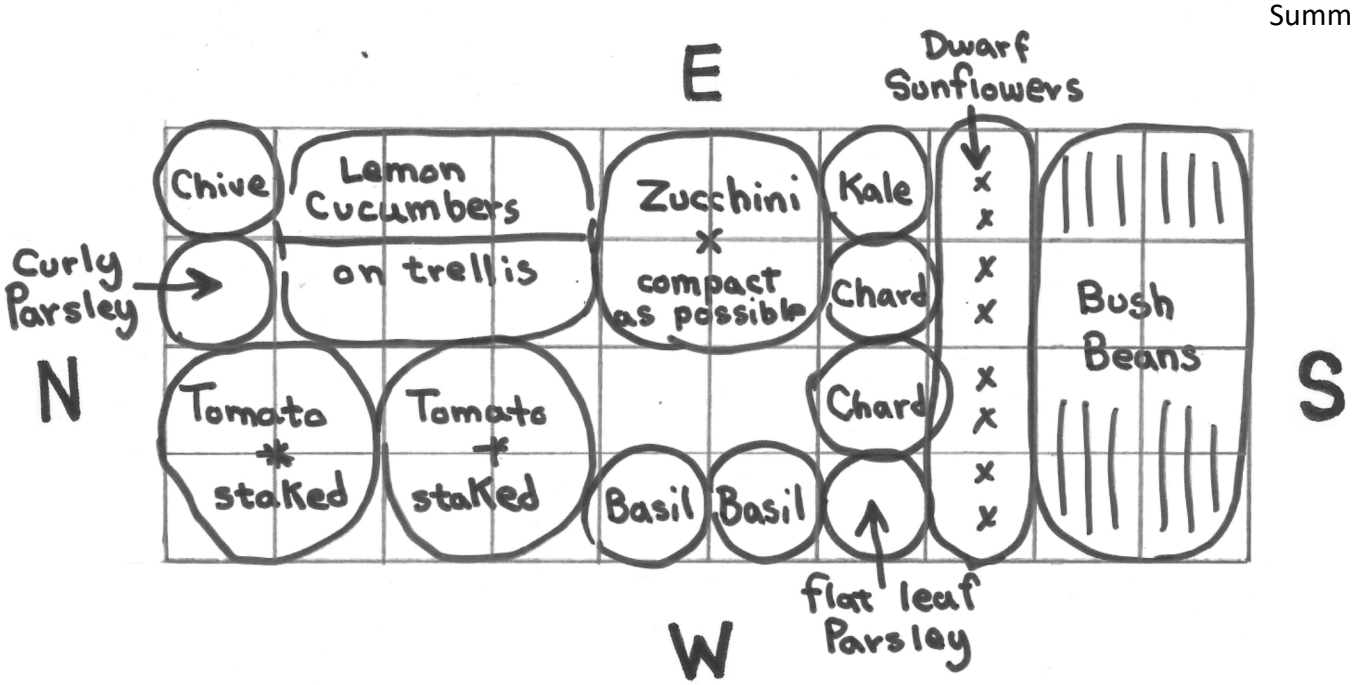
One 4’ x 10’ bed, two seasons

1 square = 1 square foot

Spring



Summer



Personal Planting Plan

Crop	Varieties	Date to Plant	Days to Harvest	Foot-print	Height	Shade ok?	Planting Method	Succession	# of plants /seeds	Notes
Example: Tomatoes	*Stupice, Sungold, Early Girl*	*May 30*	*60-65*	*36''x36''*	*Tall*	*Full sun only*	*Transplant*	*Single*	*3*	*need to be supported*

Personal Planting Map

Personal Planting Map

Seed to Supper

A Beginner's Guide to Low-Cost Vegetable Gardening

New York State 2019 Edition

Cornell Garden-Based Learning & Cornell University Cooperative Extension

A Publication of Oregon Food Bank
and
Oregon State University Extension Service

Adapted by NYS CCE

First published in 2013 as Seed to Supper: A guide for beginning gardeners.

Written by:
Alison Abbors, Learning Gardens Program Coordinator, Oregon Food Bank
Lynn Cox, OSU Extension Master Gardener - Washington County

Edited by:
Jeanne Brandt, Family Community Health, Oregon State University Extension Service
Weston Miller, Consumer Horticulture, Oregon State University Extension Service
Maureen Quinn, Family Community Health, Nutrition Education Program, Oregon State University Extension Service
Susan Lang, Developmental Editor

Illustrated by: John Stillmaker

Recipes contributed by: Lisa Bell, Kathy Block-Brown, Carol Kast and www.FoodHero.org

Cover illustration and design: Connie Ratti

Booklet design: Alison Abbors

Table of Contents

Introduction i

Chapter 1: Planning Your Garden 1

Making a planting plan 1
Crop rotation by plant family 3
Making a planting map 3
Common crop chart 7
Sample planting maps 8
Personal planting plan 10
Personal planting map 11

Chapter 2: Getting Started with Healthy Soil 13

Choosing your site 13
Building healthy soil 14
Compost 15
Making garden beds 18
Improving and protecting soil health 21

Chapter 3: Planting Your Garden 24

Preparing the soil 24
Fertilizing 25
Seeds, or transplants? 27
Direct seeding 27
Transplanting 31
Protecting young plants 32

Vertical gardening 34
Container gardening 35
Exploring culture in gardens: Three Sisters 36

Chapter 4: Caring for Your Growing Garden 38

Watering 38
Fertilizing during the growing season 40
Weeding 41
Using Integrated Pest Management (IPM) 43
Identifying common pests 47

Chapter 5: Harvesting and Using Your Bounty 53

Gardening for your health 53
Crop-by-Crop: Harvest, storage & nutrition 55
Cooking from your garden 73

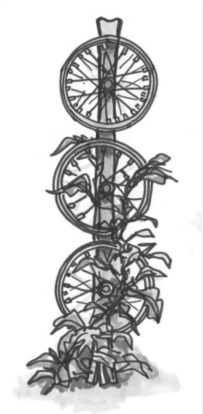
Glossary 78

Appendix 81

Cooperative Extension contacts 81
Resources for gardening on a budget 82
Trellises and vertical gardening 84
Common garden tools 86
Additional gardening information 87

Acknowledgements 90

References 91



Welcome, Gardeners!

We invite you to experience the deep satisfaction that comes from growing a portion of your own food.

This booklet was created for participants of the Seed to Supper course, a shared program of Oregon Food Bank's Learning Gardens and adopted by the Cornell Cooperative Extension (CCE) of New York State in January of 2016. Seed to Supper is a comprehensive beginning vegetable gardening curriculum designed for adults gardening on a budget. Taught at community sites throughout New York by trained volunteer Garden Educators, Seed to Supper highlights practical, low-cost techniques for building, planning, planting, maintaining and harvesting a successful vegetable garden.

Seed to Supper in New York State is partnering with New York's Food Banks and Extension offices to build more food secure communities—places where all people at all times have access to enough food for a healthy life. Increasing community food security through programs in gardening, nutrition education, advocacy, and community organizing goes hand-in-hand with our work to help people living with low incomes meet their short-term food needs.

Whether you've taken a Seed to Supper class or come across this booklet in another way, we hope that the information in these pages will help you make budget-friendly decisions in your garden and, ultimately, share in the joy of eating your own home-grown vegetables!

Happy gardening!

Garden
Learn
Reflect
Cornell Garden Based Learning

Cornell University Cooperative Extension

A Gardener's Job

Your job as a gardener is simple: to understand what your plants need and to give it to them. So what do plants need? They need sunlight, water, air, and nutrients in the right amount and at the right time. This guide will help you make sure your plants get everything they need to grow well, so you get the best possible results from your garden.