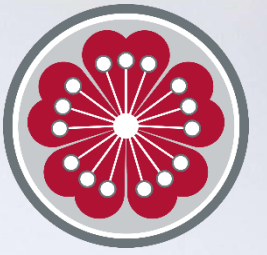


Planning Your Seed Starting Schedule



Cowlitz County Master Gardeners

Heidi Hubler and Sara Clark

January 30, 2024



LEARN WITH US!

cowlitzcomg.com



UPCOMING WORKSHOPS



HAVE A GARDENING PROBLEM? ASK A MASTER GARDENER!



VEGETABLE GARDENING



FRUITS



LANDSCAPE GARDENING



MONTH-BY-MONTH GARDEN TIPS



LAWN/TURF/PASTURE



COMPOSTING



POLLINATORS, SPIDERS, BENEFICIALS, INSECT PESTS



HOW-TO DEMONSTRATIONS: for adults and kids



WEEDS



SUBSCRIBE TO OUR YOUTUBE CHANNEL

<https://www.cowlitzcomg.com>

Introduction

WHEN should I plant my seeds?

- 1) Know your growing zone
- 2) Know your seeds
- 3) Direct planting or transplants
- 4) Succession planning



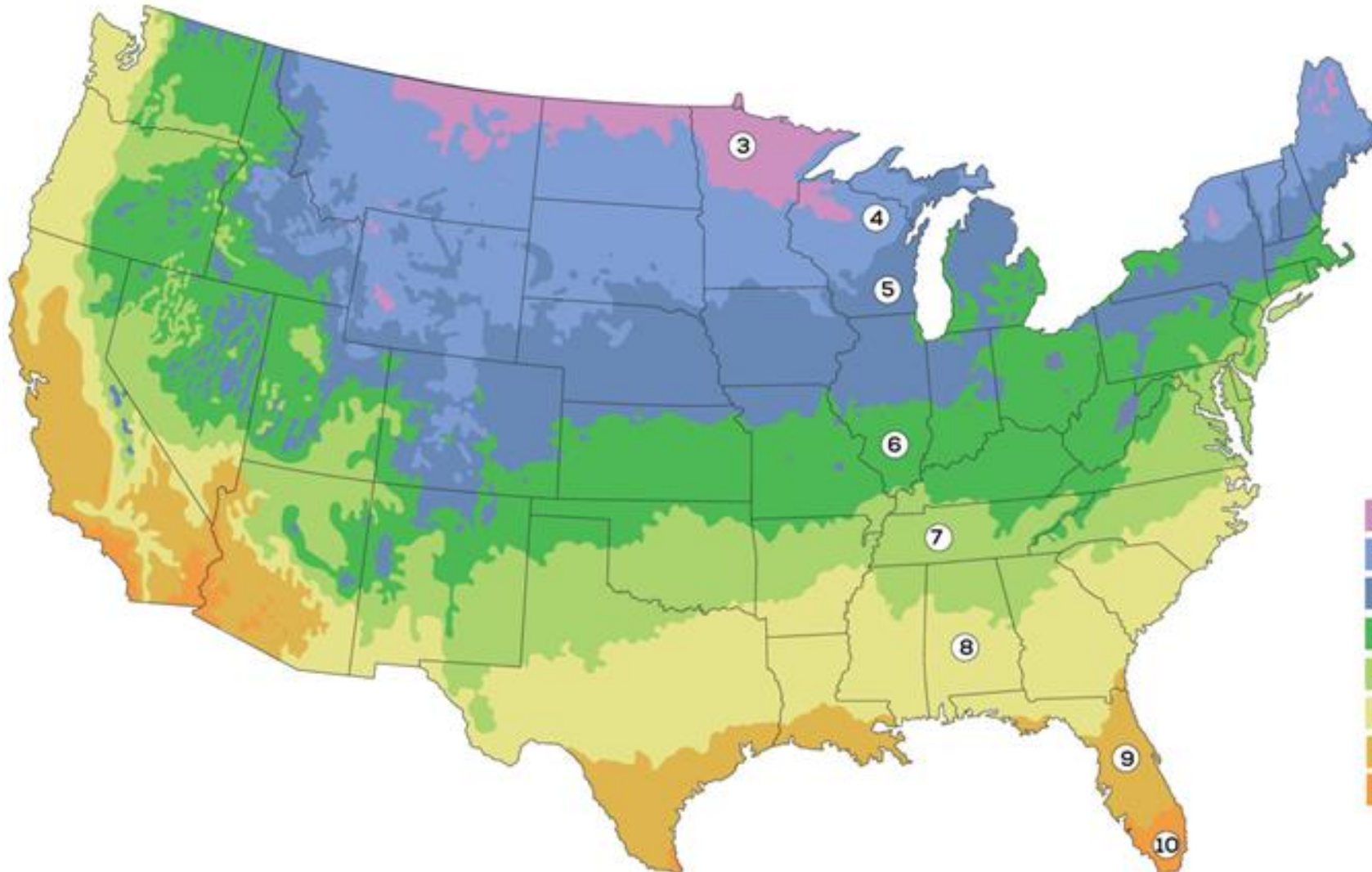
Introduction

WHEN should I plant my seeds?

- 5) Extending the growing season
- 6) Specific Examples
- 7) Winter gardening
- 8) Summary



USDA Plant Hardiness Zone Map

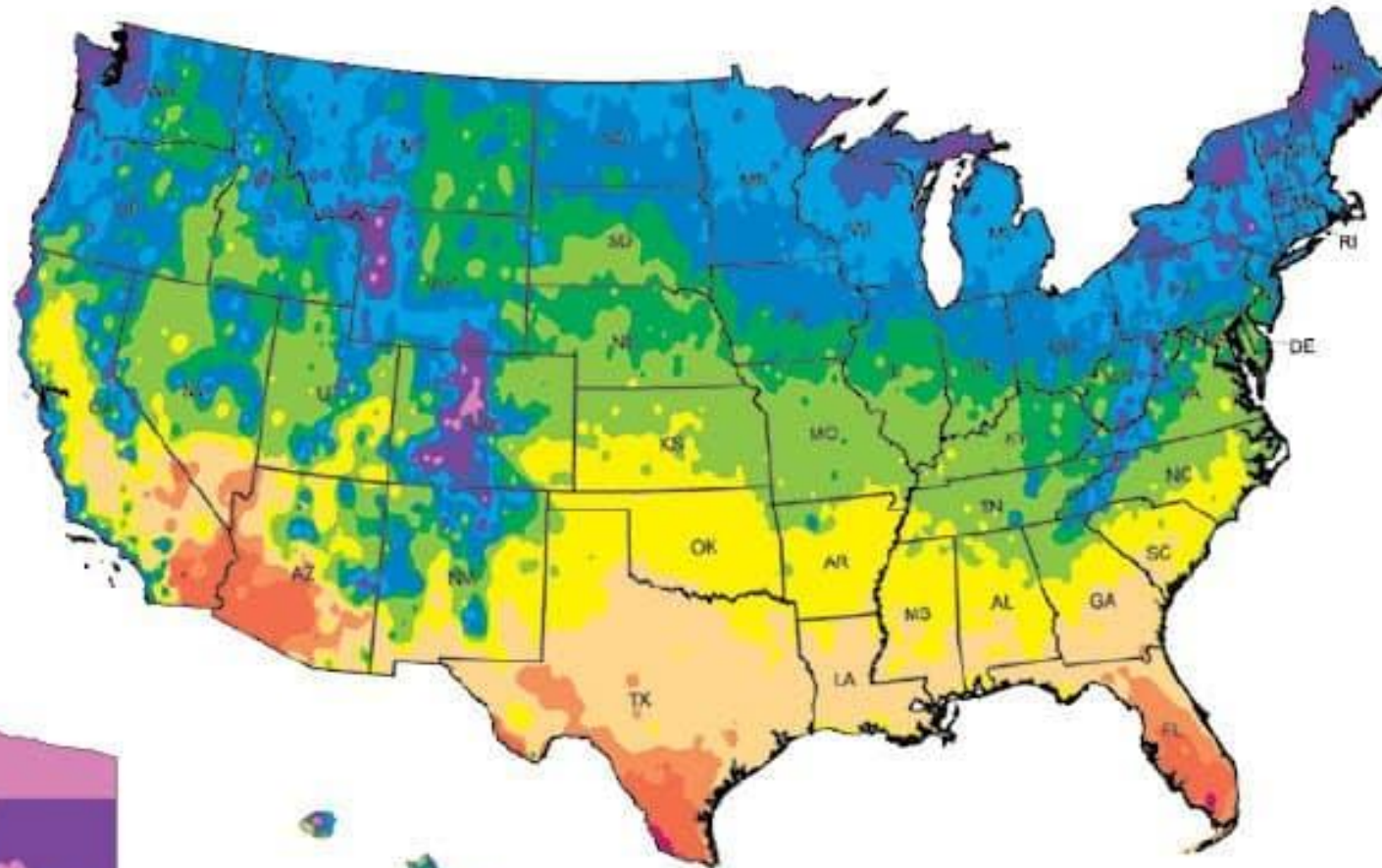


AVERAGE MINIMUM WINTER TEMPERATURE

	Fahrenheit	Celsius
Zone 3	-40° to -30°	-40° to -34°
Zone 4	-30° to -20°	-34° to -29°
Zone 5	-20° to -10°	-29° to -23°
Zone 6	-10° to 0°	-23° to -18°
Zone 7	0° to 10°	-18° to -12°
Zone 8	10° to 20°	-12° to -7°
Zone 9	20° to 30°	-7° to -1°
Zone 10	30° to 40°	-1° to -4°

American Horticultural Society Heat Zone Map

DAYS ABOVE 86°	ZONE
Fewer than 1	1
1 to 7	2
7 to 14	3
14 to 30	4
30 to 45	5
45 to 60	6
60 to 90	7
90 to 120	8
120 to 150	9
150 to 180	10
180 to 210	11
More than 210	12



AMERICAN HORTICULTURAL SOCIETY

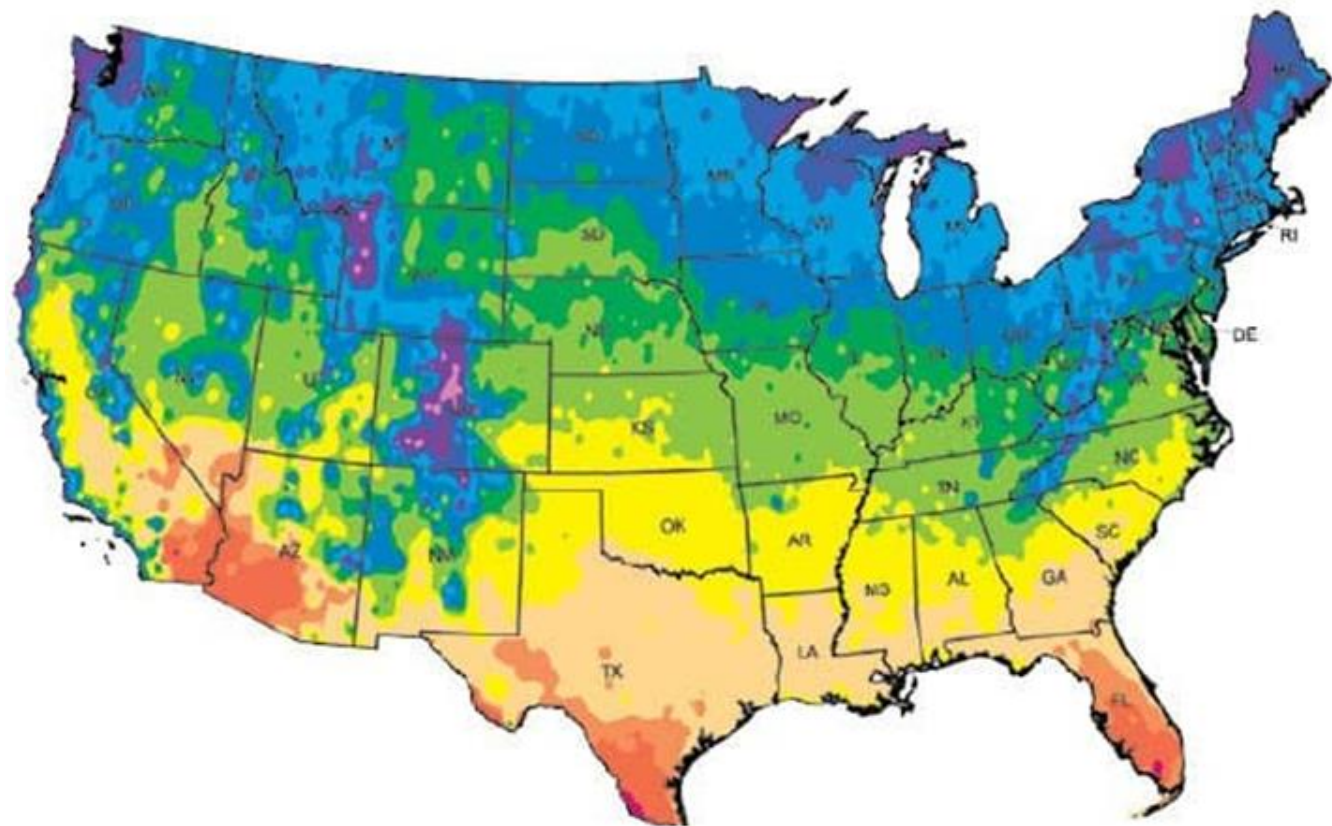
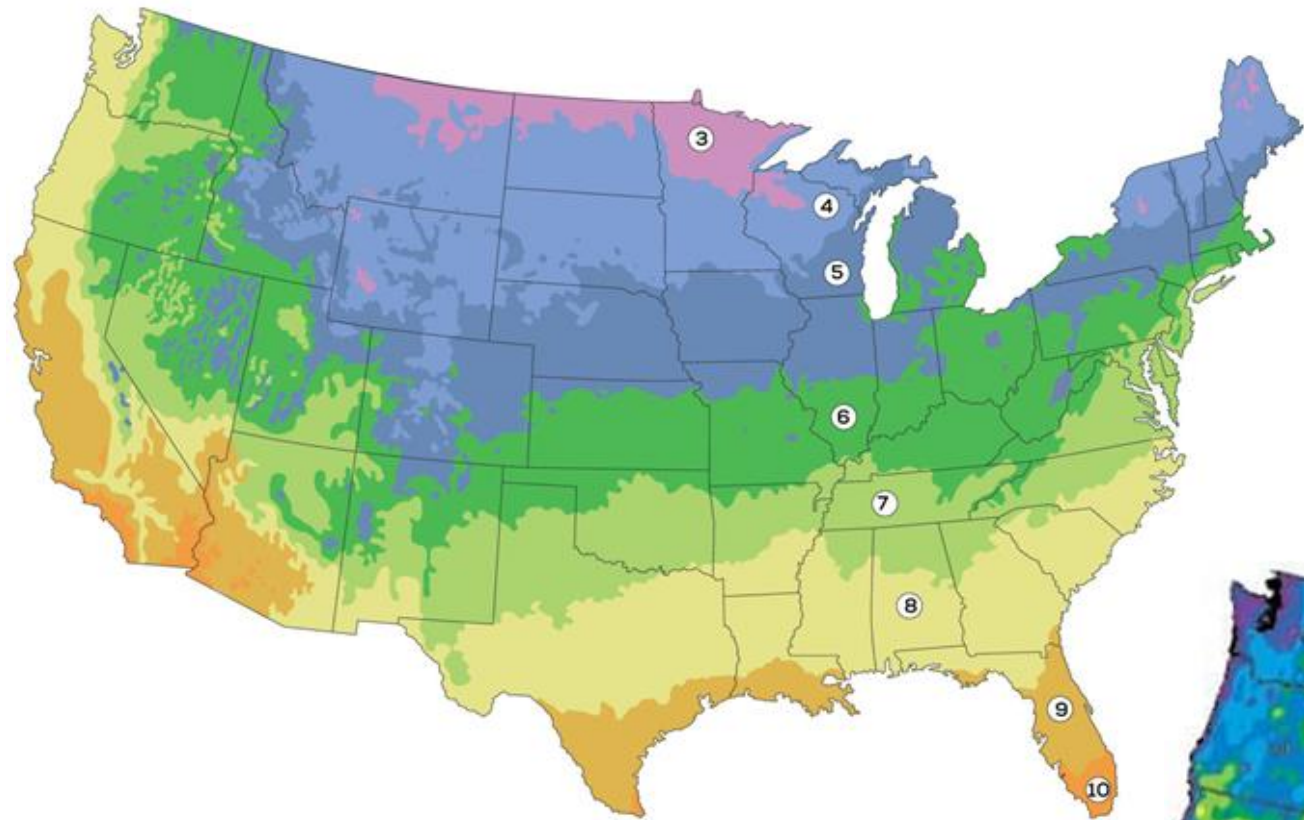
7931 East Boulevard Drive, Alexandria, VA 22308
703-768-5700, fax 703-768-8700

Coordinated by: Dr. H. Marc Cathey, President Emeritus.

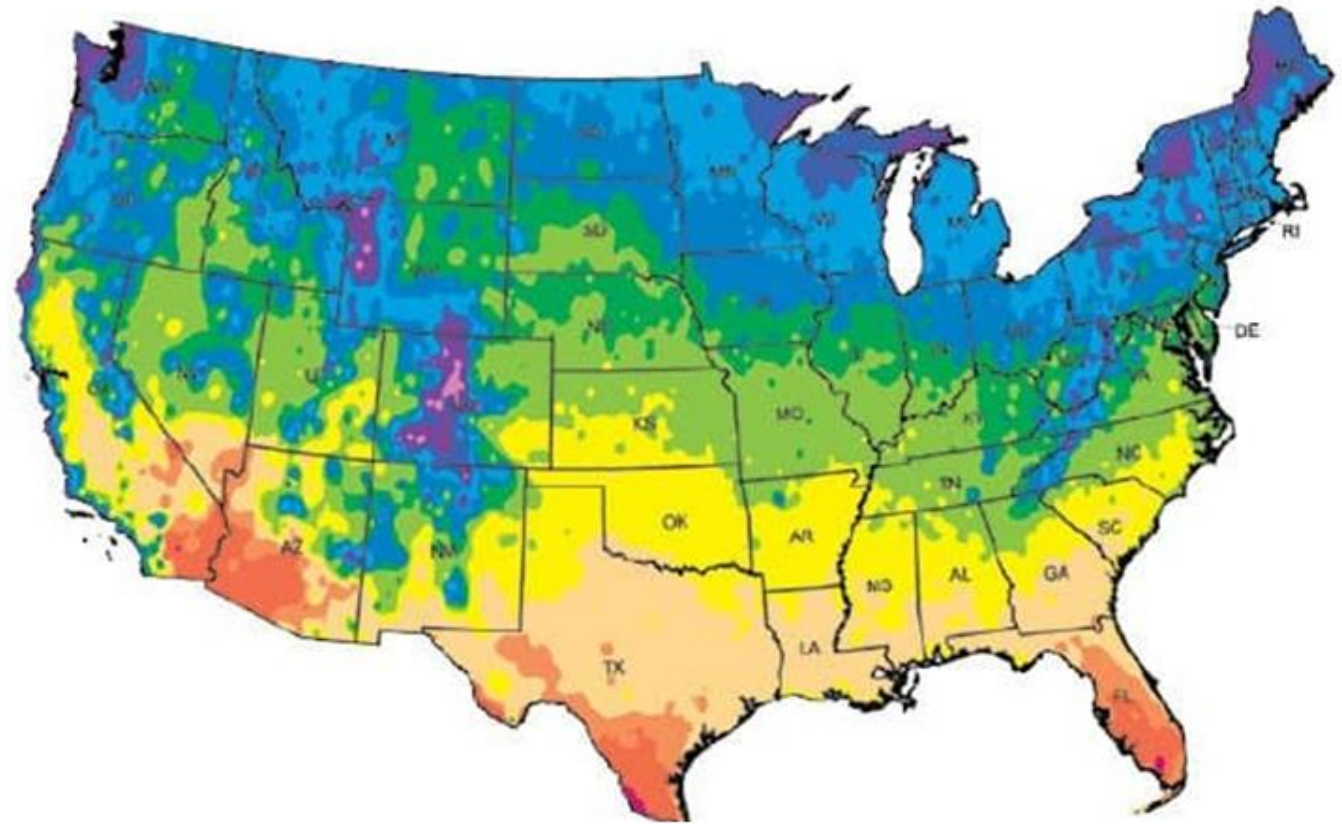
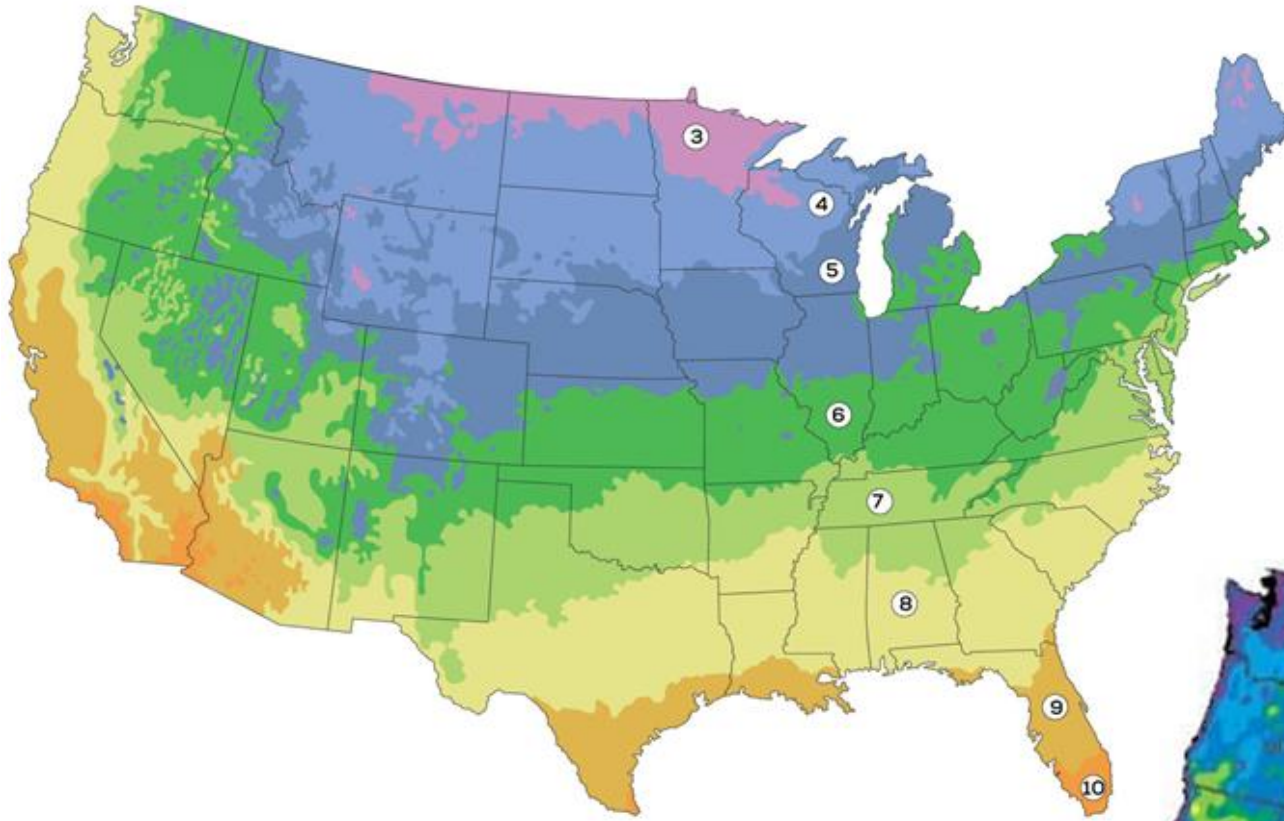
Compiled by: Meteorological Evaluation Services Co., Inc.

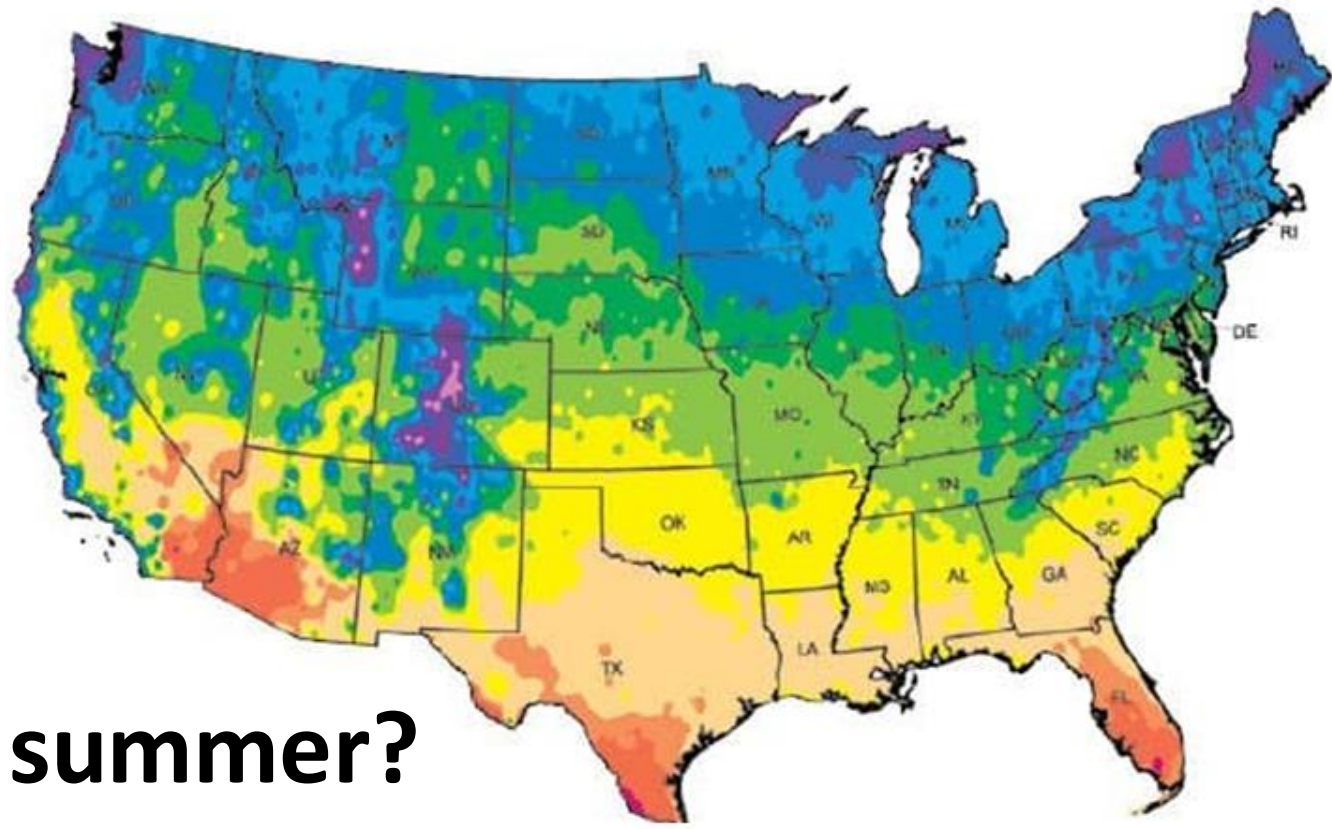
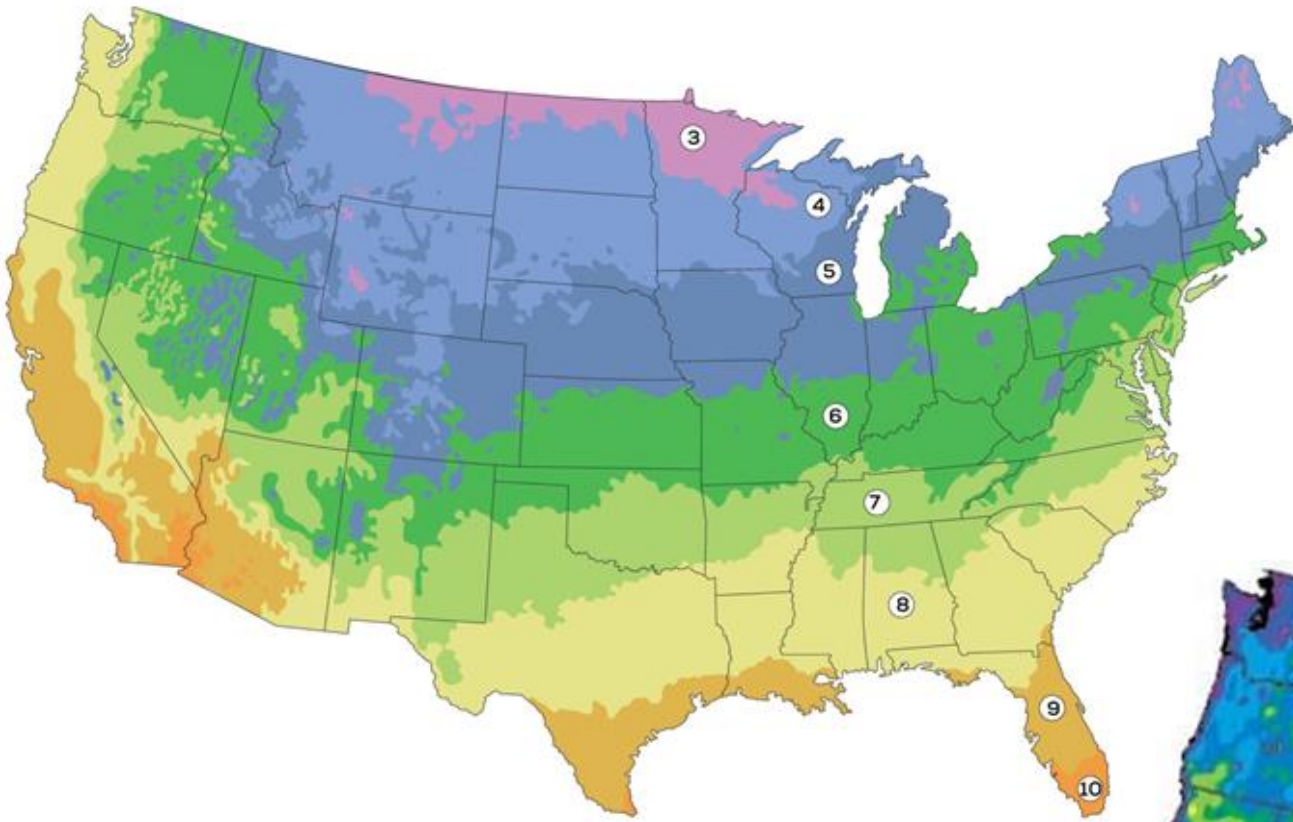
Underwriting by:

- Monrovia Nursery Company
- Horticultural Research Institute of the American Nursery and Landscape Assoc.
- Goldsmith Seed Co.
- Time-Life Inc., September 1997



Will your perennials survive the winter?

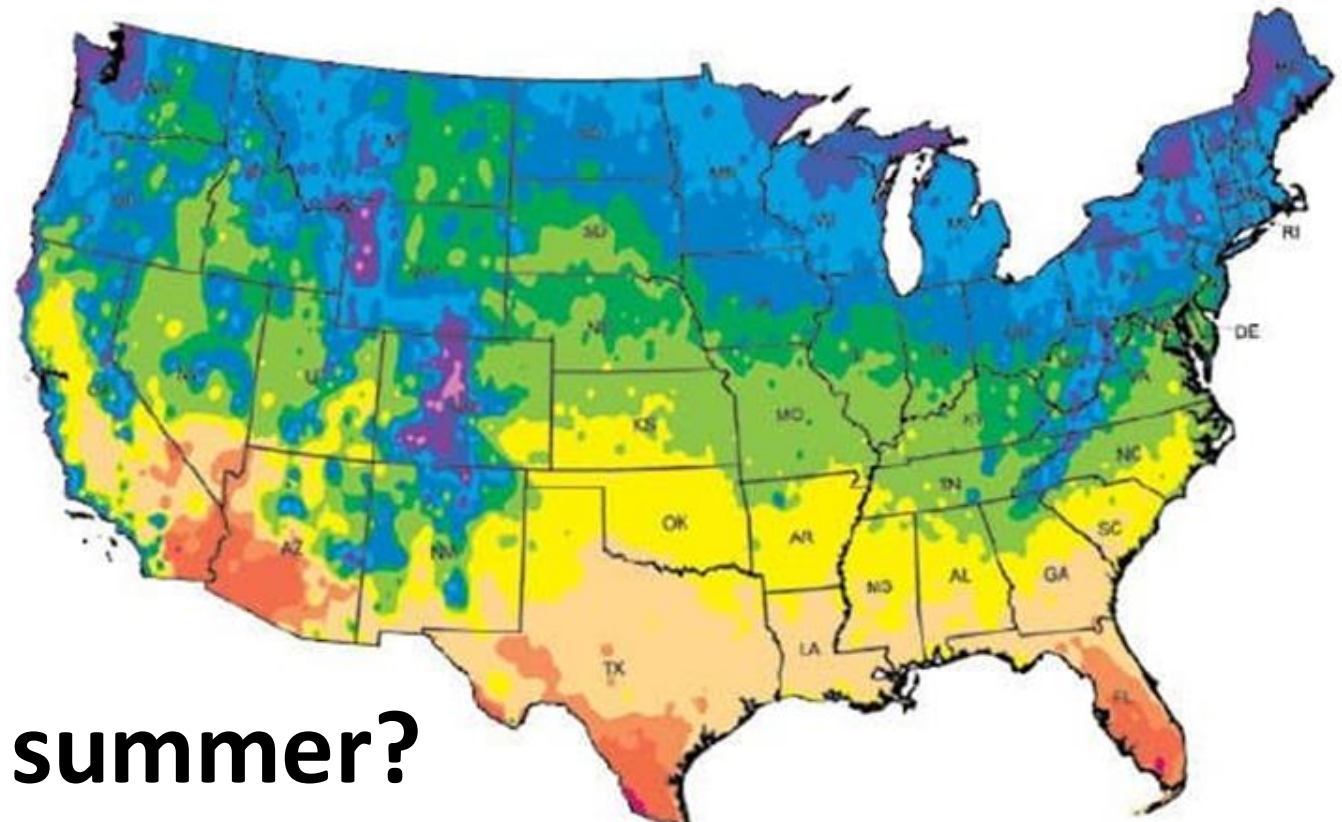




**Will your vegetables and
annuals grow well in the summer?**

DAYS ABOVE 86° ZONE

Fewer than 1	1
1 to 7	2
7 to 14	3
14 to 30	4
30 to 45	5
45 to 60	6
60 to 90	7
90 to 120	8
120 to 150	9
150 to 180	10
180 to 210	11
More than 210	12



Will your vegetables and annuals grow well in the summer?

Table 2. Classification of vegetable crops according to their adaptation to warm and cold temperatures (Adapted from: Knott's Handbook for Vegetable Growers; Vegetable Production, Nonnecke).

Warm-season Crops			
<u>Tender</u>		<u>Very Tender</u>	
Cowpea	Soybean	Cucumber	Pepper
New Zealand spinach	Sweet corn	Eggplant	Pumpkin
Snap/green bean	Tomato	Lima bean	Squash
		Muskmelon	Sweet potato
		Okra	Watermelon
Cool-season Crops			
<u>Hardy</u>		<u>Half-hardy</u>	
Artichoke	Kohlrabi	Carrot	Chinese cabbage
Asparagus	Leek	Cauliflower	Endive
Beet	Mustard	Celery	Lettuce
Broad bean	Onion	Chard	Potato
Broccoli	Parsley		
Brussels sprouts	Radish		
Cabbage	Rhubarb		
Chive	Spinach		
Collards	Turnip		
Garlic	Parsnip		
Horseradish	Salsify		
Kale			

KNOW YOUR SOIL TEMPERATURE

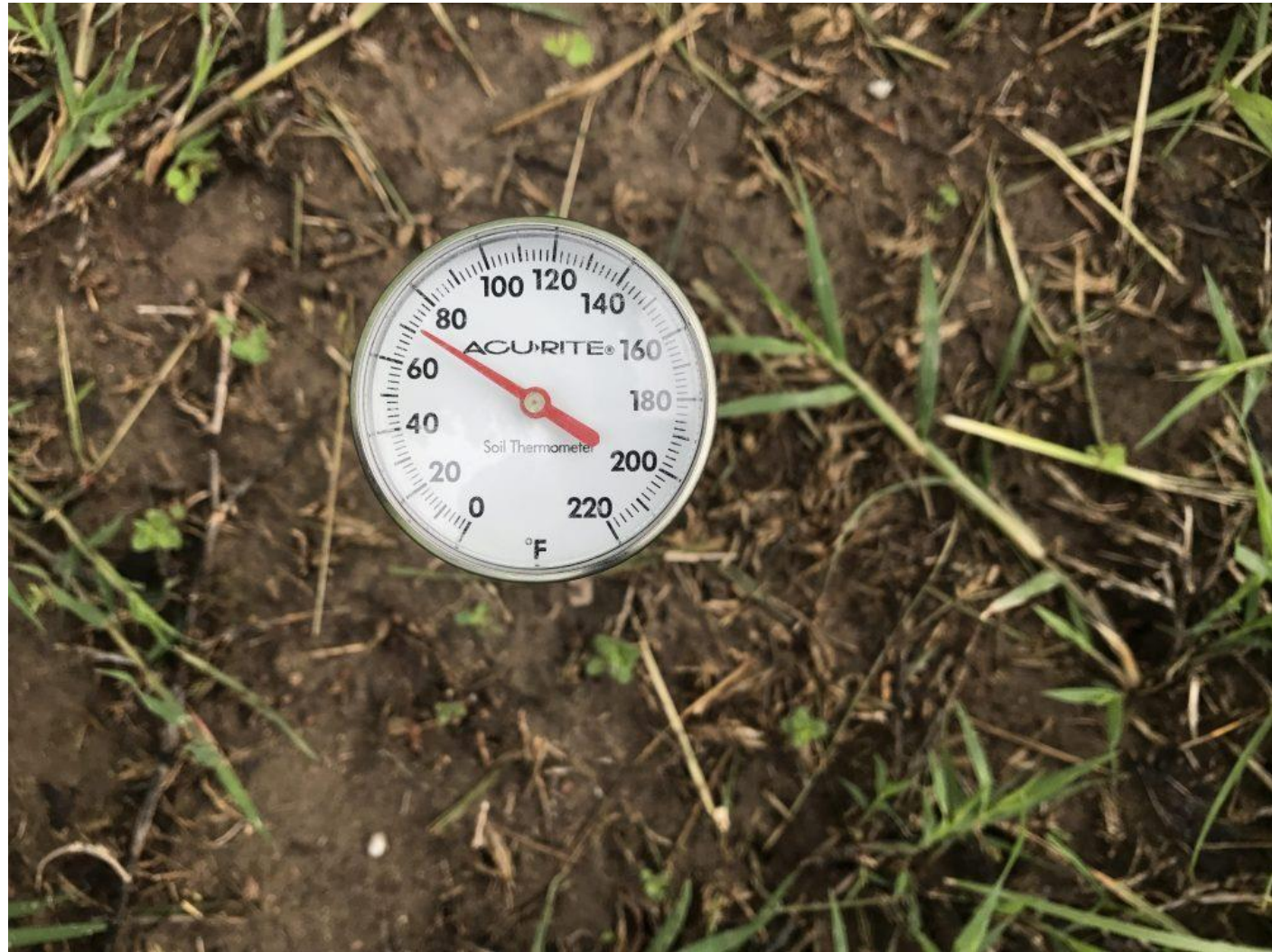


Table 9. Minimum, maximum, and optimum soil temperatures for vegetable seed germination (Source: Knott's Handbook for Vegetable Growers).

Vegetable	Minimum (°F)	Optimum Range (°F)	Optimum (°F)	Maximum (°F)
Asparagus	50	60-85	75	95
Bean	60	60-85	80	95
Bean, Lima	60	65-85	85	85
Beet	40	50-85	85	95
Cabbage	40	45-95	85	100
Carrot	40	45-85	80	95
Cauliflower	40	45-85	80	100
Celery	40	60-70	70	85
Chard	40	50-85	85	95
Corn	50	60-95	95	105
Cucumber	60	60-95	95	105
Eggplant	60	75-90	85	95
Lettuce	35	40-80	75	85
Muskmelon	60	75-95	90	100
Okra	60	70-95	95	105
Onion	35	50-95	75	95
Parsley	40	50-85	75	90
Parsnip	35	50-70	65	85
Pea	40	40-75	75	85
Pepper	60	65-95	85	95
Pumpkin	60	70-90	90	100
Radish	40	45-90	85	95
Spinach	35	45-75	70	85
Squash	60	70-95	95	100
Tomato	50	60-85	85	95
Turnip	40	60-105	85	105
Watermelon	60	70-95	95	105

Minimum (°F) [Optimum (°F)] Soil Temperature for Germination

Lettuce	35°F	75°F
Onion	35°F	75°F
Parsnip	35°F	65°F
Spinach	35°F	70°F

Table 9. Minimum, maximum, and optimum soil temperatures for vegetable seed germination (Source: Knott's Handbook for Vegetable Growers).

Vegetable	Minimum (°F)	Optimum Range (°F)	Optimum (°F)	Maximum (°F)
Asparagus	50	60-85	75	95
Bean	60	60-85	80	95
Bean, Lima	60	65-85	85	85
Beet	40	50-85	85	95
Cabbage	40	45-95	85	100
Carrot	40	45-85	80	95
Cauliflower	40	45-85	80	100
Celery	40	60-70	70	85
Chard	40	50-85	85	95
Corn	50	60-95	95	105
Cucumber	60	60-95	95	105
Eggplant	60	75-90	85	95
Lettuce	35	40-80	75	85
Muskmelon	60	75-95	90	100
Okra	60	70-95	95	105
Onion	35	50-95	75	95
Parsley	40	50-85	75	90
Parsnip	35	50-70	65	85
Pea	40	40-75	75	85
Pepper	60	65-95	85	95
Pumpkin	60	70-90	90	100
Radish	40	45-90	85	95
Spinach	35	45-75	70	85
Squash	60	70-95	95	100
Tomato	50	60-85	85	95
Turnip	40	60-105	85	105
Watermelon	60	70-95	95	105

Minimum (°F) [Optimum (°F)] Soil Temperature for Germination

Beet	40°F	85°F
Cabbage	40°F	85°F
Carrot	40°F	80°F
Cauliflower	40°F	80°F
Celery	40°F	70°F
Chard	40°F	85°F
Peas	40°F	75°F
Radish	40°F	85°F
Turnip	40°F	85°F

Table 9. Minimum, maximum, and optimum soil temperatures for vegetable seed germination (Source: Knott's Handbook for Vegetable Growers).

Vegetable	Minimum (°F)	Optimum Range (°F)	Optimum (°F)	Maximum (°F)
Asparagus	50	60-85	75	95
Bean	60	60-85	80	95
Bean, Lima	60	65-85	85	85
Beet	40	50-85	85	95
Cabbage	40	45-95	85	100
Carrot	40	45-85	80	95
Cauliflower	40	45-85	80	100
Celery	40	60-70	70	85
Chard	40	50-85	85	95
Corn	50	60-95	95	105
Cucumber	60	60-95	95	105
Eggplant	60	75-90	85	95
Lettuce	35	40-80	75	85
Muskmelon	60	75-95	90	100
Okra	60	70-95	95	105
Onion	35	50-95	75	95
Parsley	40	50-85	75	90
Parsnip	35	50-70	65	85
Pea	40	40-75	75	85
Pepper	60	65-95	85	95
Pumpkin	60	70-90	90	100
Radish	40	45-90	85	95
Spinach	35	45-75	70	85
Squash	60	70-95	95	100
Tomato	50	60-85	85	95
Turnip	40	60-105	85	105
Watermelon	60	70-95	95	105

Minimum (°F) [Optimum (°F)] Soil Temperature for Germination

Asparagus 50°F 75°F

Corn 50°F 95°F

Tomato 50°F 85°F

Table 9. Minimum, maximum, and optimum soil temperatures for vegetable seed germination (Source: Knott's Handbook for Vegetable Growers).

Vegetable	Minimum (°F)	Optimum Range (°F)	Optimum (°F)	Maximum (°F)
Asparagus	50	60-85	75	95
Bean	60	60-85	80	95
Bean, Lima	60	65-85	85	85
Beet	40	50-85	85	95
Cabbage	40	45-95	85	100
Carrot	40	45-85	80	95
Cauliflower	40	45-85	80	100
Celery	40	60-70	70	85
Chard	40	50-85	85	95
Corn	50	60-95	95	105
Cucumber	60	60-95	95	105
Eggplant	60	75-90	85	95
Lettuce	35	40-80	75	85
Muskmelon	60	75-95	90	100
Okra	60	70-95	95	105
Onion	35	50-95	75	95
Parsley	40	50-85	75	90
Parsnip	35	50-70	65	85
Pea	40	40-75	75	85
Pepper	60	65-95	85	95
Pumpkin	60	70-90	90	100
Radish	40	45-90	85	95
Spinach	35	45-75	70	85
Squash	60	70-95	95	100
Tomato	50	60-85	85	95
Turnip	40	60-105	85	105
Watermelon	60	70-95	95	105

Minimum (°F) [Optimum (°F)] Soil Temperature for Germination

Beans	60°F	80°F
Cucumber	60°F	95°F
Eggplant	60°F	85°F
Muskmelon	60°F	90°F
Okra	60°F	95°F
Pepper	60°F	85°F
Pumpkin	60°F	90°F
Squash	60°F	95°F
Watermelon	60°F	95°F

Table 3. Growing degree day (GDD) base temperatures for some common vegetable crops (Source: Knott's Handbook for Vegetable Growers).

Crop	Base Temperature (°F)
Asparagus	40
Bean, snap	50
Beet	40
Broccoli	40
Carrot	38
Collards	40
Cucumber	55
Eggplant	60
Lettuce	40
Muskmelon	50
Onion	35
Okra	60
Pea	40
Pepper	50
Potato	40
Squash	45
Strawberry	39
Sweet corn	48
Sweet potato	60
Tomato	51
Watermelon	55

BASE TEMPERATURES

Below these temperatures,
all plant growth stops.

Beans **50°F**

Cucumbers **55°F**

Peppers **50°F**

Tomatoes **51°F**

Choosing Your Seeds:

Days to Maturity

- *How long* until the plants **mature** is the key fact for deciding when to **start** your seeds.
- Seed Packets have very useful information, including Days to Maturity, (or Harvest or Ripeness.)
- **In Zone 8, seeds with SHORTER days to maturity are generally more successful.**

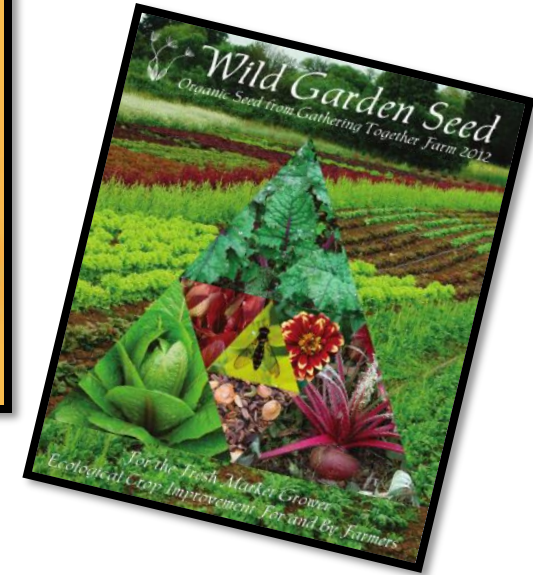


Where to find seeds:

Choose Seed Suppliers who specialize in your area and climate zone.

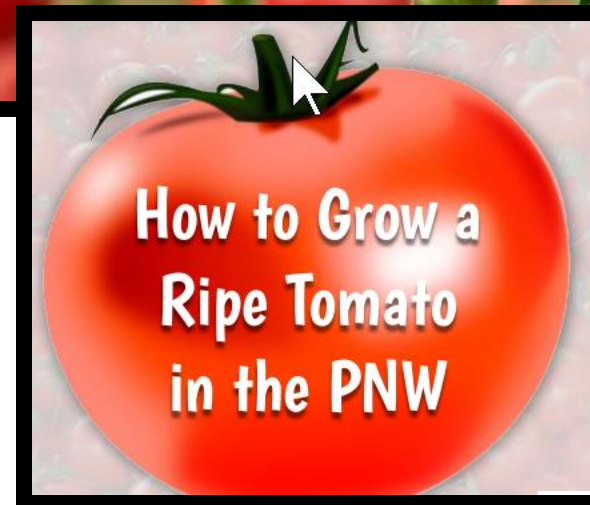
Examples of Maritime Northwest Seed companies :

- [Ed Hume Seeds](#)
- [Nichols Garden Nursery](#)
- [Salt Spring Seeds](#)
- [Territorial Seed Company](#)
- [West Coast Seeds](#)
- [Wild Garden Seed](#)



A Note about Tomatoes:

- For Tomatoes, “Days to Maturity” starts at **TRANSPLANTING**, not direct seeding.
- *How to Grow a Ripe Tomato in the PNW* is another talk WSU Cowlitz County Master Gardeners have:
<https://static1.squarespace.com/static/5bce465092441bb41c15fd04/t/6284727931e7a6240cc215a8/1652847237966/how+to+grow+a+red+tomato.pdf>



PLANT SALE: SATURDAY MAY 11!



Transplanting vs. Direct Seeding

Before you can decide this, here is ***A Very Key Question:***

Is Your Garden Ready?

- Preparing the garden for planting seeds or transplants **needs to be included in planning.**
- Waiting until the soil is dry enough can delay planting.
- One way to plant earlier in the season is to prepare the garden in the fall and cover it.



Direct Seeding:

Advantages:

- Only plant once.
- **Hopefully!**
- No weeks of caring for transplants.
- Not limited by greenhouse space.
- Less effort; no hauling tons of transplants out to the garden.
- Some plants prefer direct seeding.



Direct Seeding:

Disadvantages:

(Assuming your garden is ready)

- Less control of the conditions for the early growing period.
- The climate may not follow your plans!
- Your garden season is more dictated by your zone and temperature, and you have less control, and usually a shorter season.



Transplanting

Advantages:

- Extends the season!
- Lets you grow varieties with longer “days to maturity.”
- You can use “Succession Planting” to get more food out of a smaller garden plot.
- It *may* save \$\$



Transplanting

Disadvantages:

- You need light and heat and usually \$\$ to raise transplants.
- A sunny window can work, but overhead lighting is better.
- Space is usually limited, unless you own a massive greenhouse!



Good news!

There are many ways to overcome these obstacles!



Succession Gardening

Continuous production throughout growing season
- plant same crop every few weeks



Radishes

7-10 days

Lettuce

2-3 weeks

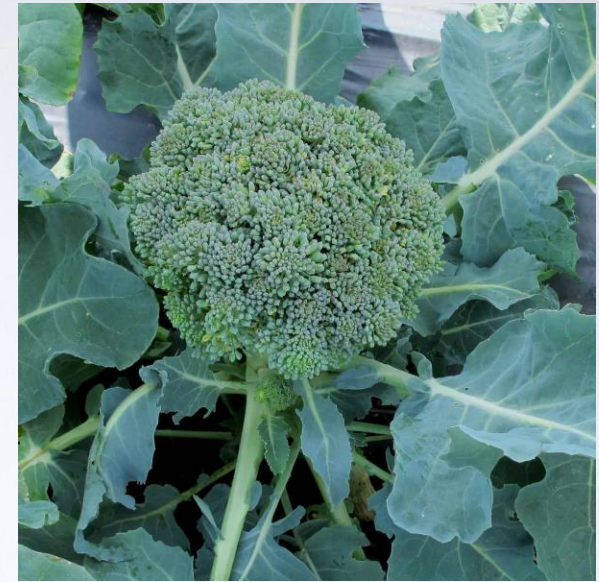
Peas

3-4 weeks



Succession Gardening

Replacement plantings after harvest
(NEW plantings in available space)



Spring Plantings → **Early Summer Harvest**

Broccoli

Gemini F1

50 days

Territorial

Monty F1

56 days

Johnny's



Succession Gardening

Spring Plantings → Early Summer Harvest (60 days or less)

Radishes (22) Turnips (40)

Cauliflower (45) Broccoli (50)

Lettuce (28) Pac Choi (37) Spinach (24) Swiss Chard (28)

Peas (60)

Onions (August harvest)

Garlic (July harvest)



Succession Gardening

Early Summer Harvest → Summer Planting (late June – mid August)

Radishes (22)

4 plantings

April 1 → May 8

Harvest 4/24 – 5/8 and 6/1 – 6/15

April 20 → May 25

Harvest 5/11 – 5/25 and 6/15 – 6/30



Succession Gardening

Early Summer Harvest → Summer Planting (late June – mid August)

Peas (60)

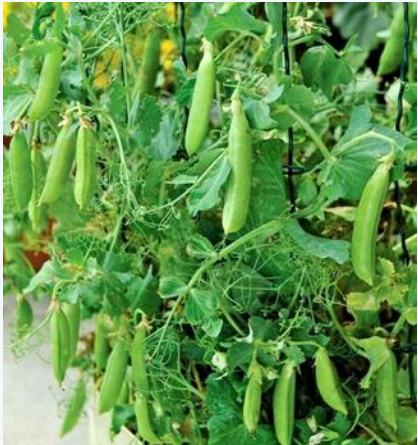
4 plantings

April 10 → June 29

Harvest 6/9 – 6/29 and 8/28 – 9/18

May 7 → July 27

Harvest 7/6 – 7/27 and 9/21 – 10/11



Succession Gardening

Early Summer Harvest → Summer Planting (late June – mid August)

Broccoli (60) (transplants)

2 plantings April 10 → June 30

Harvest 6/9 – 6/30 and 9/1 – 9/22



Succession Gardening

Early Summer Harvest → Summer Planting (late June – mid August)

Lettuce, turnips, cauliflower all harvested by June 20



Succession Gardening

Early Summer Harvest → Summer Planting (late June – mid August)

Lettuce, turnips, cauliflower all harvested by June 20



Bush Beans (55 days)
Cucumbers (55 days)

harvest 8/14 – 9/4

harvest 8/14 – 9/14



Succession Gardening

Early Summer Harvest → Summer Planting (late June – mid August)

Lettuce, turnips, cauliflower all harvested by June 20

Bush Beans (55 days)

harvest 8/14 – 9/4

Cucumbers (55 days)

harvest 8/14 – 9/14

Radishes 9/4

harvest 9/26 – 10/10



Succession Gardening

Early Summer Harvest → Summer Planting (late June – mid August)

Garlic all harvested by July 15



Succession Gardening

Early Summer Harvest → Summer Planting (late June – mid August)

Garlic all harvested by July 15

Summer Squash (50 days) harvest 9/9 – 10/10



Succession Gardening

Early Summer Harvest → Summer Planting (late June – mid August)

Onions all harvested by August 15



Succession Gardening

Early Summer Harvest → Summer Planting (late June – mid August)

Onions all harvested by August 15

Turnips (40 days)

harvest 9/24 – 10/15

Lettuce / Spinach (26 days)

harvest 9/10 – 10/1



Succession Gardening

Early Summer Harvest → Summer Planting (late June – mid August)

Lettuce (28)



Planted seed in greenhouse in late-July

Transplanted in mid-August

Harvested throughout September



Succession Gardening

Early Summer Harvest → Summer Planting (late June – mid August)

Spinach (24)

Direct seeded in mid-August

Harvested starting in mid-September



Greenhouse Gardening

Cucumbers

Snow Peas

Carrots

Beets

Tomatoes

Peppers

Swiss Chard

Bok Choi



Greenhouse Gardening



Greenhouse Gardening



Greenhouse Gardening



**Planted cucumbers once
soil temperature was
70°F (mid-May)**

**Harvested 6 weeks
earlier than in
my garden**

Greenhouse Gardening



**Planted
Beets
in August
for Spring
harvest**

Greenhouse Gardening

January 2021



Greenhouse Gardening

May 26, 2021



Greenhouse Gardening



THANKSGIVING 2021

Greenhouse Gardening

Cucumbers

**planted in mid-May
for July harvest**

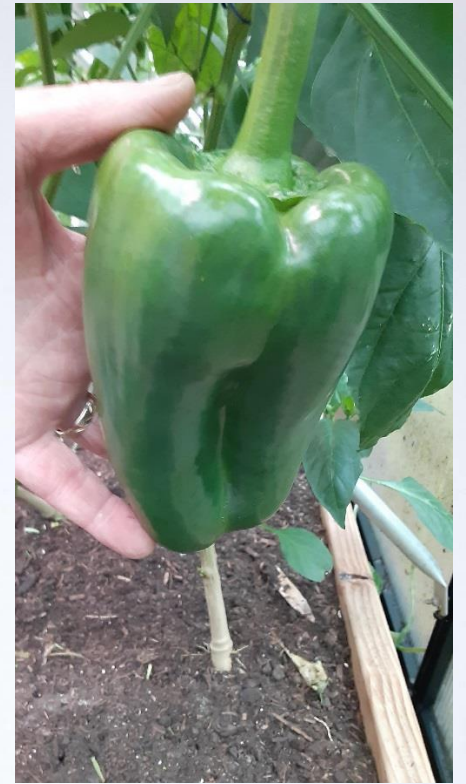


Greenhouse Gardening

Tomatoes
Peppers



**transplanted
in August
for late fall harvest**



Greenhouse Gardening

Snow Peas

Carrots

Beets

planted in late July
for spring harvest



Extending the Season in Ways Other than a Greenhouse

- Here are some ways to warm the soil or protect your plants:



Cloches



Floating Row Cover



Hoops covered by Row Cover or Plastic



Cover the Soil with Plastic



Wall O' Water



Cold Frame

Brassicas: Cool Weather Crops

Broccoli, Cabbage, Cauliflower, Kale, Radishes, etc.

Variety	Start Transplant	Set Out*	Direct Seed*
Broccoli	End of March	End of May	End of May
Cabbage	End of March	End of May	End of May
Cauliflower	End of March	End of May	End of May
Kale	End of March	End of May	End of May
Kale (winter)	(Harvest in winter & spring)		Mid July -August
Radish	-----	-----	Mid March

* **Optimum Soil Temperature:** Broccoli: 50-60, Cabbage: 50-90, Cauliflower: 45-85, Kale: 60-90, Radish: 50-65

Tips for Brassicas

- Broccoli: After the main head is cut, often there are side shoots. If you prefer the heads, start a few broccoli every week, to space the harvest out.
- Cabbage, Cauliflower, Kale: Start new plants every few weeks for similar reasons.
- Radishes: starting a FEW every few weeks is better than 50 all at once.



Cucurbits (Kyoo CUR bits)

Cucumbers, Pumpkins, Squash, Muskmelons, Watermelons, Zucchini

Variety	Start Transplant*	Set Out**	Direct Seed*
Cucumber	Mid April	Beginning June	Beginning June
Squash – summer (includes Zucchini)	Mid April	Beginning June	Beginning June
Squash – winter	Mid April	Beginning June	Beginning June
Pumpkins	Mid April	Beginning June	Beginning June
Muskmelons	Mid April	Beginning June	Beginning June
Watermelons	Mid April	Beginning June	Beginning June

* **Optimum Soil Temperature:** Cucumbers: 70-95, Summer Squash: 70-95, Winter Squash: 60-90, Pumpkins: 70-90, Muskmelons: 75-95, Watermelon: 60-95

****Take care with transplanting:** cucurbits dislike having their roots disturbed. Using biodegradable pots can be useful.

Tomatoes (50 days – 90 days)

Must be transplanted

May 21

(lower elevation)

50 days

July 10

70 days

July 30

90 days

Aug 19



Tomatoes (50 days – 90 days)

Must be transplanted

June 7

(higher elevation)

50 days

70 days

90 days

July 27

Aug 16

Sept 5



Tomatoes (50 days – 90 days)

Must be transplanted

June 21, 2022

(cold!)

76 days

Sept 5

(1st tomato)



Tomatoes

Must be transplanted

When to plant tomato seeds?



Tomatoes

Seedlings in a heated greenhouse

~ 50 - 70 days before transplanting

April 1 \pm 10 days



Tomatoes

Seedlings without a greenhouse

~ 75 - 95 days before transplanting

March 7 \pm 10 days



Tomatoes

Seedlings must be up-potted



Tomatoes

Seedlings must be up-potted



Tomatoes

Seedlings must be up-potted





Winter Gardening

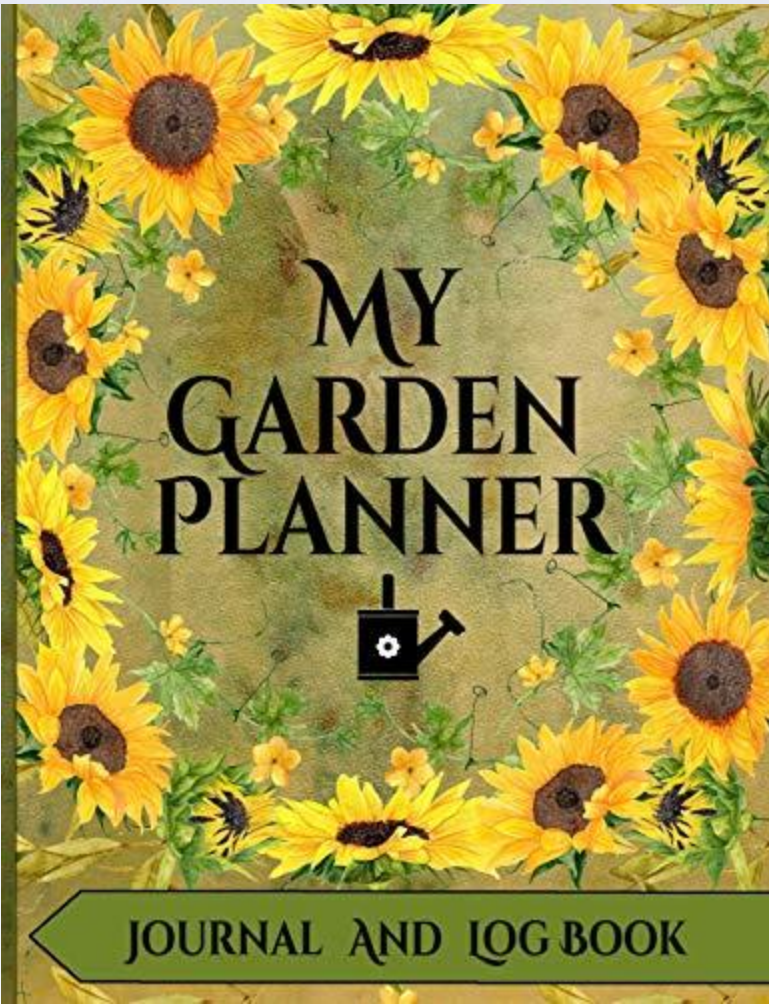
- **Winter Gardening** requires knowledge of your microclimate, site, soils, varieties that work well, protecting your plants, and more.
- **Winter Vegetable Production on Small Farms and Gardens West of the Cascades** is an excellent resource for how to garden in the PNW winter. It is in the Resources Section at the end of this presentation.



Winter Gardening Seed/Transplant Times

Crop / Hardiness	Plant Seed or Transplant	Harvest
Sprouting Broccoli 15–20°F	T- Mid July/ Early August	Feb. - April
Winter Cabbage 20–25°F	T- Mid July/ Early August	Nov. - March
Winter Cauliflower 10–15°F	T- Mid July/ Early August	Feb. - April
Garlic Bulb 0–15°F	Bulb – Sept/ Early Nov.	March-July
Spinach 0°F	S: Aug/Sept T- July-Aug	Nov. - Feb
Kale 0°F	T- June-Aug.	Sept. - April
Carrot & Parsnip 5°F	S: May – July	Oct. - March
Rutabaga 20°F	S: July	March
Turnip 10–20°F	S: August	March



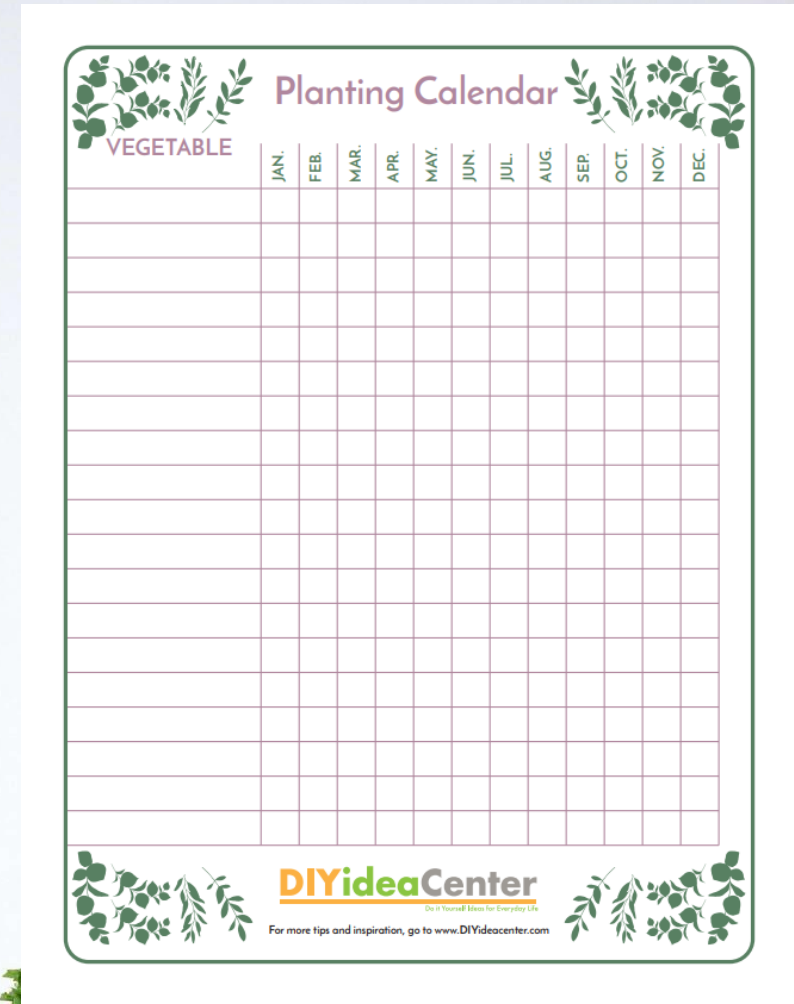


Plan Ahead

Keep Notes

- Successes
- Failures

Recommendations for next season



Summary

Knowing WHEN to plant is key

- 1) Know your growing zone
- 2) Know your seeds
- 3) Direct planting or transplants
- 4) Succession planning



Summary

Knowing WHEN to plant is key

5) Extending the growing season
(garden and greenhouse)

6) Specific Examples (brassicas, cucurbits, and tomatoes)

7) Winter gardening



Questions?



Resources:

Raising Transplants

Amazing Herb Garden. Build Your Own Indoor Growing Station. <https://www.amazingherbgarden.com/how-to-build-your-own-diy-seed-starting-station-my-indoor-grow-light-setup/>

Tomatoes

Cowlitz County Master Gardeners. (2022). How to Grow a Ripe Tomato in the PNW.

<https://static1.squarespace.com/static/5bce465092441bb41c15fd04/t/6284727931e7a6240cc215a8/1652847237966/how+to+grow+a+red+tomato.pdf>

Vegetable Gardening in General

Miles, C., Sterrett, G., Henault, L., Benedict, C., Daniels, C. (2013). EM057E:Home Vegetable Gardening in Washington.

Washintgon State University Extension. <https://s3.wp.wsu.edu/uploads/sites/2071/2014/04/Home-Vegetable-Gardening-in-WA-EM057E.pdf>

Mock, N. (12 July 2022). How to Read a Seed Packet or Plant Tag to Help Your Garden Grow.

Taste of Home. RDA Enthusiast Brands, LLC. <https://www.tasteofhome.com/article/how-to-read-a-seed-packet/>

Vegetable Gardening in general, continued:

Tillery, P. (30 April 2021). Planted: Reading a Seed Packet [Video]. BKAT-TV. <https://vimeo.com/543856048>

Washington State University, Puyallup Research and Extension Center. (2023). Gardening in Washington State. <http://gardening.wsu.edu/home/>

Winter/ Year Round Gardening:

Andrews, Nick, et al. (May 2022). Winter Vegetable Production on Small Farms and Gardens West of the Cascades. Pacific Northwest Extension Publishing. <https://catalog.extension.oregonstate.edu/pnw548>

Taylor, L. (2014). *Maritime Northwest Garden Guide: Planning Calendar for Year-Round Organic Gardening* (2nd Ed.). Tilth Alliance. Print. (Yes! A Real Book!)

Washington State University. (2011). Washington State University Extension E0001. Master Gardener Training Manual.