

## Succession Sowing... And Other High Elevation Gardening Tips



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## Questions?



### Resources:

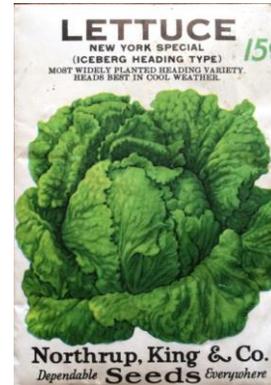
- [extension.colostate.edu](http://extension.colostate.edu)
- [planttalk.org](http://planttalk.org)
- [plantselect.com](http://plantselect.com)
- CO-Horts Blog:  
[www.csuhort.blogspot.com](http://www.csuhort.blogspot.com)

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Master Gardeners: [larimermg@gmail.com](mailto:larimermg@gmail.com)

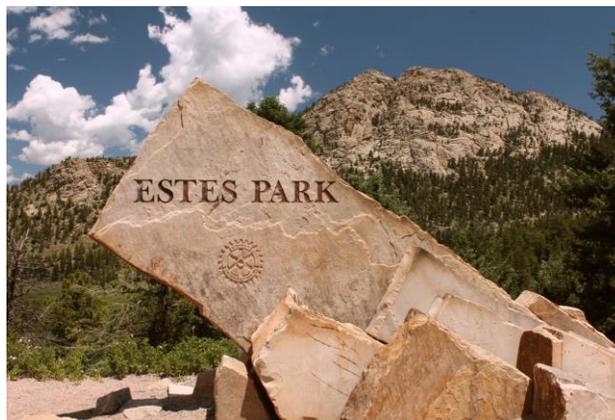
## What We'll Cover Today...

- Challenges of growing in a short season
- Recommendations for successful vegetables
  - Plants to consider
  - Growing systems
  - Succession sowing
  - Care and maintenance
  - Harvesting
- Answering YOUR questions!



## Definition of “High Elevation”

- We'll use “high elevation” as anything greater than 7,500 feet



# Gardening at Elevation

## Pros

- Cool growing temperatures
- Can grow cool-season crops all year
  - Peas
  - Lettuce
  - Radishes
- Greater potential for moisture from snow or afternoon storms?
- Microclimates

## Cons

- Short growing season
- Limited plant selection
- Closer in proximity to the sun, which can lead to sun damage on plants
- Soils are slow to warm
- Animals
- Wind

# Facts about Estes Park

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual	
<b>Monthly Temperatures</b>															
<b>Estes Park</b>	average extreme high	53	55	60	69	75	84	88	85	80	72	62	55		
	<b>normal daily high</b>	<b>38</b>	<b>41</b>	<b>46</b>	<b>54</b>	<b>62</b>	<b>73</b>	<b>78</b>	<b>77</b>	<b>70</b>	<b>59</b>	<b>45</b>	<b>39</b>	<b>57</b>	
	<b>normal daily low</b>	<b>16</b>	<b>18</b>	<b>22</b>	<b>27</b>	<b>35</b>	<b>41</b>	<b>47</b>	<b>45</b>	<b>38</b>	<b>30</b>	<b>23</b>	<b>16</b>	<b>30</b>	
	average extreme low	-12	-10	-1	5	22	30	38	37	23	12	-3	-8		
<b>Fort Collins</b>	average extreme high	62	65	72	79	85	93	96	94	89	81	70	62		
	<b>normal daily high</b>	<b>42</b>	<b>46</b>	<b>53</b>	<b>61</b>	<b>70</b>	<b>80</b>	<b>85</b>	<b>83</b>	<b>75</b>	<b>64</b>	<b>50</b>	<b>43</b>	<b>63</b>	
	<b>normal daily low</b>	<b>15</b>	<b>20</b>	<b>27</b>	<b>34</b>	<b>43</b>	<b>52</b>	<b>57</b>	<b>56</b>	<b>47</b>	<b>36</b>	<b>25</b>	<b>17</b>	<b>36</b>	
	average extreme low	-6	0	10	18	32	41	49	48	32	20	7	-3		

Normal high in June: 73 degrees

Normal high in July: 78 degrees

Normal high in August: 77 degrees

# Estes Park Moisture

		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
<b>Total Monthly Precipitation</b> (inches)														
Estes Park	normal	0.3	0.5	1.0	1.3	1.9	1.5	2.3	1.9	1.2	1.0	0.7	0.4	14.3
	maximum	1.8	2.1	3.3	4.0	5.4	3.8	5.3	5.8	2.7	2.9	2.1	1.2	17.4
<b>Total Monthly Snowfall</b> (inches)														
Estes Park	normal	1.9	5.9	7.6	3.3	0.5	0.1	0	0	0.6	1.2	4.4	2.7	25.2
	maximum	12.0	30.0	31.5	14.0	6.0	3.0	0	0	4.0	9.0	18.0	12.5	64.5

## Last Average Frost Date for Estes Park

		<u>Spring Frost Probability</u>			<u>Fall Frost Probability</u>			<u>Length of Growing Season</u>		
		90%	50%	10%	10%	50%	90%	10%	50%	90%
Estes Park	32° threshold	May 27	June 9	June 21	Sept 3	Sept 14	Sept 25	83	97	111
	28° threshold	May 5	May 21	June 6	Sept 10	Sept 21	Oct 1	106	123	140
	24° threshold	Apr 18	May 8	May 27	Sept 18	Oct 4	Oct 19	125	149	173

- Unless you're using season-extension techniques, plan on your season lasting from mid-June to mid-September (~90-100 days)
- But you can grow lots of cool season veggies on the front or back end of the season
- Or use raised beds or containers to increase the length of the growing season

## So What Can You Plant?

If starting from seed:

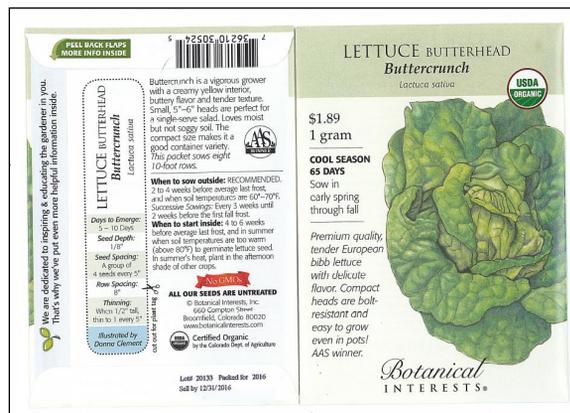
1. Beans
2. Cucumbers
3. Radish
4. Pumpkins
5. Cosmos
6. Peas
7. Lettuce
8. Squash
9. Sunflowers
10. Zinnias



## What to look for on a seed packet

Outside of Package

- Crop
- Variety
- Scientific name
- Amount of seed in packet
- Days to Maturity
- General planting window
- Days to emergence
- Seed Depth
- Seed Spacing
- Row Spacing
- Thinning
- Plant description
- Outside and Inside Starting Instructions (may vary for other seed companies)
- Sun requirements (flowers)
- Bloom Time (flowers)
- Height (flowers)



Keep your selections to <80 days to harvest!

**PEEL BACK FLAPS  
MORE INFO INSIDE**

S 72505 01295 4



**LETTUCE BUTTERHEAD**  
*Buttercrunch*  
*Lactuca sativa*

We are dedicated to inspiring & educating the gardener in you. That's why we've put even more helpful information inside.

*cut out for plant tag*

**Days to Emerge:**  
5 - 10 Days

**Seed Depth:**  
1/8"

**Seed Spacing:**  
A group of  
4 seeds every 5"

**Row Spacing:**  
8"

**Thinning:**  
When 1/2" tall,  
thin to 1 every 5"

*Illustrated by  
Donna Clement*

Buttercrunch is a vigorous grower with a creamy yellow interior, buttery flavor and tender texture. Small, 5"-6" heads are perfect for a single-serve salad. Loves moist but not soggy soil. The compact size makes it a good container variety. **AAS Winner**

**When to sow outside:** RECOMMENDED. 2 to 4 weeks before average last frost, and when soil temperatures are 60°-70°F. Successive Sowings: Every 3 weeks until 2 weeks before the first fall frost.

**When to start inside:** 4 to 6 weeks before average last frost, and in summer when soil temperatures are too warm (above 80°F) to germinate lettuce seed. In summer's heat, plant in the afternoon shade of other crops.

**No GMOs**

**ALL OUR SEEDS ARE UNTREATED**

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Broomfield, Colorado 80020  
www.botanicalinterests.com

**USDA Certified Organic**  
by the Colorado Dept. of Agriculture

Lot# 20133 Packed for 2016  
Sell by 12/31/2016

**LETTUCE BUTTERHEAD**  
*Buttercrunch*  
*Lactuca sativa*

**USDA ORGANIC**

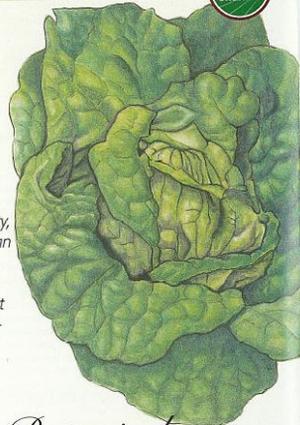
**\$1.89**  
1 gram

**COOL SEASON  
65 DAYS**

Sow in early spring through fall

*Premium quality, tender European bibb lettuce with delicate flavor. Compact heads are bolt-resistant and easy to grow even in pots! AAS winner.*

*Botanical*  
INTERESTS®



## The Secret of Seed Catalogs

- Everything sounds awesome...but not everything will grow in Estes Park
- Everything will look perfect—they have professional photographers
- It's easy to go overboard and buy too much
  - Remember the size of your garden!
- Keep your selections to 80 days to harvest or less!

## Reading Catalogs

- Desirable mountain characteristics to look for on a seed packet include:
  - cold-tolerant
  - reliable in cool weather
  - easy to grow
  - Vigorous
  - Productive
  - great flavor

## When Do I Start Planting My Seedlings in the Garden?

- Seed Starting Rule #1: Don't Plant too Early!
- WHEN is governed by the last frost date for the area (for the summer garden)
- OR ambient soil temperature (for the spring garden)
- Consult your seed packets and catalogs for planting out dates and count backwards



## Planning your Schedule

- General time required to start seeds inside before planting outdoors (germination time is NOT included):
  - 2 to 4 weeks: cucumber, melons, squash, lettuce
  - 5 to 7 weeks: broccoli, Brussels sprouts, cabbage, cauliflower, tomatoes
  - 6 to 9 weeks: eggplant, leeks, onions, peppers, some herbs



## Timing Seedlings

- If you want to plant your tomatoes outside on June 10 (strongly recommended), start them indoors on/around April 22 (6 weeks total)
- Starting them too early results in leggy plants that are HUGE and gangly to plant



# Planting Chart

- Here's where journaling becomes relevant
- Weather events
- What worked this year; what did not
- Specific varieties
- Save these notes year-to-year and also your planting plans
- Talk to fellow gardeners

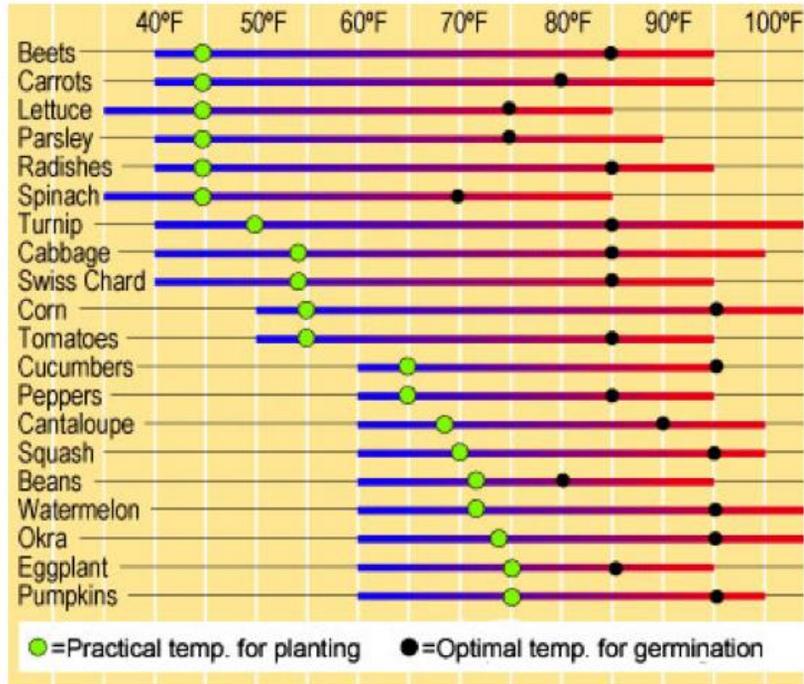


## Soil temperature is a good method to judge planting times

### Measure

- 4-inches deep
- 8 a.m.
- When temps >40 degrees, you can start to plant cool season vegetables





## Planting the Spring Garden

- Planting based on soil temp for seed germination
- Soil temp 40-60 degrees
- Ambient air temp
- Can thrive in less sun
- Leafy crops tend to be “sweeter” with cooler weather
- Require crop protection when temps drop

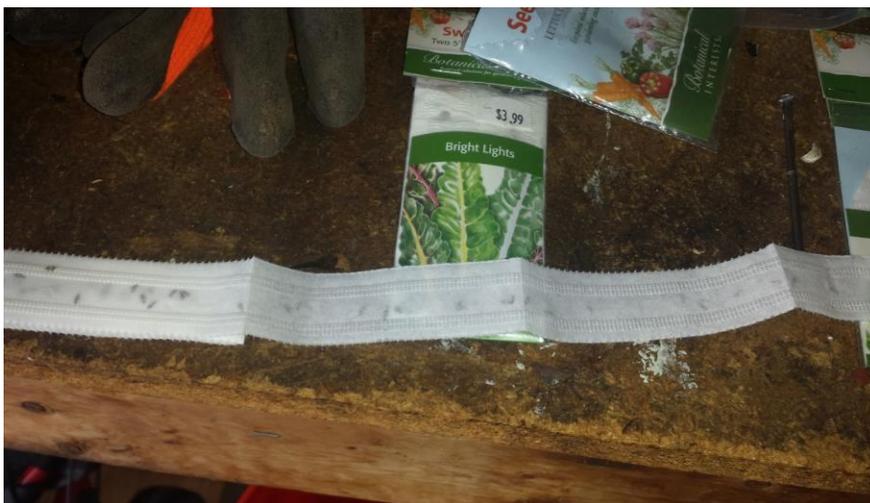


## Planting the Summer Garden

- Requires warmer soil (>65 degrees) and warm ambient air temps
- Minimum of 6 hours of full sun
- Seeds can be started indoors or outside based on seed packet recommendations
- Timing based on the variety and the specifications on the seed packet
- The most reliable warm season veggies are bush beans and summer squash



## Seed Tape is Awesome!





## Reliable Leafy Greens at Elevation

- Leafy greens: lettuces, arugula, kale, spinach, Swiss chard, collards, cabbage, endive, radicchio, turnip greens and beet greens



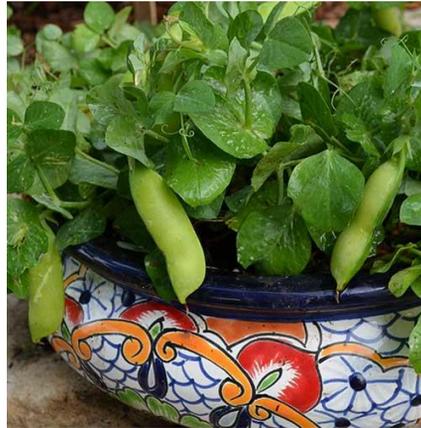
## Reliable Root Crops at Elevation

- Root vegetables: carrots, beets, radishes, turnips, kohlrabi, rutabaga, potatoes, leeks



## Reliable Other Veggies

- Other vegetables:  
peas, broccoli,  
cauliflower, Brussel  
sprouts



## Reliable Herbs at Elevation

- Herbs: French tarragon, horseradish, some mints, and chives.
- Not hardy perennial herbs: sage, thyme, oregano, rosemary, bay laurel; grow in pots and bring in for winter
- Annual herbs that can be direct-seeded in beds include parsley, dill, calendula, and borage.
- Basil and cilantro: consider growing them in a pot in a warm, sunny location and putting them inside at night or covering them

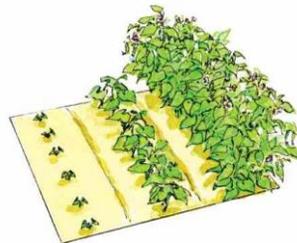
## Planting for Harvest (Especially in Small Spaces)

- Succession planting
- Intercropping
- Vertical gardening
- Cut and come again



## Succession Planting

- As one crop is harvested and removed from the garden, a second is planted in the area vacated
- It's a good way to ensure you will have a continuous supply of certain vegetables longer through the season
- Makes use of space vacated by an earlier maturing crop



## Succession Planting Options

- Two or three small plantings of leaf lettuce or radishes made a week to 10 days apart spread out the harvest over a longer time
  - Do this all summer
  - Or do this in early spring and again in late July to August—pay attention to DTH!
- Onion sets for green onions can be planted every two weeks until the sets are gone

## Intercropping

- Two crops are planted in the same row at the same time
  - The difference between the crops is that one matures before the other and when harvested, leaves room for the second crop to grow to maturity
- Intercropping techniques help you take advantage of the 'vacant space' between crops and puts it to use

## Intercropping

- Some intercropping suggestions include planting beans, radish, green onions, spinach or lettuce in the space between things like tomato, pepper or cabbage plants
- The earlier maturing crops will be harvested before the later ones start to grow together



## Intercropping

- Another intercropping technique is to plant seed of two different crops in the same row at the same time
- Plant both radish and carrot seed in the same row at the same time
- The radish will germinate and be harvested in about 20-25 days, leaving room behind for the later-maturing carrots

## Vertical Planting

- Helps you put “air space” to work for you
- Use some type of wire fencing material on either the north or east side of the garden will allow you to grow vine crops even in small space gardens
- Fencing should be strong enough to support plants and should be about 4 feet high



## Vertical Planting

- At the base of the fence sow vegetables such as cucumber, pole beans or melons
- The space in front that might have been taken up by the vine can now be planted to other crops



## Cut and Come Again Veggies

- Vegetables that have leaves growing in a rosette form are the “come again” choices
- New leaves come from the center and the older leaves are on the outside edges
- Harvesting often is key!



## Common “Come Again” Veggies

- Kale, collards, chard, leaf lettuce, Chinese cabbage and spinach



## Uncommon “Come Again” Veggies

- Mustard greens, cress, mizuna, endive, chervil, arugula and tatsoi



## Benefit of Floating Row Covers

- Lightweight, spun polyester fabrics allow sun and rain in, don't need venting, provide frost protection down to 24° F (depending on the thickness of the fabric)
- Help keep out insects and critters such as rabbits and deer
- They also increase humidity, reduce water needs, and prevent some sun scorch
- Provide some protection from light hail and drying winds



## Floating Row Covers

- Most of the vegetables recommended for the mountains do not need pollination, so keeping plants continually covered is not an issue
  - Except for summer squash
  - Beans and peas are self-fertile!
- Place directly over plants
- Hoops or wires can be used to keep the cover from touching the plants
- Use garden staples, rebar, logs, or heavy rocks to keep the covers from blowing off in strong spring winds

## Do You Really Want Tomatoes?

- Look for 'cold-set' varieties with a Siberian or Arctic heritage, and ultra-early tomatoes
  - 'Alaskan Fancy'
  - 'Siberian'
  - 'Snow White'
- Focus on cherry tomatoes, as they ripen more quickly than larger tomatoes
- Determinate tomatoes (bush type) will ripen all at once

## Starting Tomatoes from Seed

- Start seeds indoors six weeks before the last frost date
- Harden them off before placing outside



## Starting Tomatoes from Seed

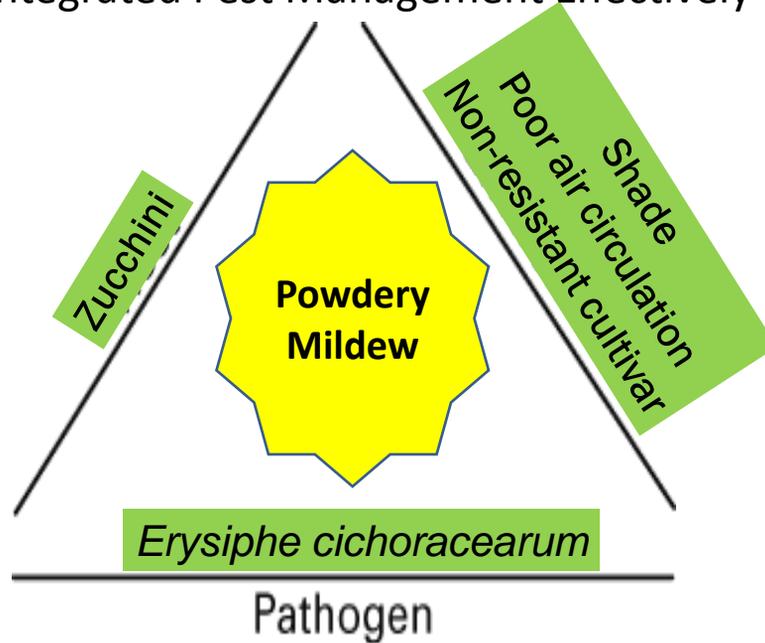
- Plant in the warmest, sunniest spot in your garden and use Walls-of-Water or jugs of water
- For best yields, grow tomatoes in a tall cold frame, hoop house or greenhouse



## Cultural Tips and Tricks

- Vegetables should be planted in an area that receives 6-8 hours of sun per day
- A south-facing, slightly sloped area is ideal for warming soils in spring and staying frost-free later in the fall
- Try to plant close to the house or a rock wall so the plants can benefit from the thermal mass
- Utilize your microclimates!

## Using Integrated Pest Management Effectively



## Other Tips

- Use drip irrigation
  - Come on May 15 to hear Dr. Tony Koski's talk
- Manage weeds
- Only plant what is manageable for you to maintain
  - If you can't use all your space, then share it with a friend
- Plant what YOU enjoy eating!



## What Are Your Questions?

