Growing
Roots, Tubers & Bulbs
In Central Arizona

Presented by
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How to start, plant, grow and harvest these popular roots, tubers and bulbs:

• Sweet Potatoes
• Potatoes
• Jerusalem Artichokes
• Garlic
Planting considerations:

- Choosing the best location
- Temperature
- Preparing the soil
- Varietal Selection
- Planting (slips, chits, cloves)
- Growing/Fertilizing/Watering
- Harvesting
- Curing and Storage
- Pests and Diseases
Choosing a location

• Look for an area that has exposure to midday sun (10am-3pm).
• Protectable from the elements and animals.
• Rotation of plants from previous season.
• Soil quality
• Access to water

Image Credit: Deep Green Permaculture
https://deepgreenpermaculture.com/2020/03/24/emergency-survival-prepper-vegetable-gardening-part-1-selecting-a-location-for-a-food-garden/
Temperature is a Factor

Graph Credit: University of Arizona Cooperative Extension
Sweet Potato

*Ipomoea batatas*

- Start with slips (vine) from a mature root
- Prefers fluffy deeply amended soil
- Plant after night time temperatures are above 55 F
- Plant rooted slips 12" apart allowing 3' for vines
- Fertilize with higher phosphorous fertilizers
- Water regularly and deep water on hot/dry days
- Time to maturity – expect at least 100 days
- Harvest before first fall frost
- Curing – the secret to the sweetest potatoes!
Sweet Potatoes
Starting your Slips
Sweet Potatoes

Soil, Sun and Water
Sweet Potatoes

Fertilizer

Fertilizer
16-16-8

Compost

Chibi Sweet Potato
Sweet Potatoes

Harvesting & Curing

Photo Credit: Joe Gardner

Photo Credit: Mother Earth News
Potato
*Solanum tuberosum*

- Choosing the variety
  - Early, Mid or Late Season Varieties
  - Determinate or Indeterminate
- Start with chits from seed potatoes
- Prefers deep, fluffy deeply amended soil
- Plant after soil temperatures are above 50 F
  - Plant chits 4" deep and 12" apart and hill 6" high
  - Plant chits 7-8" deep and 12" apart – no hilling
- Fertilize with higher phosphorous fertilizers
- Time to maturity – generally 90-135 days
- Curing – in ground or root cellar
Potatoes

Choosing the Type and Varieties

Cool Days = number of days from last frost in your area to soil temperatures in your garden over 70 degrees Fahrenheit

Early Season – Best Choice for Southern Climates
60-100 cool days to reach harvest

Mid Season - Can grow in most climates
101-135 cool days to reach harvest

Late Season – Best Choice for Northern Climates
135-150 cool days to reach harvest
## Potatoes

### Choosing the Varieties

<table>
<thead>
<tr>
<th>Potato Type</th>
<th>Description</th>
<th>Best Uses</th>
<th>Varieties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russet</td>
<td>These potatoes have a thick skin that’s light to medium brown. The interior is white to yellow with a fluffy texture when cooked.</td>
<td>Baking, Mashing, Roasting</td>
<td>Goldrush, Burbank, Pioneer</td>
</tr>
<tr>
<td>Red</td>
<td>A thin red skin and white interior characterize this group. The firm texture holds up well to cooking.</td>
<td>Soups, Salads, Roasting, Mashing</td>
<td>Norland Red, Strawberry Paw, Adirondack Red</td>
</tr>
<tr>
<td>Yellow</td>
<td>Thin light tan to golden skin with a yellow interior. It's a waxy potato with a creamy, slightly buttery flavor.</td>
<td>Grilling, Roasting, Mashing, Salads</td>
<td>Yukon Gold, Natascha, Yellow Finn</td>
</tr>
<tr>
<td>Blue / Purple</td>
<td>Some have blue or purple skin and flesh, others have colorful skin with a white interior. Blues and purples have slightly earthy taste and hold on to the pretty color when they’re cooked.</td>
<td>Roasting, Grilling, Salads</td>
<td>Elmer's Blue, Magic Molly, Purple Majesty Caribe</td>
</tr>
</tbody>
</table>
Potatoes

'Chitting' Your Seed Potatoes

Photo Credit: The Guardian

Photo Credit: Garden Gate Magazine
Potatoes

Planting Your Seed Potatoes

Photo Credit: Gardening Know How

Photo Credit: Kathy Watts
Potatoes

Fertilizer
Potatoes

Harvesting & Curing

Photo Credit: Kathy Watts

Photo Credit: Clemson Cooperative Extension

Photo Credit: ThisIsMyGarden.com
Jerusalem Artichoke
*Helianthus tuberous*

- Choosing the variety – 25 varieties
- Start with tubers, cut into sections.
- Grows best in well-draining, slightly alkaline soil
- Fertilize with 6-12-6
- The plants/stalks have 28% protein
  - Excellent feed for goats, sheep, pigs, cows
- People enjoy the tubers either raw or cooked
- Time to maturity – generally 130 days
- Curing – in ground or root cellar ~ 32 degrees F
Jerusalem Artichoke

Choosing the Varieties

Stampede
• Early yielding 90 days

Red Fuseau
• Mid-sized tuber with dark red skins

White Fuseau
• Tall white tubers, easy to peel

Jerusalem
• Hybrid variety 96-120" tall

Photo Credit: Insteading.com
Jerusalem Artichokes

Planting Your Tubers

Photo Credit: GardenBetty.com

Photo Credit: GardenBetty.com
Jerusalem Artichokes

Fertilizer
Jerusalem Artichokes

Harvesting & Curing

Photo Credit: HarvestToTable.com

Photo Credit: Nature-and-Garden.com
Garlic

Hardneck: Allium Sativum Ophioscorodon
Softneck: Allium Sativum Sativum

- Choosing the horticultural group and cultivar:
  - Hardneck or Softneck?
  - Cultivar (hundreds to choose from!)
- Start with cloves
- Prefers sandy loam or clay loam soil pH 6.0-8.0
- Plant in fall when soil temperatures are about 50°F
- Fertilize with 10-10-10 and compost
  - Banding with high phosphate fertilizer
- Time to maturity – generally 250-270 days
- Curing – hanging for 2-3 weeks in a dry, airy space
Garlic

Choosing the Horticultural Group

**Garlic Vernalization:** Over the winter, the garlic goes through a process called vernalization, whereby the cold temperatures stress the seed and divide it into separate cloves. The more time garlic has to grow **before** forming bulbs, the larger the heads will be.

**Hardneck** – Requires longer/colder vernalization period. Has more symmetrical cloves and they grow scapes (flower shoots). Requires greater cold exposure to make bulbs. Usually best suited to northern climates.

Horticultural Groups (8): Porcelain, Rocambole, Purple Stripe, Glazed Purple Strip, Asiatic, Turban and Creole.

**Softneck** – Not as affected by vernalization as the hardneck types. Less symmetrical (cloves in assorted sizes) but more tolerant of warmer temperatures and better suited to southern climates.

Horticultural Groups (3): Silverskin, Artichoke, and Middle Eastern
Garlic

Choosing the Cultivars

Photo Credit: HelloHomestead.com

Photo Credit: New Jersey Agricultural Experiment Station
# Garlic

## Hardneck vs Softneck Characteristics

<table>
<thead>
<tr>
<th>Desired Characteristic</th>
<th>Category</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longer Storage</td>
<td>Softneck</td>
<td>Silverskin</td>
</tr>
<tr>
<td>Braided Bulbs</td>
<td>Softneck</td>
<td>Silverskin</td>
</tr>
<tr>
<td>High # of cloves per bulb</td>
<td>Softneck</td>
<td>Artichoke</td>
</tr>
<tr>
<td>Largest cloves</td>
<td>Hardneck</td>
<td>Porcelain</td>
</tr>
<tr>
<td>Uniform clove size</td>
<td>Hardneck</td>
<td>Rocambole, Porcelain, Purple Stripe</td>
</tr>
<tr>
<td>Has a scape*</td>
<td>Hardneck</td>
<td>Rocambole, Porcelain, Purple Stripe</td>
</tr>
<tr>
<td>Cloves peel easily</td>
<td>Hardneck</td>
<td>Rocambole, Porcelain, Purple Stripe</td>
</tr>
<tr>
<td>Heat tolerant</td>
<td>Softneck</td>
<td>Artichoke</td>
</tr>
<tr>
<td>Cold tolerant</td>
<td>Hardneck</td>
<td>Rocambole, Porcelain, Purple Stripe</td>
</tr>
<tr>
<td>Milder flavor</td>
<td>Hardneck</td>
<td>Rocambole</td>
</tr>
<tr>
<td>Easiest to grow</td>
<td>Softneck</td>
<td>Artichoke</td>
</tr>
</tbody>
</table>

*Photo Credit: [New Jersey Agricultural Experiment Station](https://www.njaes.rutgers.edu/)*
Garlic

Planting Your Cloves

Photo Credit: GardenNursery.com

Photo Credit: Seedwise.com
Garlic

Straw Mulch vs Wood Chips

Photo Credit: Kathy Watts

Photo Credit: Kathy Watts
Garlic

Fertilizing Garlic

Photo Credit: Kathy Watts
Garlic

Harvesting Garlic

Photo Credit: Kathy Watts

Photo Credit: TheSpruce.com
Garlic

Curing Garlic

Photo Credit: ThisIsMyGarden.com

Photo Credit: ThePrudentGarden.com
Pests and Diseases

Whitefly
Photo Credit: NewYorkTimes.com

Aphid
Photo Credit: BustlingNest.com

Tomato Hornworm
Photo Credit: Washington Post

Potato Scab
Photo Credit: Vegetables.Cornell.edu
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Yavapai County