

Garlic Production

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Garlic

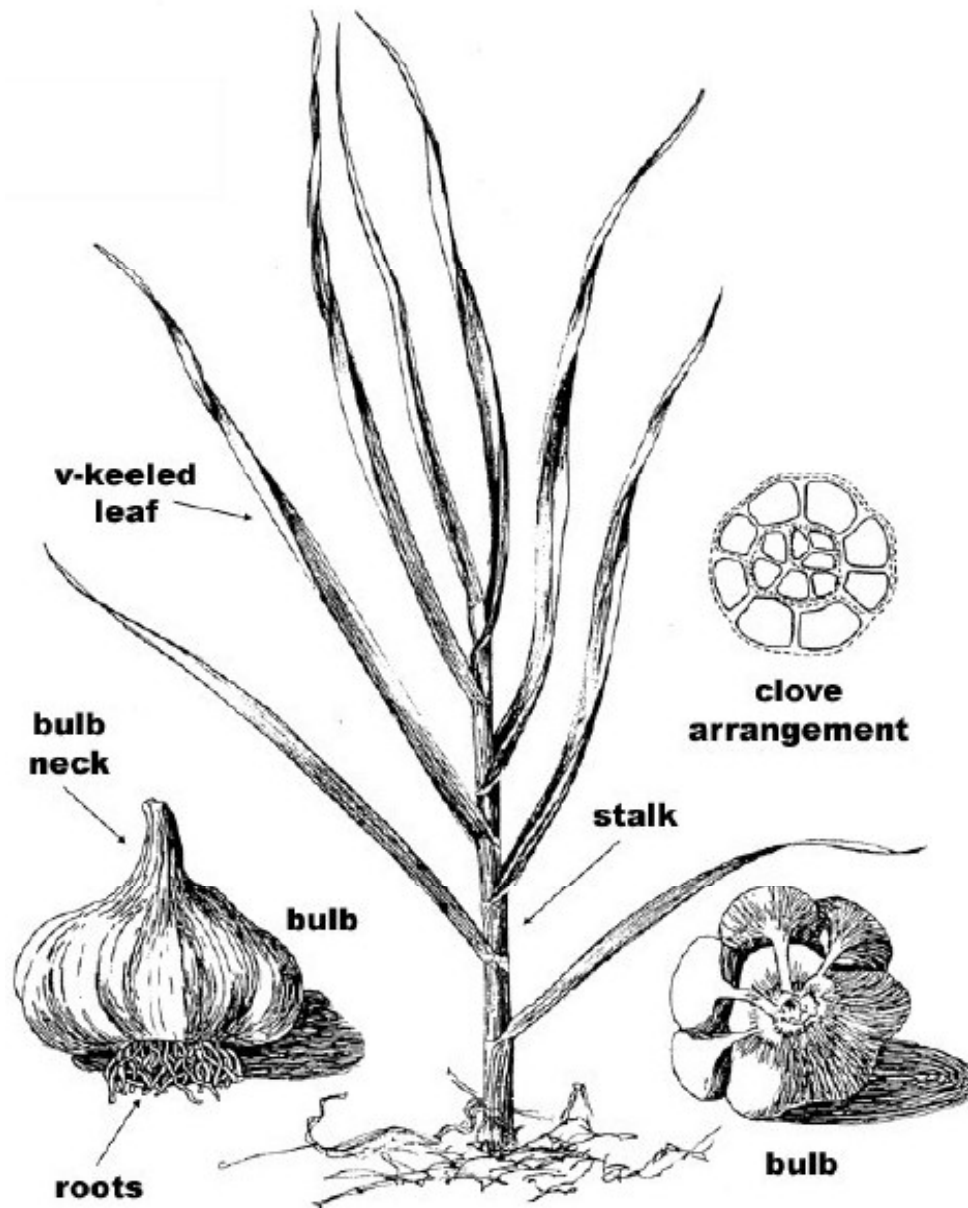
- Member of the onion family
- Cultivated for thousands of years
- Average yield 8,000-10,000 lbs per acre
- 'Many uses'



Hardneck Garlic



Softneck Garlic



Two Categories

- **Hardneck varieties**
 - Produce a flower stock (scape)
 - Difficult to braid
 - Does not store well
 - 4-12 cloves produced
- **Softneck varieties**
 - Do not produce a seedstock (may in a cold winter)
 - May produce bulblets within the stem
 - More productive (10-40 cloves)
 - Longer shelf life



Garlic Types and Varieties

- Rocambole
 - Hardneck
 - Named selections—German Red, Spanish Roja
- Purple Stripe
 - Hardneck
 - Performs well in cold climates
- Glazed purple stripe
 - Hardneck



Garlic Types and Varieties

- Marbled Purple Stripe
 - Hardneck
 - Very vigorous in cold climates
- Porcelain
 - Hardneck
 - Bulbs are large
 - Named selection-Music



Garlic Types and Varieties

- Asiatic
 - Shorter plant
 - Hardneck
 - Clones very prone to splitting
- Artichoke
 - Softneck, but may bolt following a cold winter
 - Usually most productive softneck in cold climates
 - Named selections—Inchellium red, Susanville

Garlic Types and Varieties

- Turban
 - Softneck-may form a flower stalk in the north
 - Does not store well
 - Earlier maturing
- Creole
 - Softneck-may form a flower stalk in our climate
 - Most suited for warm climates



Garlic Types and Varieties

- Silverskin
 - Softneck
 - Most suited for warm climates



Elephant Garlic

- Note a true garlic
- Type of leek
- Larger
- Can develop a bitter taste in cold climate



Site Preparation

- Free of perennial weeds
- Well drained soils high in organic matter
- Sandy loam is preferred
- Well composted manure
- Optimum ph is 6-7
- Soils should be well tilled before planting



Planting

- One to two weeks after first killing frost
 - Roots should develop but shoots should not emerge from soil
- Plant cloves
 - 2-3 inches below the soil line
 - Pointed side up
 - Six inch apart
 - Separate cloves the day of planting

Planting

- 100 foot row will require four to five lbs. of bulbs
- One pound of garlic bulbs will yield 4-8 pounds of harvestable bulbs
- 50 cloves per pound
- Do not plant garlic purchased at a grocery store



Mulch

- Cover with 3-4 inch layer of straw/organic matter 3-5 weeks after planting



Snow—a great mulch



Nitrogen Fertility

- Moderate to high levels of nitrogen
- 100 lbs N per acre medium organic matter level
- Apply prior to planting
- Do not apply after first week in May
- Nitrogen deficiency includes yellowing of older leaves, poor vigor, and low yields



Phosphorus and Potassium

- Use soil test to determine needs
- Potassium levels generally high in our soils
- Phosphorus deficiency –purple leaves and stunted growth



Removing mulch

- Remove in the spring after threat of hard freeze
- Shoots can tolerate air temperatures to 20 degrees
- Plant death, multiple shoots, and poor bulb development can occur if temperature go below 10 degrees
- Return the mulch when plants are 6 inches tall



Spring cold injury



Multiple shoots following cold damage



Poor bulb development following cold damage



Remove mulch



Mulched garlic



Irrigating Garlic

- Garlic has a shallow root system
- Critical stage is end of May to mid July
- Irrigation should be discontinued two weeks prior to harvest



Removal of scapes

- Yields can be reduced by 20% if scapes are not removed
- Remove just after the scapes began to curl



Removing scapes



Weed control

- Poor competitor with weeds
- Roundup application prior to planting
- Use weed free mulch
- Shallow cultivation prior to returning the mulch



Herbicides

- Prowl 3.3E
- Prefar 4E
- Buctril 2E
- Fusilade DX 2E
- Poast 1.5E
- Select 2E



Insects

- Not a major problem
 - Onion thrips
 - Small, sucking insects prevalent during dry weather
 - Onion maggots
 - Follow sound rotation
 - Wireworms
 - Common in fields that have been sod
 - Brown larvae half inch long



Diseases

- Control with proper rotation and disease free seed



Harvesting and Curing

- 2nd week of July-first week in August
- Different varieties will mature at different times
- Harvest too early will result in small bulbs that do not store well
- Harvest too late will force cloves to pop out of their skin



Harvesting and Curing

- The lower leaves will begin to dry, 50% of the leaves will remain green
- Cut a bulb in half-clove, should fill the skin
- Dug with shoots and roots
 - Let dry then brush off dirt



Harvesting and Curing

- After digging 10-15 bulbs should be tied to a bundle and allowed to dry
- After 3-4 weeks the tops should be removed
- Leave $\frac{1}{2}$ inch of stem on the bulb



Storage

- Table stock 32-40 degrees and 60% humidity
- Can be stored at room temperature, but will dehydrate faster
- Softneck will store 6-8 months
- Hardneck will store 3-4 months



Planting stock storage

- 60-70% humidity and room temperature
- Garlic stored at 32-40 degrees will not bulb properly



Souris Valley Garlic and Grape Festival

- September 19, 2009
- Sponsored by local Lions clubs
- Minot Municipal Auditorium
 - Classes
 - Wine testing
 - Great food
 - Grape stomping



Super Gardening Saturday

- April 18, 9:00 am
- North Central Research Extension Center
- Daniel Dix, Wood Spirits Gardens, Backus, MN—Keynote speaker
 - Creating a Garden Sanctuary
 - Stonescaping-the building Blocks of your Landscape

Source of Information

- Google 'Growing Garlic in Minnesota'

Questions

