GROWING GARLIC IN THE GREAT PLAINS

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2014 Program
Daily Schedule
(highlighted in blue)

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Some background...

- *Allium sativum* (Onion family)
- An easy crop to grow
- Few pest problems
- Fits into summer market
- An old crop…. over 5,000 years
  - Central Asia-then Egypt
- Important in many cultures
  - Asian (Japan, China, SE Asia)
  - Northern European (Russia, Germany)
  - Southern European (Italy, Spain)
  - Middle Eastern (Egypt, Turkey, etc)
  - Northern Africa
- Can produce 7,000-10,000 lb/acre yield
Local garlic growing

- Before mid 80s, most people used ‘powdered garlic’
- Health benefits
  - Antibacterial or antifungal
  - Heart benefits / cholesterol
  - Selenium/immune system
  - Cancer prevention
  - Vampires
- Local and specialty markets and foods
- The Food Network
Garlic flavor, etc...

- A diallyl-sulfur containing flavor compound
  - Alliin- in-tact form
  - Allicin- crushed form (Allinase- enzyme)
- About 3-4 minutes after ‘chopping or crushing’ to release full flavor
- High heat sensitive- avoid caramelizing
- Extracts well in oil or butter
The garlic plant

- Central stalk or ‘scape’
- Flat leaf
- Bulb or ‘head’
- Shallow root system
Each bulb covered by a thin leaf shell containing multiple fleshy sections called CLOVES.

Number of cloves varies with size of the bulb and variety. Select cloves of uniform size to plant together.
Anatomy of the clove

Each clove consists of 2 leaves

A thin ‘paper-like’ outer leaf

A fleshy inside leaf

A flat ‘stem plate’ at the bottom

Roots and a new garlic plant arise from the stem plate (roots grow down and plant comes up through the clove)
It takes about a 1-2 months at 40°F to stimulate garlic to grow a new plant that will ‘bulb’

Development of the scape and bulb are dependent on daylength (photoperiod) and temperature.

- Fall planting to provide cold
- Early growth in spring to produce a large plant before bulbing initiates
- Plant will be ready for harvest in late June to early July.
Some (not all) varieties produce a seedstalk or scape. Some scapes curl others are straight (by variety)

Allowing the scape to develop reduces the size of the bulb

Remove the scapes as they form

Scapes are marketable as ‘green garlic’ – chopped and used as flavoring like green onions
Keep scapes cool and moist

Store in plastic bags for about 1 – 2 weeks in refrigerator

Excess can be chopped/blended with a little olive oil and frozen for later use.
If scapes are allowed to grow, they develop a ‘seedhead’ filled with little bulbels (bulbils, topsets,’bulblets’) These can be harvested and used as:

- Mini-garlic for flavoring
- Planted for garlic scallions (like green onions)
- Grown and harvested for 2-3 years into bulbs
Garlic varieties – a real puzzle

Garlic is propagated vegetatively and grown from cloves-no assurance of variety standards

Most ‘varieties’ are actually selections

A huge number of names (in some cases for the same variety)- estimates of 400 selections –only 10 genetically different

What’s Important to a Grower

Winter hardiness
Color of bulbs and cloves (white, purple/striped, red, brown)
Yield and quality of bulbs
Some distinct (and not so distinct) differences in flavors
Unique ‘story’ associated with the variety
‘Softneck’ - no central seedstalk, tops can be braided, usually stores longer, less winter hardy, not as flavorful

‘Hardneck’ - central seedstalk, more uniform cloves, larger and easier to peel cloves, more variations in color, unique flavor differences, very winter hardy
Some general groups and selections...

SOFTNECK

- **Artichoke** - Calif. Early, Calif. Late, Early Italian Red
- **Silverskin** - Silverwhite, Idaho Silver

*Winter hardiness may be a problem with some selections of softneck garlic*

HARDNECK

- **Roccombole** - German Brown, German Red, Spanish Roja, Russian Red, Kilarney Red, Carpathian
- **Purple Stripe** - Cheswick Red, Persian Star, Metechi
- **Porcelain** - Romanian Red, Polish Hardneck, Northern White, Georgian Crystal, Music
- **Creole Red** - Creole, Ajo Roja, Burgundy,
Selecting a variety to grow

- Gather information/starts from other growers
- What do you think your market may want
- Experiment with several selections
- Seek a premium price for certain selections

You need to ‘differentiate’ your product from what’s available as store-bought garlic. Unique flavors, colors, and a good story can be your best marketing tool.
The Basics of Growing

- Plant in the autumn
- Grow it ‘hard and fast’ in early spring
- Remove scapes as they develop
- Harvest when leaves start to yellow
- Cure and store
Planting

- Mid October to early November
- Plant about 2-3 inches deep
- Pointed end up
- Plant about 4-5 inches apart
- Rows can be as close as 8-10 inches or in a bed

It isn’t important how big the garlic gets in the fall—just so it begins to emerge is all that counts.
## Garlic Planting Observation (2008)

**Varieties:** Music, Georgia Crystal, Georgia Fire, Russian Red, Metechi, Russian Giant (all Hardneck types)

<table>
<thead>
<tr>
<th>Planting Date</th>
<th>Fall Leaves</th>
<th>Bulb Size at Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 24</td>
<td>Lots of Leaves</td>
<td>Good</td>
</tr>
<tr>
<td>October 24</td>
<td>A few</td>
<td>Good</td>
</tr>
<tr>
<td>November 24</td>
<td>A few</td>
<td>Good</td>
</tr>
<tr>
<td>December 27</td>
<td>None</td>
<td>25-30% Smaller</td>
</tr>
<tr>
<td>January 21</td>
<td>None</td>
<td>50% Smaller</td>
</tr>
<tr>
<td>February 24</td>
<td>None</td>
<td>Didn’t bulb</td>
</tr>
</tbody>
</table>

**Manhattan KS Community Garden**-fine sandy loam soil

April 28: All plants look similar in foliage and size

Harvest: June 24 and July 1 (depending on variety)
Apply P and K as per soil test

Apply N in ‘split’ applications
- 20 lb/A at planting in the fall
- 20 lb/A when ‘significant growth’ starts (mid-late April)
- 20 lb/A 2 weeks later
- 20 lb/A 2 weeks later

No fertilizer will be necessary after early June
Organic fertilizing

- Use ‘quick release’ soluble N forms
  - Compost tea
  - Fish emulsion
  - Rich compost
  - Blood meal
  - Alfalfa meal

Soil temperatures often don’t warm up soon enough to decompose organic materials in soil. Need a readily available, quick N source when garlic plant starts to grow.
Weed control in garlic

- Garlic does not compete with weeds well
- Hard to cultivate in ‘bed-type’ rows
- Grass weeds are worse
  - Germinate sooner
  - Dense root system
  - Compete for N
Weed control in garlic

- Plastic or straw mulch (plastic preferred)
- Pendimethalin (**Prowl**) when garlic has 1-4 true leaves
- Post emergent grass controls
  - Select Max
  - Poast
  - Fusilade

*Other herbicide choices are available for large acreages
Trifluralin (Treflan) does NOT have a label for garlic*
Irrigation

- Watering garlic is critical if dry periods prevail in the spring. Critical watering times are when plant is actively growing (late April to early June)
- Don’t overwater - only in dry periods

The shallow roots of garlic will not ‘reach’ for water like other crops can.
Garlic Pests

- Thrips
  - Hard to recognize
  - White ‘blotches’
  - Move from wheat
  - Control
    - Synthetic pyrethrins
    - Insecticidal soaps

- Several root rots
  - Good drainage
  - Crop rotation
When to harvest garlic

- When leaves start to yellow (at base of the plant and at the tips of leaves)
- Don’t wait until plant is completely yellow/dry

Don’t pull garlic but undercut or lift soil with a fork before pulling

Yellowing of lower leaves and of leaf tips

Paper skin holding the cloves will dissolve
Digging garlic

- Use a fork to gently loosen soil along row
- Commercial- can be undercut with a cultivator

Garlic is deeper than onions and has a denser root system that anchors the plant in the soil tighter.
Drying

- Wash if needed (mud caked on bulbs)
- Allow tops to remain and dry for 10 days to 2 weeks in a warm, dry, shaded location
- Can tie tops together and hang for drying
Storing garlic

- Trim tops and roots
- Use a soft brush or cloth to gently clean
- Use a cool, dry storage (for sale garlic)
- Don’t put in a tight container but in an open container or mesh bag

Store ‘seed’ garlic at 50 F or above temps until planting time.

Never wash or apply water to clean bulbs after dried
Some related crops

- Elephant garlic (large, mild-flavored)
  - A different species than garlic
- Garlic chives or Chinese garlic
- Shallots
- Leek
- Rakkyo (Chinese onion)
For more information

- Growing Garlic in Minnesota (Extension Pub)
- Growing Garlic in Missouri (Beginning Farming Series)
- *The Complete Book of Garlic* by Ted Merideth (Book)
Sources of garlic cloves

- Morgan County Seeds, Barnett, MO
  - Softneck
  - Osage (Hardneck)

- Seed Savers Exchange, Decorah, IA
  - [www.seedsavers.org](http://www.seedsavers.org)
  - 15 varieties

- Territorial Seed Company
  - [www.territorialseed.com](http://www.territorialseed.com)
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