

GROWING GARLIC IN THE GREAT PLAINS

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A copy of this presentation..

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2014 Program
Daily Schedule
(highlighted in blue)

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Page Safety Tools

Saturday, January 12, 2013				
Registration & Trade Show - Opens at 8:00 a.m.				
Blum Union 218/219	Spratt 214/216	Blum Union 222/223	Spratt 203	Spratt 205
Conventional Vegetables	Advanced Organic	Cut Flowers	Small Fruit	Urban Hort & Gardens
				8:45 am, Welcome and Introductions
9:00 am, Heat Tolerance in Lettuce -Lewis Jett	9:00 am, Growing Organic Berry Production in High Tunnels -Eric Hanson	9:00 am, Successful Direct-Market Flower Production -Mark Cain	9:00 am, Fundamentals of Strawberries -Elizabeth Wahle	9:00 am, Community Gardens and Urban Farming in W. Virginia - John Porter
9:45 am, Carrot Production: Tillage, Planting Density, and Nitrogen Management - Dan Brinard	10:00 am, Bioextensive Rotations and Killed Mulches for Organic Market Gardens: Kerr Center's Experience - George Kuepper		9:45 am, Fundamentals of Blueberry Production - Patrick Byers	9:30 am, The Big Garden -Nathan Morgan
--- Break --- 10:30-11:00 am	--- Break --- 10:30-11:00 am	--- Break --- 10:30-11:00 am	--- Break --- 10:30-11:00 am	10:00 am, Changing Policies and Revising Planning to Benefit KC Urban Ag - Dennis Murphy
11:00 am, Growing Cabbage, Broccoli, & Cauliflower -Chuck Marr	11:00-11:15 am		11:00 am, Weed Control in Small Fruits -Eric Hanson	11:00 am, A Refugee Incubator Farm-The Unfinished Story -Linda Gobberdiel
11:45 am, Sweet Potato Production in Great Plains: Is it a Sweet Deal? -Ajay Nair	11:15 am, Organic Management of Japanese Beetles -Jacob Wilson	11:30 am, First Year Flower Farming - Getting Started -Vicki Lander	11:45 am, Fundamentals of Brambles -Elizabeth Wahle	11:30 am, Low Maintenance Fruit Plants for Community Gardens -Shawn Bixby
12:30 pm, LUCE's Pepper				Lunch

Done

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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

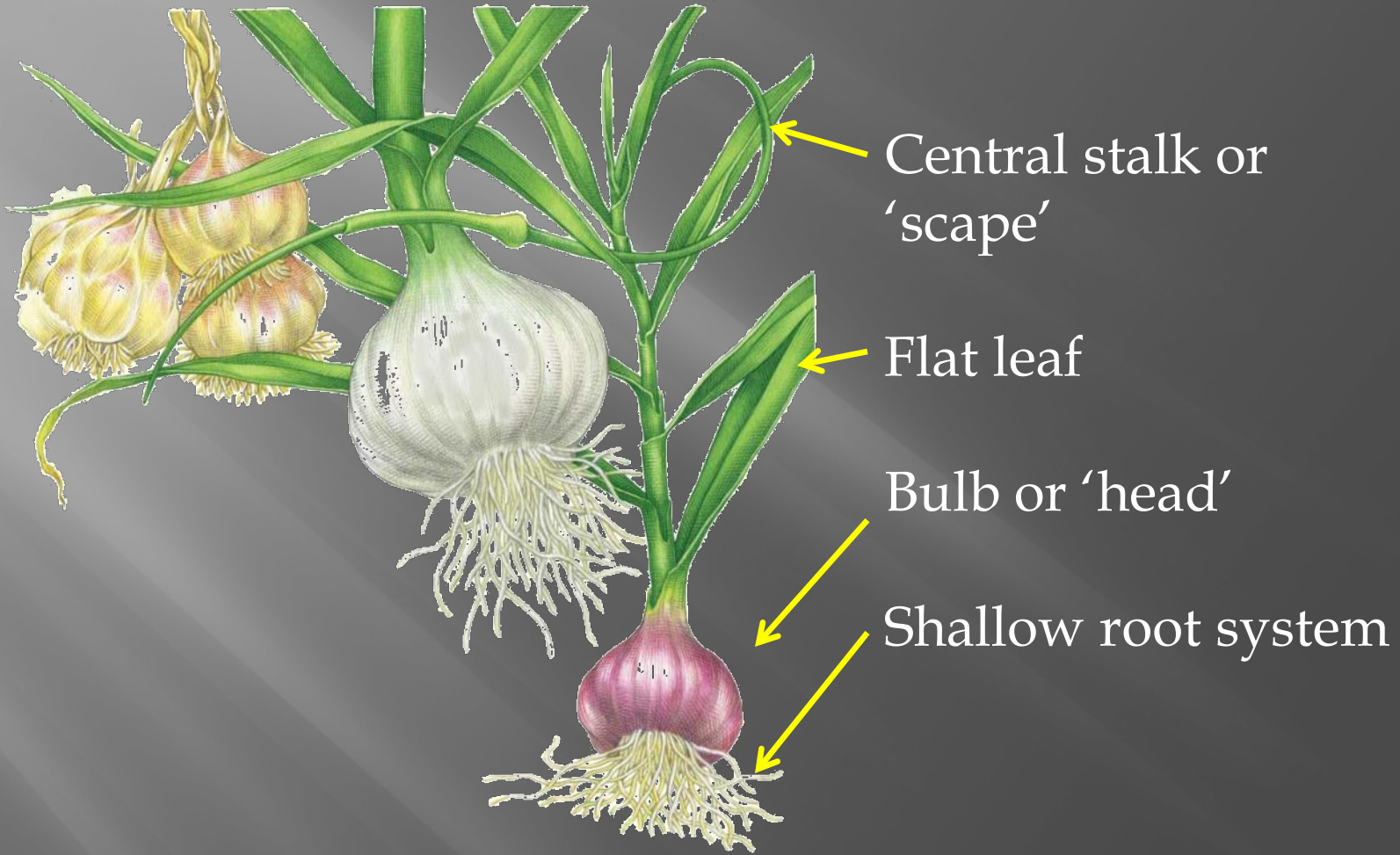
- Before mid 80s, most people used 'powdered garlic'
- Health benefits
 - Antibacterial or antifungal
 - Heart benefits /cholesterol
 - Selenium/immune system
 - Cancer prevention
 - Vampires
- Local and specialty markets and foods
- The Food Network



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



The garlic plant



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)



Garlic: temperature and daylength



It takes about a 1-2 months at 40⁰F 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.

The garlic seedstalk or 'scape'



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

Marketing 'scapes'

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.



Letting scapes develop..

If scapes are allowed to grow, they develop a 'seedhead' filled with little bulbels (bulbils, topsets, 'bulblets')

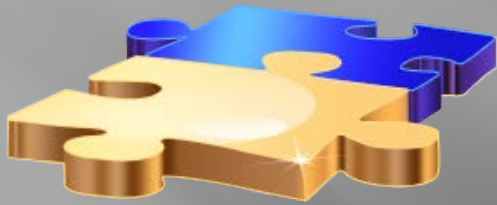
These can be harvested and used as:

- 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/stripe, red, brown)

Yield and quality of bulbs

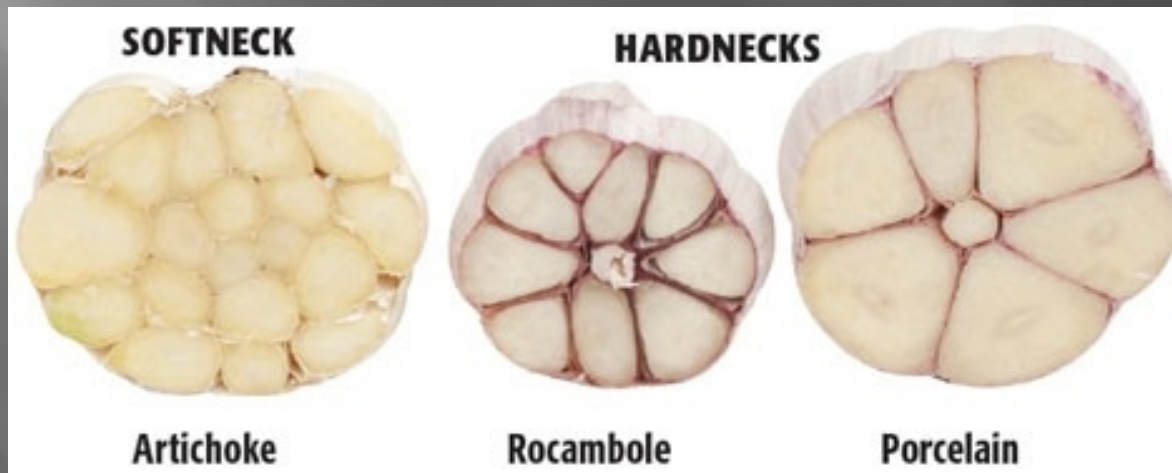
Some distinct (and not so distinct) differences in flavors

Unique 'story' associated with the variety

2 major classifications

'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

- ▣ **Rocombole**- 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

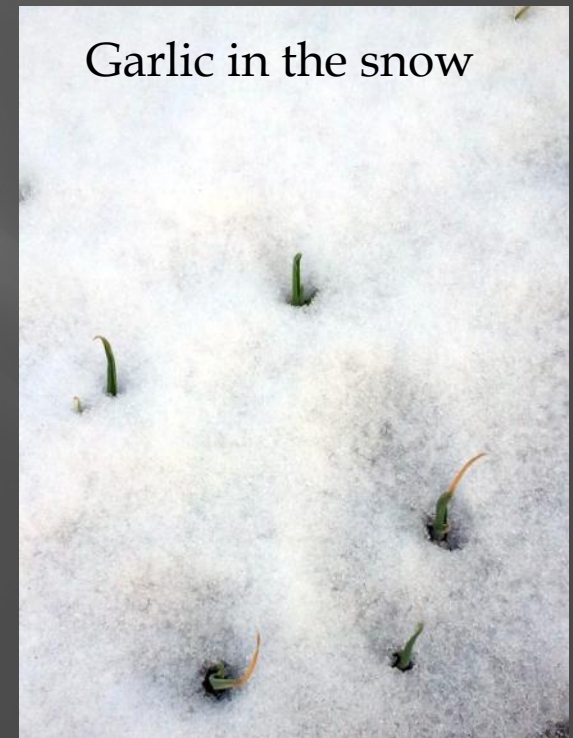
- ▣ Plant in the autumn
- ▣ Grow it 'hard and fast' in early spring
- ▣ Remove scapes as they develop
- ▣ Harvest when leaves start to yellow
- ▣ Cure and store

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 in the snow

Garlic Planting Observation (2008)

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

Planting Date	Fall Leaves	Bulb Size at Harvest
September 24	Lots of Leaves	Good
October 24	A few	Good
November 24	A few	Good
December 27	None	25-30% Smaller
January 21	None	50% Smaller
February 24	None	Didn't bulb

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)



Fertilizing

- ▣ 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**
 - Fusilaide

*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



Yellowing of lower leaves and of leaf tips

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



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
 - 15 varieties

- ▣ Territorial Seed Company
 - www.territorialseed.com



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