

# Warm Season Vegetables

UofA

**DIVISION OF AGRICULTURE**  
**RESEARCH & EXTENSION**

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# Fabaceae - The Bean Family



# The Bean Family

- Formerly known as Leguminosae and called legumes
- A large family that ranges from frost tolerant to warm season plants
- Fruit is a single pod with seeds
- Large seeds that may have a hard seed coat
- Have a symbiotic bacterial association that fixes nitrogen from the atmosphere

# Legume Trivia

## Other members of the Bean Family

- Kudzu
- Mimosa
- Alfalfa
- Lupines and Blue Bonnets
- Jack Bean
- Mesquite
- Indigo
- Clover
- Kentucky Coffee Tree
- Red Bud
- Locust
- Wisteria



# Nitrogen Fixation

- Legumes have a symbiotic relationship with *Rhizobium sp.* bacteria.
- The plant supplies carbohydrates to the bacterium and the bacterium supplies nitrogen to the plant.
- Critical for world wide plant protein production.



# Nodules on Root

- Nodulation describes the structure that forms with symbiosis of the bacteria and the roots of the plant.



# What Do We Eat?

- *Phaseolus vulgaris* ,  
the American beans
- snap, pole, runner and  
French, pinto and dry  
beans.
- *Phaseolus lunatus*  
Lima bean or Butter  
Bean
- *Archis hypogaea* – the  
Peanut
- *Vicia faba* - Fava bean
- *Glycine max*-Soy bean
- *Pisum sativum* the  
English Pea
- *Lens culinaris* - Lentil
- *Vigna sp.* - So. Pea,  
adzuki, mung, asparagus  
bean

# Beans - the Good and the Bad

## The Bad

- Phytohemagglutins – Prevent blood clotting
- Allergic reactions peanuts and fava beans
- Don't eat large quantities of uncooked beans.



# Bean Pods: The Perfect Bean- 19 days from flower to harvest.

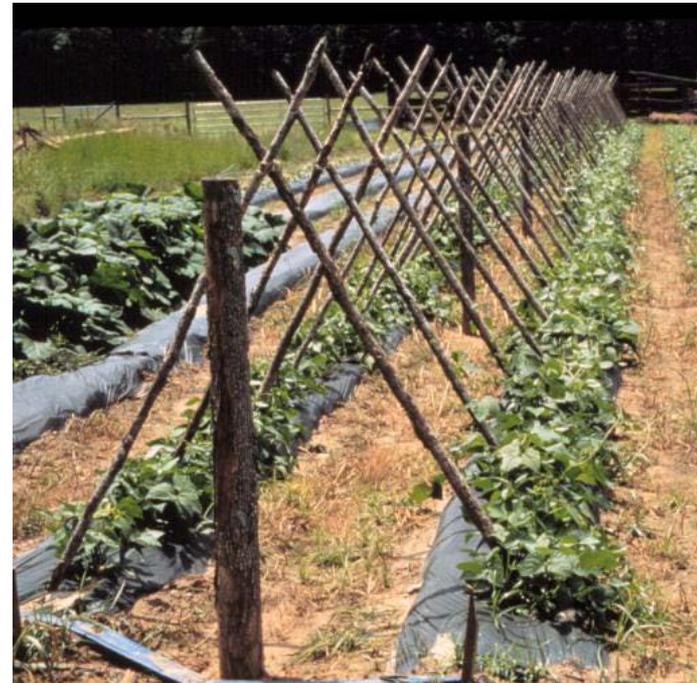


# Determinate or Indeterminate

**Bush**



**Pole**



# Types of beans

## Yard Long



## English Peas



## Snow Peas



# Southern Peas

New



Old



# Southern Peas –



# Seedling Problems

- Acid soil and or low temperatures can cause a chlorosis.



# Bean Problems



- Tip rot caused by pods touching the soil



- A fungal rot on the pods caused by humid conditions

# Insect Problems

- Aphids
- Bean Beetles
- Grasshoppers
- Weevils



# Insect Problems

- The insect thrip causes foliar damage



# Poaceae or Gramineae

## Grass Family - Corn



# Corn



- Cultivated for more than 7000 years
- First grown in southern Mexico

# Corn

- Standard Sweet Corn (Su) 2X sweeter than field corn
- Super sweet
  - Se will last 4 days or more
- Sugar Enhanced
  - SU – isolate from the above, retains sweetness



# Corn

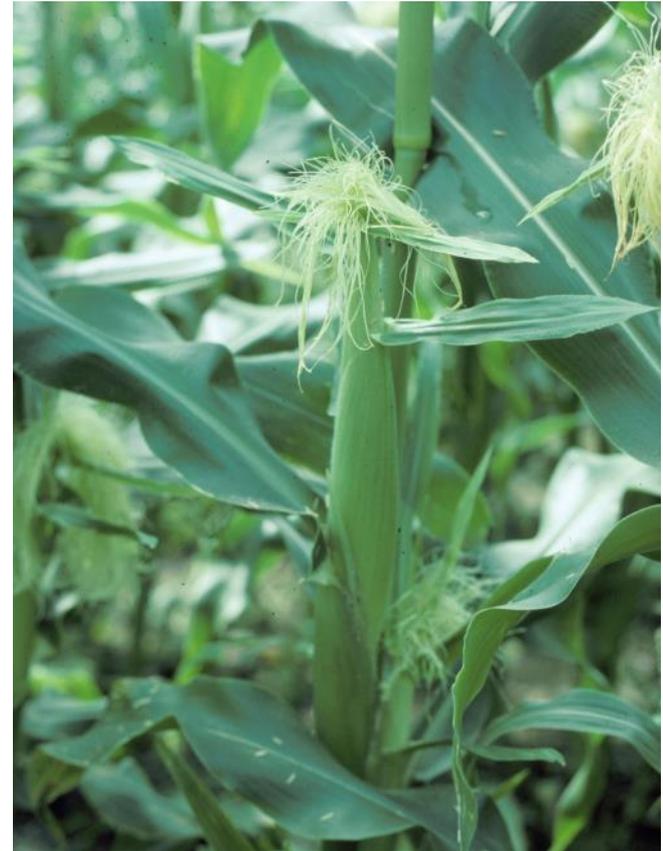
- Wind Pollinated
- Plant in short rows
- Heavy feeder



# Corn



# Problems



# The Family Cucurbitaceae – the Squash/Gourd Family



# Cucurbitaceae Family

- Watermelon
- Cantaloupe
- Winter melons
- Cucumbers
- Gourds
- Pumpkins
- Squash
- Calabaza
- Armenian melon
- Snake cucumber
- Lemon cucumber
- Vining Okra
- Chayote
- Bitter Melon
- Cucuzzi
- Luffa

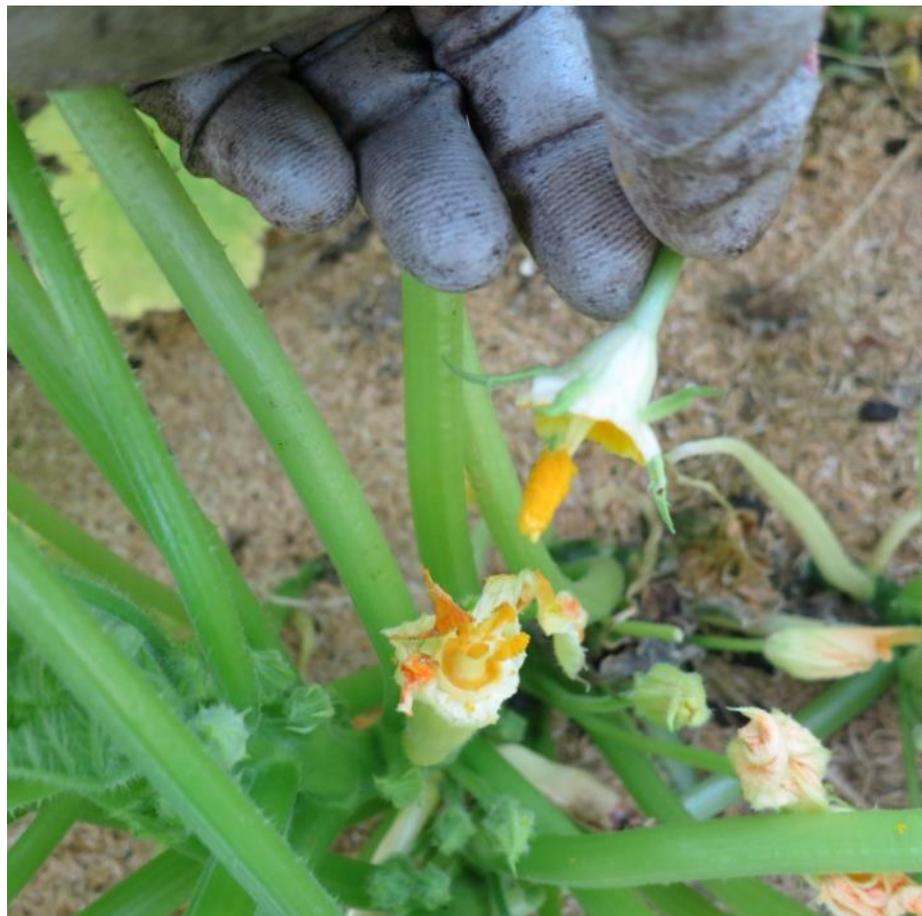
# Cucurbit flowers



# Pollinators in Your Garden



# Hand pollinating



# Growing Cucurbits

## Cultural Requirements

- Light
- Space
- Fertility
- Water

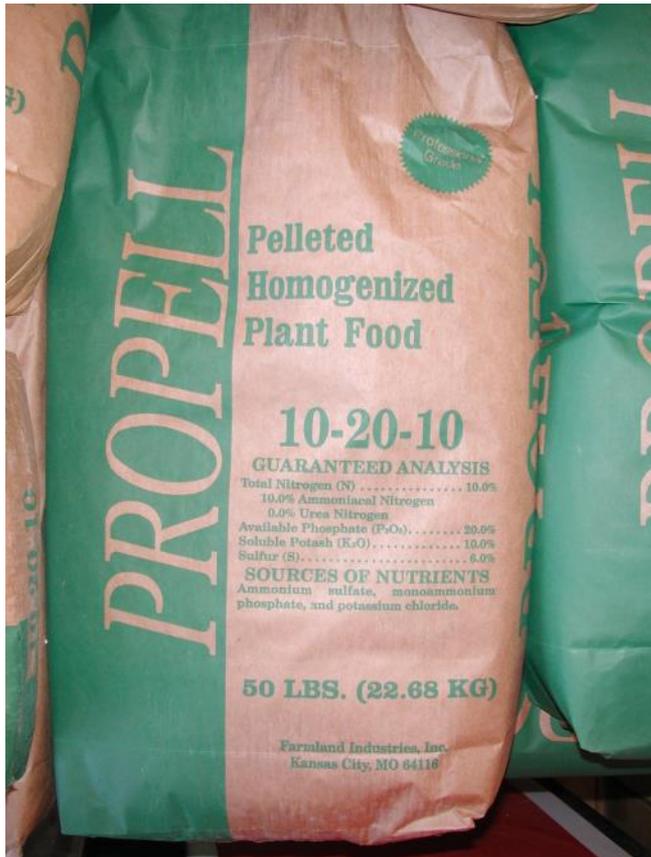


# Cucurbit Family -- Culture

- Planting -- After Danger of Frost
- Spacing -- 12 to 48 " by 48 to 96"
- Hardiness -- Very Tender Annual
- Fertility -- Medium to Heavy Feeder



# Cucurbit Family -- Fertilization



- Lime Soil pH 6
- Preplant ½ Cup of 10-20-10 per 10 feet row
- Use Transplant Starter Solution
- Medium to Heavy Feeder

# Fruit Growth



- The mature fruit inhibits the growth of the young developing fruit.

# Benefit of Mulches



- Mulches are effective for all cucurbits.
- Controls water loss
- Controls weeds
- Promotes faster growth
- Helps to control diseases

# Effect of Mulch and Temperature

## Plastic Mulch



## Bare Soil



# A Mature Melon

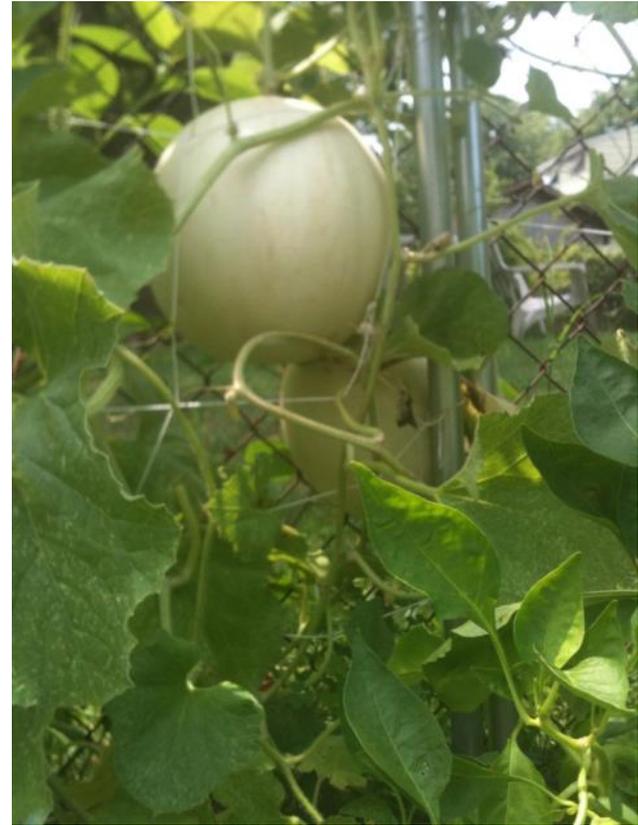


# Melon Fruit

## Canteloupe

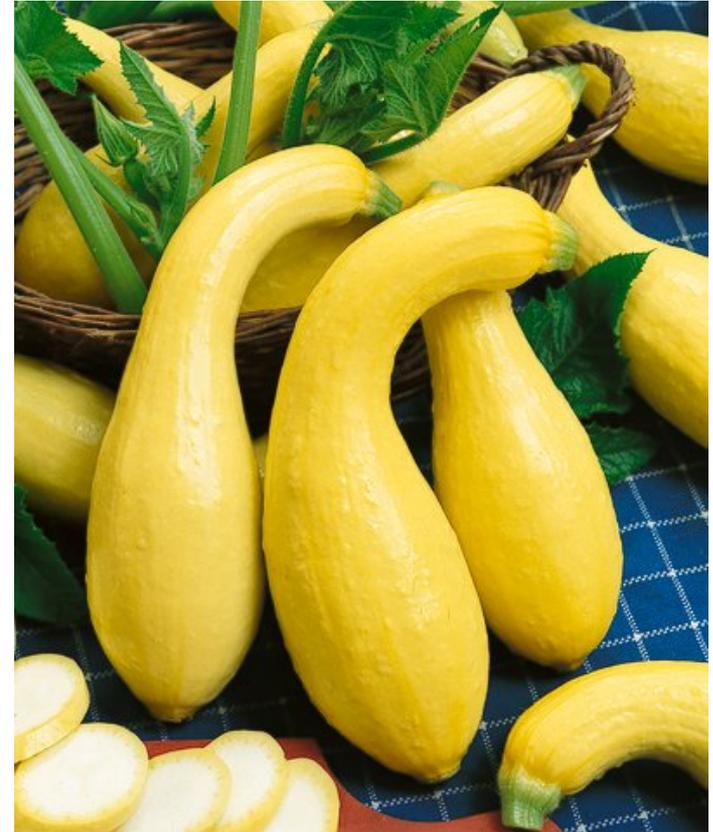


## Honeydew



# Summer Squash Types

- Scallop or Patty Pan
- Cousa
- Yellow & Green Zucchini
- Yellow crookneck



# Summer Squash



# Summer Squash -- Culture

- Planting -- After Danger of Frost
  - » Soil Temperature Above 60deg F.
- Spacing -- 24 to 36 " by 48 to 60"
- Hardiness -- Very Tender Annual
- Fertility -- Medium to Heavy Feeder



# Winter Squash Types

- Acorn
- Butternut
- Buttercup
- Hubbard
- Spaghetti
- Cushaw



Buttercup

# Winter Squash

**butternut**



**Spaghetti**



# Pumpkins Big and Small



# Problems

## Squash vine borer



# Fruit and Foliar Diseases

## Belly Rot of Fruit

## Anthracnose



# Problems

**Fruit rot**



**anthracnose**



# The Solanaceae / Nightshade Family

## Eggplant



# eggplants



# Eggplants



# Flea beetle damage



# Solanaceae - Peppers



# Peppers



# Pepper Transplants



Look at the top of the plant.



# Support the Plants



# Pepper Types

- Sweet Peppers
- Bell
- Pimento
- Italian Ramshorn
- Banana
- Cubanelle
- Hot Peppers
- Jalapeno
- Ancho Chili
- Anaheim
- Serrano
- Cayenne
- Habenero

# Malvaceae

- Hibiscus
- Okra
- Cotton





# Young Seedling



# Flower



# Developing Pods



# Field Ready to Pick



# Grading Okra



# Convolvulaceae

## Morning-glory family



# Sweet Potato History

- Native of Brazil
- Vegetatively Propagated



- Shoots (Slips) Growing From a Root



# Roots Ready to Dig



# Curing and Storing

- 80-85 degrees for 7-10 days with high humidity
- Store in a cool spot
  - 55-60 degrees

