

Vegetable Gardening from the Ground Up

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Overview

- Preparing to Plant
- Raised Beds
- Planning the Garden
- When to Plant
- Watering
- Making the Most of Your Space
- Growing Specific Vegetables

Choosing a Garden Site

- Full Sun – at least 6 hours
- Wind protection?
- Good drainage!





Preparing the Soil

- Soil pH
 - Most vegetables prefer 6.3-6.8
 - Some exceptions
- Soil qualities
 - Well-drained soil
 - Loose, not overly compacted

Improving the soil

- Take a soil test
- Incorporate organic matter
- Use raised beds
- Don't over-till





Fertilizing

- $\frac{1}{4}$ lb Nitrogen per 100 sq. ft.
- Apply before planting or split applications
- Almost any fertilizer will work



Fertilizing

- Macronutrients
 - Nitrogen
 - Phosphorus
 - Potassium

Raised Bed Gardening

- Improves drainage
- Improves soil
- Space saver
- Soil warms earlier





What is a Raised Bed?

- A raised bed is:
 - At least 6-8” higher than surrounding area
 - Edged by wood or other materials

How big should it be?

- You should be able to reach the middle.
 - No more than 4 or 5 feet wide!
- It can be as long as you want
- Don't go too big





Planning the Garden

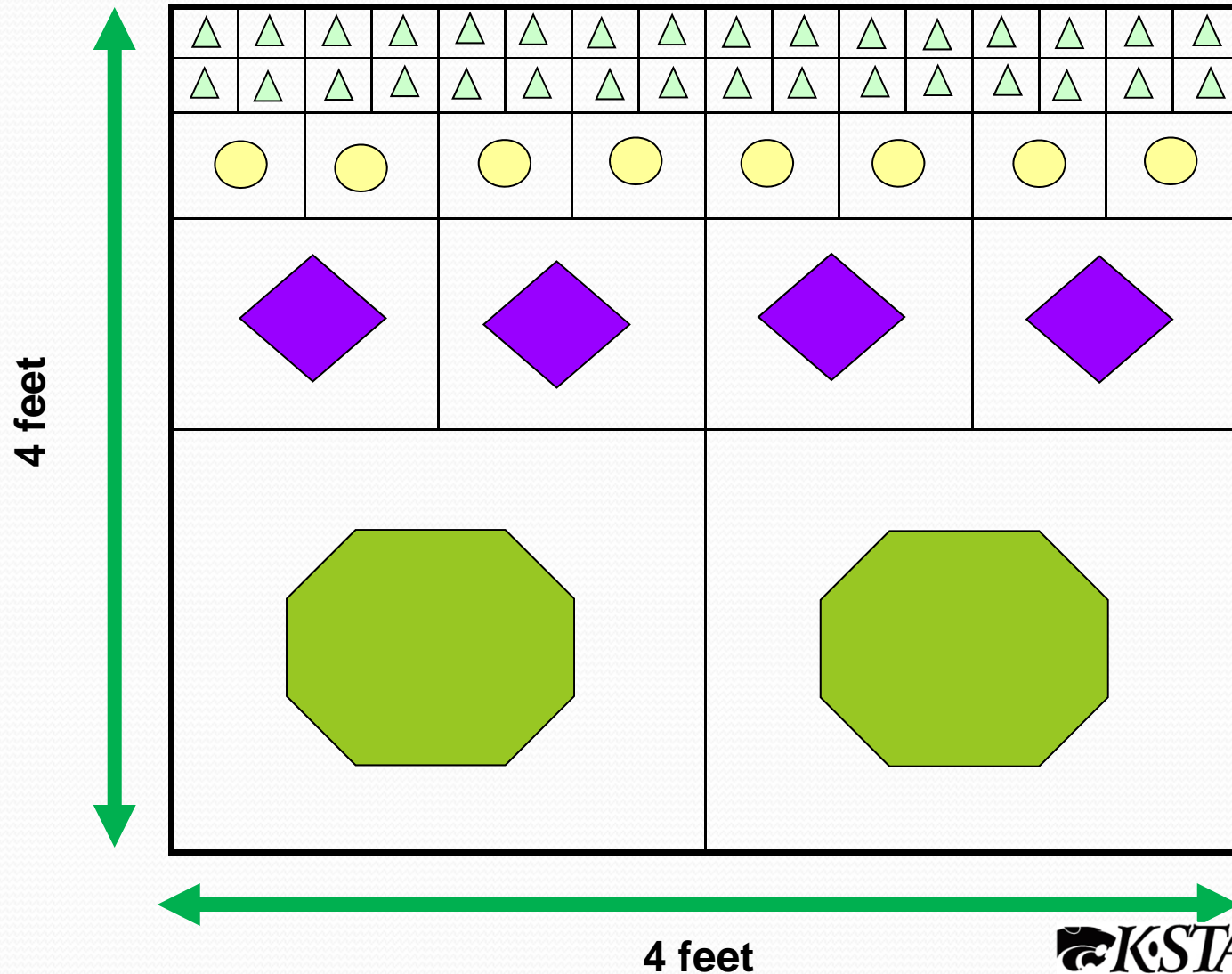
- Make a list of what you want to grow
- Prioritize your list
- Figure out how much space each vegetable needs



Space to Grow

- Use the Vegetable Garden Planting Guide
- In row spacing = space between plants
- Between row spacing
- Example: Squash
 - 36" in row spacing
 - 48-72" between row spacing

In a Raised Bed: Use In-Row Spacing





Crop Rotation

- Maintains healthy soil
- Breaks insect and disease cycles
- Plant vegetables from different “families”
 - Vine crops
 - Solanaceous crops
 - Greens
 - Root vegetables
 - Legumes

When to Plant

- Factors include:
 - Weather
 - Soil temperature
 - What the plants will tolerate
 - What the plants need to THRIVE
 - Beating the Kansas weather!



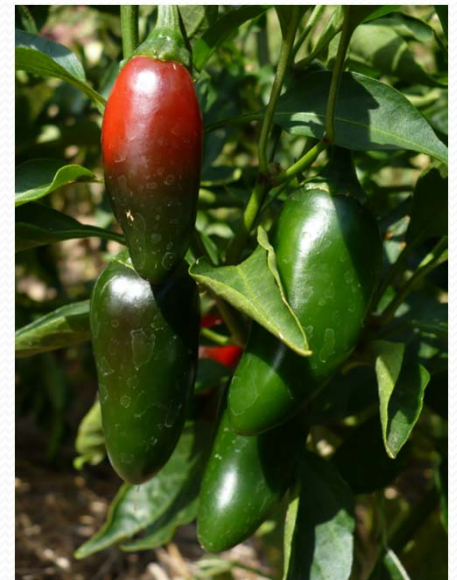
Cool Season vs. Warm Season

- Cool season vegetables:
 - Prefer cooler, moderate temperatures
 - Tolerate frosts and cold weather
 - Can be over-wintered with protection
 - Grow best in spring and fall
 - May bolt, lose quality, or die in the heat



Cool Season vs. Warm Season

- Warm season vegetables:
 - Need warm temperatures to grow
 - Will grow best during the heat of summer
 - Usually do not tolerate frosts or freezes
 - Usually cannot be over-wintered





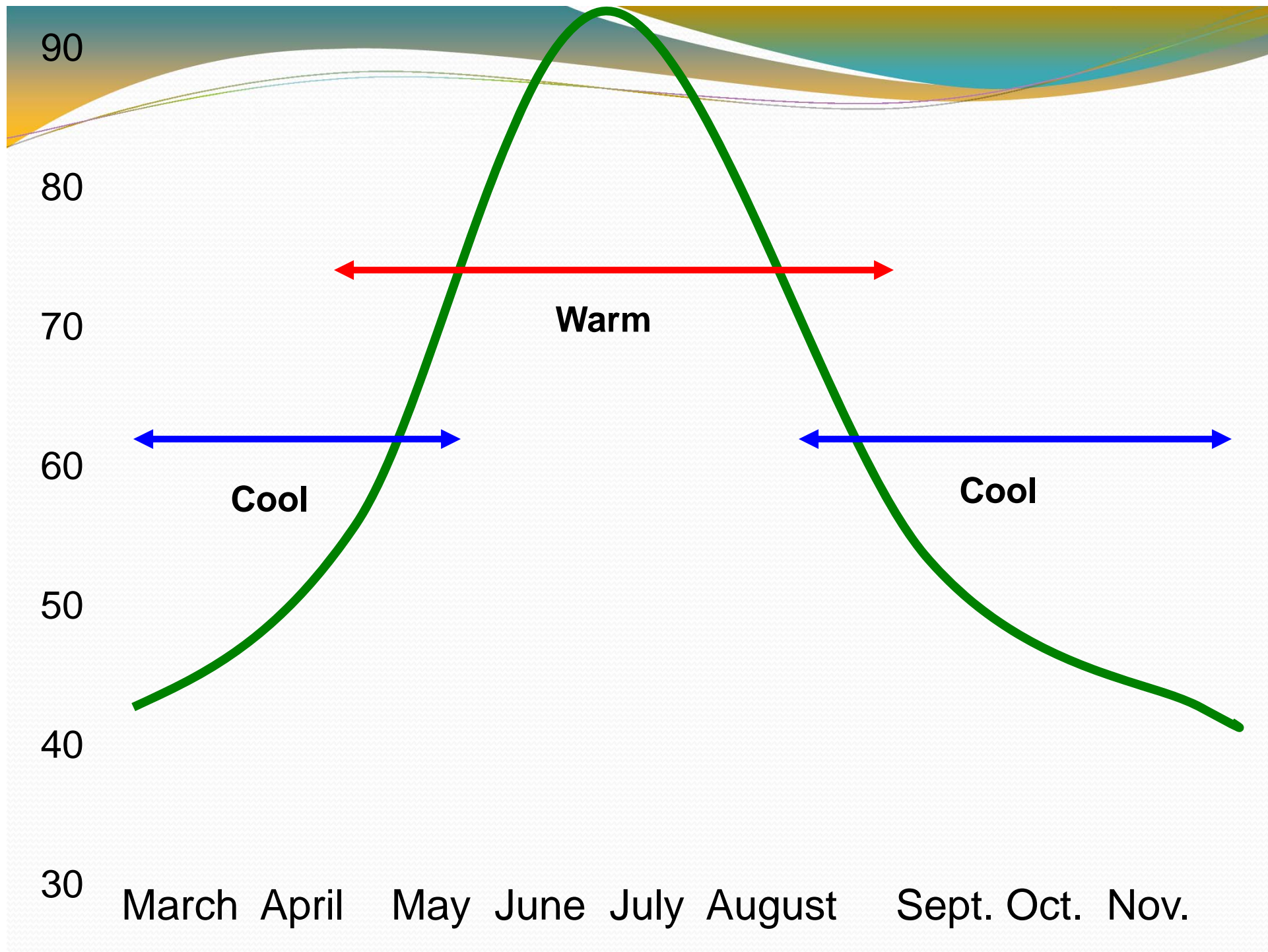
Cool Season vs. Warm Season

- Cool Season

- Lettuce
- Radishes
- Spinach
- Potatoes
- Onions
- Peas
- Carrots
- Asparagus
- Rhubarb

- Warm Season

- Tomatoes
- Cucumbers
- Beans
- Peppers
- Melons
- Sweetpotatoes
- Pumpkins
- Squash
- Eggplant





Beware of Frost!

- A 50-50 chance of frost: April 17th
 - 50% April 17
 - 40% April 20
 - 30% April 23
 - 20% April 27
 - 10% May 2



Planting Time

- Soil Temperature is MOST important
 - Cool Season - 45° F
 - Warm Season - 55° F
 - Very Warm Season - 60° F
- Measure at 2-3" soil depth in late morning



Seeds or Transplants?

- Most vegetables grow from seed
 - Or from transplants
- A few are vegetatively propagated
 - Potatoes – grow from a piece of potato
 - Sweet potatoes – grow from “slips”
 - Asparagus & rhubarb – usually buy crowns

Transplants

- Select short, stocky, dark green plants
- Plant slightly deeper than in the pots



Watering

- Water deeply and infrequently
 - About 1" of water each week
 - Larger plants will need more, especially in the hot weather
- Drip irrigation is the most efficient
- Sprinklers can work



Watering

- Practice tough love!
- Keep newly seeded areas & young seedlings moist
- Watch for signs of stress



Why Isn't My _____ Producing?

- Give it some time
- Weather conditions not right
- Planted at the wrong time
- Too much nitrogen
- Not enough sun



Male vs Female Flowers



There are mostly male flowers when flowering begins....

...So there won't be much fruit until female flowers show up!





Making the Most of Your Space

- Small Spaces
 - Plant most productive things
 - Plant most expensive things
- Medium Spaces
 - Plant productive things
 - Plant things you love
- Large Space
 - Plant anything, but prioritize

Use Vertical Space

- Use a Trellis
- Use Tomato Cages



Succession Planting

- Plant 2-3 times in 1 spot during the season
- Plant the same thing multiple times
- Plant different varieties of 1 vegetable





Succession Planting

- Plant the same vegetable multiple times
 - Same or different varieties
- Allows for a continual, consistent harvest
- Provides a “backup plan” in case of problems



Succession Planting

- How many times do I plant?
 - Some vegetables only need 1 or 2 plantings
 - Some vegetables may benefit from 2-4 plantings
 - Some vegetables should be planted every 1-2 weeks

Season Extension

- Think in terms of an individual crop
- Think in terms of your garden as a whole



Techniques for Season Extension

- Push the Envelope
- Varieties
- Cold Frames/Row Covers/Low Tunnels
- Plastic Mulches





Push the Envelope

- Plant earlier or later than “recommended”
 - Don’t go crazy
 - Also plant at “recommended” time
- Most plants are tougher than we think
 - Many cool season crops tolerate 24°F with no injury



Variety Selection

- Varieties have variation
- Different seed lots also have variation
- Find varieties that perform the best under extremes



Variety Selection

- Start with the obvious:
 - Buy varieties with differing Days to Maturity
 - There is usually a sharp difference
 - Tomatoes – 52 to 100+ DTM
 - Sweet Corn – 62 to 94 DTM
 - Broccoli – 55 to 75 DTM
 - Eggplant – 50 to 80 DTM
 - Lettuce – 45 to 75 DTM



Variety Selection

- Switch varieties at different times of year
- Adaptation to different weather
 - Ability to germinate in cold/hot soils
 - Ability to withstand light frost
 - Ability to withstand hard freeze
 - Ability to tolerate hot days and nights
 - Ability to tolerate scorching heat
 - Ability to tolerate pest pressure



Variety Selection

- Sometimes variety selection gives no advantage
 - Garden peas – 62-70 days
 - 1 week makes a difference, but not much
- It didn't “act the way it was supposed to!”

Cold Frames

- Best used for growing transplants
- Can be used to overwinter vegetables
- Not great for producing volume



Cold Frames

- Homegrown transplants can cut costs
- Flexible timing
- Flexible variety choices



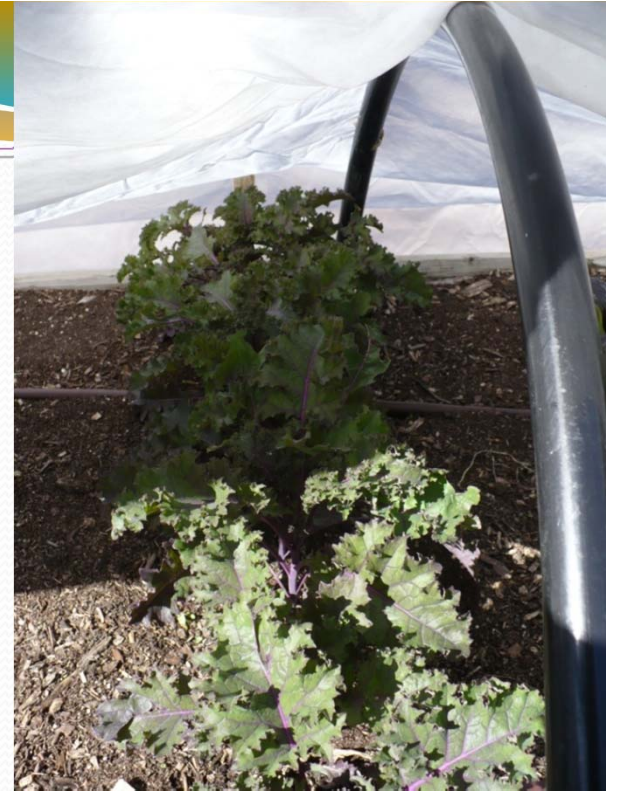
Row Covers

- Any protective covering
- Shields plants from:
 - Cold
 - Wind
 - Excess Sun
 - Insects



Row Covers

- Sunlight, rain, and air can penetrate
- Usually made of:
 - Perforated polyethylene (plastic)
 - Spun-bonded polypropylene (polyester fabric)
- Can give 2-10° protection



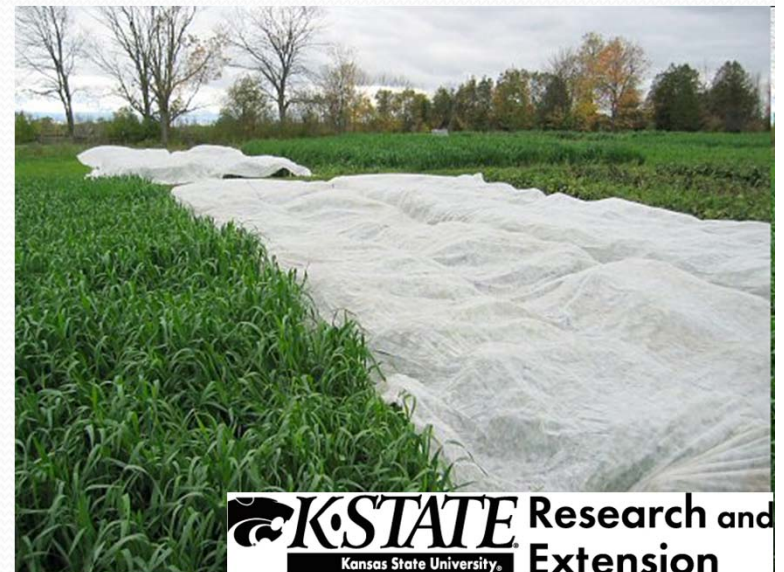
Row Cover Example

- This winter in the Demo Garden:
 - Fabric: 25°F when outside was 5°F
 - Plastic: 40°F when outside was 5°F
- 2" of snow



Floating Row Covers

- Cover several rows at once
- Easy to use
- Similar to Grandma's old sheets on the flowers!



Floating Row Covers

- Problems:
 - Rubbing on the growing point of plants
 - Tomatoes, peppers, vine crops
 - Loose edges can become a sail!



Low Tunnels

- Pros:
 - Will not rub on growing point
 - More “permanent” structures
 - Better for warm season crops
- Cons
 - More labor and material inputs
 - Edges MUST be secure
 - Hard to get the covering taut by hand





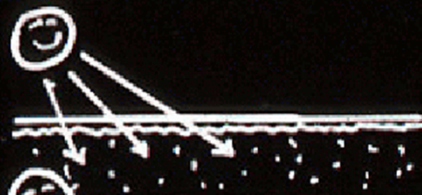
Securing the Edges!

- Did I mention that the edges of row covers must be secure?
- On a small scale, bricks, rocks, etc may hold edges down
- There are plastic or metal pins, staples, and tacks available.
- On a larger scale, burying the edges is the best

Mulches & Soil Temperature

MULCH

Clear
Plastic



+ 10°

Black
Plastic



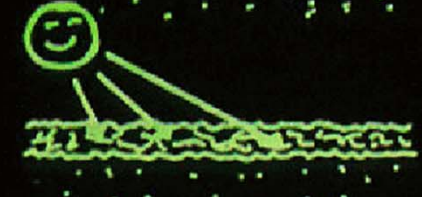
+ 6°

Paper



- 7°

Organic



- 10°



Plastic Mulch - Advantages

- Earlier crops
 - Warmer soils! (7-21 day differences)
- Less soil water evaporation
 - More uniform soil moisture
- Reduced weed pressure





Types of Plastic Mulch

- Black Plastic
 - Most commonly used mulch
 - About 6°F temperature increase
 - Cheapest
- White-on-black mulch
 - Either side can be up
 - White side up will reflect the sun, resulting in soil cooling (-2-3°)
 - Great for mid-summer





Keys to A Successful Garden

- Good location
- Well prepared & cared for soil
- Planning ahead – spacing, planting time
- Good watering practices
- Making the most of your garden space

Questions?

Demonstration Garden & Blog - <http://thedemogarden.org>

Master Gardener Hotline – 660-0190
Monday-Friday, 9-12 and 1-4