Growing Vegetables Part I

Handouts:
• MontGuide – Can I Grow That Here?
• MontGuide – Planting a Successful Home Vegetable Garden
• MontGuide – Hotbeds and Cold Frames for Montana Gardeners
• Tomato Trenching Diagram
• MontGuide – Heirloom Vegetables
VEGETABLES

✔ Intensively cultivated, fertilized, irrigated
✔ Usually staples
✔ High amount of hand labor
✔ Often fruits of annual plants
FRUITS (as opposed to vegetables)

- Seed-bearing product of a **perennial** plant
- Occupy land for a relatively long time
- Are desserts more often than not
- May be intensively or extensively cultivated
- Usually require more land per plant unit
- Relatively large amount of hand labor, but less than vegetables
- Are usually true fruits botanically
Planning Hints

• List your favorite vegetables in order of preference

• Don’t plant what you won’t eat
  – On the other hand, EXPERIMENT!!

• Identify candidates for transplanting
Planning Hints

• Draw a map
  – Tall crops on the north side to reduce shading (indicate N on map)
  – Perennials to the side for tillage ease
  – Group plants according to cultural requirements and growth habits
  – Rotation from previous year
Planning Hints

• Select cultivars
  – Check row lengths, row spacing and planting dates
  – A table works well for this

• Project yields

• Plant a little more of the right cultivars for preserving
Site Selection

• Convenient to your house
• 6 – 8 hours sunlight/day
  – 8-10 hours is better!
• Avoid low spots
• Watch for wind
• Avoid trees and shrubs
• 10’ away from buildings
Edible Landscaping
Site Selection

• Water availability
• Size of garden
  – Large enough to produce
  – Small enough so it’s not a chore
  – ¼ acre = food for family of 5
• Soil
  – Well-drained, high organic matter, sandy loam, silt loam is best.
Starting a new Garden? How do you get rid of the sod?

- Most complete way is to spray with herbicide
  - Glyphosate
  - Best done in the fall before planting so grass breaks down
  - Spring application may need to be done several days before planting
  - Read the label

- Organic? Remove the sod—but don’t leave rhizomes behind
  - If not, weed problems will plague you
The Soil

• Have a soil test done to know what amendments/nutrients are needed
• Check pH every 3 years or so
• Garden plants grow best in a pH of 6.2 to 6.8
• Over tilling can be detrimental
  – Can cause a layer of compaction
  – Causes imbalance of microorganisms
  – OM incorporated too deep for decomposition
Tilling the Soil

- Larger debris may need to be moved
- Rotary tilling works well
  - Soil should not be over-worked
  - Can cause a compaction layer
Rotary tillers
Should I Till in the Fall or Spring?

• Fall:
  – Earlier spring planting
  – Pests and perennial weeds reduced
  – Trapping snow
  – Freeze/thaw
  – Incorporation of amendments
  – Organic Matter will decompose

• Spring:
  – Better for sandy soils
  – Most soils need to be tilled in the spring anyway to smooth the soil for planting
Garden seeds
Seed Selection

- Purchase from a reliable company

- Keep a journal!
  - Germination
  - Plant vigor/adaptability
  - Pest susceptibility
How long can you keep seeds?

<table>
<thead>
<tr>
<th>Sweet Corn</th>
<th>1 year</th>
<th>Bean</th>
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</thead>
<tbody>
<tr>
<td>Leek</td>
<td></td>
<td>Carrot</td>
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<tr>
<td>Parsnip</td>
<td></td>
<td>Pea</td>
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<tr>
<td>Onion</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Beet</td>
<td>4 years</td>
<td>Brassicas</td>
</tr>
<tr>
<td>Pepper</td>
<td></td>
<td>Cukes</td>
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<tr>
<td>Pumpkin</td>
<td></td>
<td>Eggplant</td>
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<td>Tomato</td>
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<td>Lettuce</td>
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</tbody>
</table>
Germination Testing

- Ragdoll test
- Indicates germination percentage and rate of seeding
- Test your old seed before sowing!
Direct seeding

• Row Planting
  – Use string tied to two stakes to keep rows straight
  – Weeding is easier between rows
  – Thin to appropriate spacing

• Broadcast Planting
  – Wide rows
  – Hard to weed and thin
  – Really only works on certain vegetables (lettuce, carrots etc)
  – Not recommended for new gardens

• Hill Planting
  – To hill or not to hill – that is the question?
  – Hilling really means to put multiple seeds in one planting hole, not mounding the soil
  – Potatoes? We will discuss later...

• Rake the garden and leave the “fines” behind for a good seedbed.
• Don’t over till!
How deep do I plant my seeds?

- Read the package
- Rule of thumb – plant seeds in the media 2½ deeper than the diameter of the seed.
Planting strips – makes planting small seed easy

• No thinning needed
The back of a seed packet

- Type of vegetable
- Days to maturity
- Sowing seed
  - Spacing
  - Distance between rows
- Thinning/transplanting
- Germination
- Year it was packaged for use
- Special notes from seed company
Days to Maturity

• Length of time to harvest from the day that seeds or transplants are placed in the garden
• It is an average. Actual time will vary with growing conditions
• Examples of veggies normally grown from direct seeding
  – Beans
  – Peas
  – Corn
  – radishes

• Examples of veggies normally grown from transplants
  – Tomato
  – Pepper
  – Cabbage
  – Broccoli
  – Eggplant
Recommended Planting Dates — According to the Montana Climate Summary

- www.mtmastegardener.org

- Average last killing frost in spring

- Average first killing frost in fall

- Average growing season is the # of days between the last and the first frost
Recommended Planting Dates –
A look at the MSU Campus

- Average last killing frost in spring for MSU
  - May 24

- Average first killing frost in fall for MSU
  - September 16

- Average growing season for Montana State University is 115 days,

- However, it is only an estimate as all days are not conducive to growing

- Seasoned gardeners in Bozeman will tell you that it is best to plant (frost intolerant plants) after June 1

- Take home message: We have a short growing season!
Watering

• Types of irrigation will be left to the irrigation lecture later in the series
• The best recommendation is to water your vegetables 1-2 inches of water per week in one application per week
• Water to a depth of 5-6” per application
• Except in the seedling stage, let top 1-3” of topsoil dry out between before watering again
• However, all is dependent on soil texture
Weeding

• Most labor intensive part of gardening
• There are entire industries that are built on gardeners wanting it to be simpler
Weeding – Take Home Message

• Use the tools that work for you
• Keep up on the weeding
  – Younger weeds are easier to remove
• Removing weeds before they seed will decrease weed seedbank
• Turning under weeds will slightly increase nitrogen and OM, but may increase the weed problem
  – If weeds are rhizomatous
  – Have seed heads
  – Easily root
  – Unless you know the weed, it is best to collect them and put them in the compost pile or in the trash
MULCHING

• Alternative to weeding
• Retain soil moisture
• Materials
  – Straw
  – Newspaper
  – Old carpeting
  – Cardboard
  – Grass clippings (watch for herbicide residual)
  – Don’t use sawdust, it ties up nutrients (N)
• If weeds are rhizomatous or you want to increase soil temperature, you may want to use synthetic mulches
Synthetic Mulch

• Solarization
  – Clear plastic warms the soil 8
    – 10°F more than black plastic.
  – Weeds can grow!
  – Helps in early growth of cucurbits
  – Thermal film prevents weed growth as with black plastic mulch while providing high enough soil temperatures for early productivity and plant growth, like clear plastic
Synthetic Mulch
Designer Mulches

- Increase harvest of quality fruit by 10-15%
- The colors reflect light onto the plants
- Research continues
Intensive Gardening Methods

- Raised beds
- Square foot gardening
- Vertical gardening
- Interplanting
- Succession planting
Interplanting (intercropping) and Succession Planting

- **Interplanting**
  - Plant early-maturing crops between longer-season crops
    - Radishes/Carrots
  - Avoids competition
  - Efficient use of space

- **Succession Planting**
  - Plant another crop after first ripens
    - Radishes/Beans
Raised beds

- Benefits include: less weeds, warms soil earlier, easier to work, custom soils, season extension
- Use redwood, cedar or fir – they will last almost as long as other products
- Try not to use pressure-treated wood or railroad ties
- Should be no more than 4’ wide – leave space between beds to work (I like 3’)
- Borrowed from www.sunset.com
Raised Beds for Physically Challenged
Season Extension

- Cold frames
- Hot beds
- Cloches
- Row covers
Row Covers

• Tunnels

• Floating row
  – Season extension
  – Earlier maturity
  – Insect and wind protection
  – Frost protection
Crop Rotation

Why?

• Many disease organisms are soil born
• Curbs insect infestation
• Reduces depletion of soil nutrients
Container Vegetable Gardening

• Keep roots cool
  – Avoid using black pots

• Use large pots
  – Not too large you can’t move them indoors if frost is imminent

• Might require more frequent watering
  – Pots can dry out faster than your garden

• Patio or container varieties available
After the Harvest

- Pull dead plants
- Remove diseased or insect infested material
- Look for composted nutrient sources and other amendments
- Till residue and amendments
- Remove soil from pots and store indoors so that they don’t freeze

- Celebrate and take time off.
Preserving MontGuides

- [http://www.msuextension.org/store/](http://www.msuextension.org/store/)

- Home Canning Pressures and Processing Times
- Fruit and Vegetable Leather
- Canning Pickles and Sauerkraut
- Making Jams, Jellies and Syrups Including Wild Montana Berries and Fruit
- Processing Fruit, Tomatoes, and Mixtures in a Pressure Canner
- Drying Vegetables
- Freezing Vegetables
- Drying Fruits
- Freezing Fruits
End

Questions?