PREPARING A NEW GENERATION OF ILLINOIS FRUIT AND VEGETABLE FARMERS

EVALUATING AND SELECTING CULTIVARS

Elizabeth Wahle
January 2015
Objectives ...

• Understand why crop, variety, and cultivar selection is important
• Know where to find information on the performance of specific varieties and cultivars
• Examine a few examples of important traits of specific varieties or cultivars
• Know how to evaluate crop performance on your farm
Before you select crops and specific varieties or cultivars, remember that you can’t grow everything...

- Grow what you have a market for ... or what you think you can develop a market for.
- Grow what fits in your succession plan.
- Grow what fits in your space.
- Grow what thrives in your particular environment.

“If you can’t sell it, don’t grow it.”
Variety

• Plants that differ from other members of the species in minor ways
• Appears naturally with no human intervention
• Name is in Latin and follows the species name
  – Commonly left out of catalogue listing
• Though not technically correct, is used interchangeably with cultivar
Good example of variety

- **Leaves**
  - *Brassica oleracea acephala* - kale, collards
  - *Brassica oleracea alboglabra* - Chinese broccoli
- **Terminal bud**
  - *Brassica oleracea capitata* – red and green cabbage
  - *Brassica oleracea sabauda* - savoy cabbage
- **Axillary (lateral) buds**
  - *Brassica oleracea gemmifera* - Brussels sprouts
- **Stem**
  - *Brassica oleracea gongylodes* - kohlrabi
- **Inflorescences**
  - *Brassica oleracea botrytis* - cauliflower
  - *Brassica oleracea italica* – broccoli
Another example of variety

- *Zea mays amylacea* - flour corn
- *Zea mays everta* - popcorn
- *Zea mays indentata* - dent corn
- *Zea mays rugosa* and *Zea mays saccharata* - sweet corn
- *Zea mays ceratina* - waxy corn
- *Zea mays tunicata* - pod corn
- *Zea mays indurata* – flint corn
- *Zea mays japonica* - Striped maize
Cultivar

• Cultivated variety = Cultivar
  – Human intervention (selective breeding)

• Non-Latin name
  – Name follows species or variety name
    • Capitalized and in single quotes

• Example
  – *Zea mays rugosa* ‘Ambrosia’
  – *Zea mays rugosa* ‘Silver King’
  – *Zea mays rugosa* ‘Mirai’
Open Pollination

• An open-pollinated plant cultivar is one in which pollination is carried out by wind, insects, or other naturally occurring agents.

• The seed saved from an open-pollinated cultivar can be grown in subsequent years and will breed true providing that it does not cross-pollinate with another cultivar of the same variety or species.
A Hybrid cultivar (i.e. controlled pollination)

• Is made by cross-pollinating two specific parent varieties/cultivars
• This first generation of offspring is referred to as the F1 hybrid
• Although F1 hybrids often show increased yield and vigor, the plants will not breed true if its seeds are saved
  – F1 Hybrids include many kinds of sweet corn, summer squash, melons, cucumbers, carrots, spinach and some tomatoes and peppers
Heirloom

• Open pollinated
• Often older cultivars
  – passed along from generation to generation
• Often chosen for flavor
• Most are disease-susceptible

‘Sainte Lucie,’ 85 days, late-season, indeterminate, open pollinated
Genetically modified organisms (GMO)

- A variety of methods used to genetically modify organisms or influence their growth and development by means that are not possible under natural conditions or processes and are not considered compatible with organic production.
  - Such methods include cell fusion, microencapsulation and macroencapsulation, and recombinant DNA technology (including gene deletion, gene doubling, introducing a foreign gene, and changing the positions of genes when achieved by recombinant DNA technology).
- Such methods do not include the use of traditional breeding, conjugation, fermentation, hybridization, in vitro fertilization, or tissue culture.
Cultivars within a crop differ in ...

- Response to environment
- Growth habit, fruit shape
- Overall yield
- Maturity
- Color
- Flavor and nutritional value
- Disease and insect resistance
- Post-harvest stability
- Market niche
- Profit potential
Response to environment

• Cold-hardiness
  – Contender peaches; Illini Hardy blackberries
  – Differences in sweet corn vigor re: early planting

• Seasonality
  – Day-neutral versus “June-bearing” strawberries

• Ability to stand up to summer heat and humidity
  – Cherries, pears, lettuce, spinach ...
Winter and Summer Extremes

Plant Hardiness Zone Map

Illinois

Average Annual Extreme Minimum Temperature 1976-2005

<table>
<thead>
<tr>
<th>Zone</th>
<th>Temp (°F)</th>
<th>Temp (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5a</td>
<td>-20 to -15</td>
<td>-28.9 to -26.1</td>
</tr>
<tr>
<td>5b</td>
<td>-15 to -19</td>
<td>-26.1 to -23.3</td>
</tr>
<tr>
<td>8a</td>
<td>-10 to -5</td>
<td>-23.3 to -20.6</td>
</tr>
<tr>
<td>6b</td>
<td>-5 to 0</td>
<td>-20.6 to -17.8</td>
</tr>
<tr>
<td>7a</td>
<td>0 to 5</td>
<td>-17.8 to -15</td>
</tr>
</tbody>
</table>
Number of Frost-free Days in IL
Growth habit, fruit shape

• Determinate versus indeterminate tomatoes
• Bush versus vining type cucumbers, bush versus pole beans
• Plum, grape, cherry, and beefsteak tomatoes
Space

- Trellising
- Vining
- Canopy
- In-row spacing
- Between row spacing

Indeterminate tomatoes must be trellised and will grow very tall.
Yield

- Overall yield
- Early yield or consistent yield

Data in the Midwest Vegetable Variety Trial Reports ...

https://ag.purdue.edu/hla/fruitveg/Pages/MVVTRB.aspx
Maturity

• Sweet corn
  – Bi-color – Fastlane – 67 days
  – Bi-color – Ambrosia – 75 days
  – Bi-color – Providence – 82 days
• Tomatoes
• Peaches
• Apples
• Brambles
• (all fruit and vegetable crops)
Perdue’s Mountain Fruit Farm, Taylors, SC
Apple Tree Varieties

Select an Apple Variety: Acey Mac

Apple Tree Varieties in order of Ripening (Early to Late)

The list below identifies the ripening order for our apple varieties. Use this list to help choose apple trees which yield fruit at different times throughout the season. The harvest dates listed here are approximate for south central PA. Adjust accordingly for other locations.

- Yellow Transparent - July 1
- Yellow Transparent Pernine - July 1
- Lodi - July 5
- Pristine (CO-OP 32) PP#9,881 - July 10
- Redfree - August 5
- Ginger Gold® (Mountain Cove cv.) - August 12
- Zestar!® (Minnewashta cv.) PP#11,367 - August 15
- Dandee Red PP#16,620 - August 15
- Sensa - August 15
- Initial™ (X-6163 cv.) - August 20
Accomplishing succession of harvests

Choosing varieties

- Planting a range of cultivars with different maturity dates

Why? Allows for extended harvest and sales of product.

Repeating plantings over time

- Planting the same cultivar periodically over the growing season

Planting a range of maturities at each planting rather than planting one maturity every 1-2 weeks (for instance) has less risk in outdoor production due to weather concerns.
Scheduling Vegetable Plantings for Continuous Harvest

By Janet Bachmann
NCAT Agriculture Specialist
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We have also provided Zack Grant’s spread sheets and the link to Ag-squared, as well as catalogs such as Johnny’s Select Seeds that provide guidance on planting schedules.

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Market gardeners try to schedule their planting so they can offer customers a continuous supply of fresh flowers, herbs, and vegetables throughout the growing season. This publication helps growers plan planting times and succession planting.

Annual first-freeze date in the fall. You can get these dates for your area from your local Extension agent or garden store. You can find a USA Frost Zone map online at www.averaat-gardening.com/zone.htm.

Weather has a large influence on timing because of its effect on seedling establishment and crop growth. For example, peas planted at the first possible planting date in the spring and then again two weeks later will usually mature only one week apart. Germination conditions at the time of the second planting will likely be much better, and the young plants will grow faster as the days lengthen, slowly catching up with the first crop. This same process happens in reverse for fall crops. Even a couple of days’ difference in midsummer planting dates can lead to a harvest date difference of two, or even three, weeks. (Ogden, 1992.)

Two ways to extend the harvest period for some crops are: 1) to plant varieties with a different number of days to maturity at the same time; and 2) to plant the same variety multiple times in succession.

Sweet corn often is grown in successive plantings to prolong the harvest season. A good way to stagger sweet corn plantings is to wait until one crop is 1 to 2 inches tall before planting the next. Sweet corn tends to emerge more slowly in cool soil (60–65°F) than in warm soil (68–77°F). Standard sweet corn varieties are better for early spring plantings than the super-sweet varieties, since the super-sweet varieties won’t perform as well in cool soil. Stowing sweet corn about one week before the average frost-free date is a rule of thumb for the
### Vegetable Planting Calendar

<table>
<thead>
<tr>
<th>Vegetable</th>
<th>Approx. Planting per Person per Year</th>
<th>Min Space (In.)</th>
<th>Inches Between Plants (In.)</th>
<th>Days from Planting to Harvest</th>
<th>Vitamin Content*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rich in Vitamin A/C</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinach</td>
<td>3-20 ft</td>
<td>15-30 ft</td>
<td>0.25 ounce*</td>
<td>3-5 months</td>
<td>112,000</td>
</tr>
<tr>
<td>Collard green</td>
<td>3-15 ft</td>
<td>15-30 ft</td>
<td>0.25 ounce*</td>
<td>3-5 months</td>
<td>100,000</td>
</tr>
<tr>
<td>Kale</td>
<td>3-15 ft</td>
<td>15-30 ft</td>
<td>0.25 ounce*</td>
<td>3-5 months</td>
<td>85,000</td>
</tr>
<tr>
<td>Broccoli</td>
<td>5-10 ft</td>
<td>15-30 ft</td>
<td>0.5 ounce**</td>
<td>3-5 months</td>
<td>71,500</td>
</tr>
<tr>
<td><strong>Rich in Vitamin C</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tomatoes</td>
<td>3-5 pl</td>
<td>5-10 pl</td>
<td>0.125 ounce**</td>
<td>6-8 months</td>
<td>55-85</td>
</tr>
<tr>
<td>Peppers</td>
<td>2-5 pl</td>
<td>4-6 pl</td>
<td>0.25 ounce*</td>
<td>6-8 months</td>
<td>0.000</td>
</tr>
<tr>
<td>Cabbages</td>
<td>2-3 pl</td>
<td>4-6 pl</td>
<td>0.25 ounce*</td>
<td>6-8 months</td>
<td>0.000</td>
</tr>
<tr>
<td>Lettuce</td>
<td>5-10 pl</td>
<td>10-15 pl</td>
<td>0.5 ounce*</td>
<td>3-5 months</td>
<td>0.000</td>
</tr>
<tr>
<td>Cauliflower</td>
<td>5 pl</td>
<td>15 pl</td>
<td>0.25 ounce*</td>
<td>3-5 months</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Other Green Vegetables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broccoli</td>
<td>10-15 ft</td>
<td>30-40 ft</td>
<td>0.35 pound*</td>
<td>12-14 months</td>
<td>370</td>
</tr>
<tr>
<td>Spinach</td>
<td>10-15 ft</td>
<td>30-40 ft</td>
<td>0.35 pound*</td>
<td>12-14 months</td>
<td>320</td>
</tr>
<tr>
<td>Lima beans, bush</td>
<td>15-20 ft</td>
<td>30-40 ft</td>
<td>0.35 pound*</td>
<td>12-14 months</td>
<td>250</td>
</tr>
<tr>
<td>Crowder peas</td>
<td>10-15 ft</td>
<td>20-25 ft</td>
<td>0.35 pound*</td>
<td>12-14 months</td>
<td>200</td>
</tr>
<tr>
<td><strong>Other Vegetables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leeks, parsnips</td>
<td>10-15 ft</td>
<td>20-25 ft</td>
<td>0.35 pound*</td>
<td>12-14 months</td>
<td>150</td>
</tr>
<tr>
<td>Carrots</td>
<td>10-15 ft</td>
<td>20-25 ft</td>
<td>0.35 pound*</td>
<td>12-14 months</td>
<td>100</td>
</tr>
<tr>
<td>Beets</td>
<td>5-10 ft</td>
<td>10-15 ft</td>
<td>0.35 pound*</td>
<td>3-5 months</td>
<td>75-90</td>
</tr>
<tr>
<td>Cucumber</td>
<td>2-3 pl</td>
<td>5-10 pl</td>
<td>0.25 ounce*</td>
<td>6-8 months</td>
<td>55-72</td>
</tr>
<tr>
<td>Eggplant</td>
<td>2-3 pl</td>
<td>5-10 pl</td>
<td>0.5 ounce*</td>
<td>6-8 months</td>
<td>55-72</td>
</tr>
<tr>
<td>Collards</td>
<td>5 pl</td>
<td>15 pl</td>
<td>0.25 ounce*</td>
<td>3-5 months</td>
<td>50-65</td>
</tr>
<tr>
<td>Lettuce, green</td>
<td>5-10 pl</td>
<td>10-15 pl</td>
<td>0.25 ounce*</td>
<td>3-5 months</td>
<td>50-65</td>
</tr>
<tr>
<td>Green, yellow, orange</td>
<td>5-10 pl</td>
<td>15-20 pl</td>
<td>0.25 ounce*</td>
<td>3-5 months</td>
<td>50-65</td>
</tr>
<tr>
<td>Onions, white</td>
<td>5-10 pl</td>
<td>15-20 pl</td>
<td>0.5 ounce*</td>
<td>3-5 months</td>
<td>50-65</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>3-5 pl</td>
<td>5-10 pl</td>
<td>0.5 ounce*</td>
<td>3-5 months</td>
<td>50-65</td>
</tr>
<tr>
<td>Zucchini</td>
<td>3-5 pl</td>
<td>5-10 pl</td>
<td>0.5 ounce*</td>
<td>3-5 months</td>
<td>50-65</td>
</tr>
<tr>
<td>Cucumbers</td>
<td>3-5 pl</td>
<td>5-10 pl</td>
<td>0.5 ounce*</td>
<td>3-5 months</td>
<td>50-65</td>
</tr>
<tr>
<td><strong>Vitamin Content</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>7,000</td>
<td>10,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>1,500</td>
<td>2,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>300</td>
<td>400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcium</td>
<td>500</td>
<td>600</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>100</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnesium</td>
<td>50</td>
<td>75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phosphorus</td>
<td>100</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Protein</td>
<td>20</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riboflavin</td>
<td>0.5</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thiamin</td>
<td>0.1</td>
<td>0.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitamin C</td>
<td>50</td>
<td>75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitamin E</td>
<td>5</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitamin K</td>
<td>10</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Vegetables are primary sources of vitamins A and C. They are also good sources of other vitamins and minerals. In addition, they provide important bulk to our diets.

**For direct seeding, normally these vegetables are planted in the garden as plants.

http://extension.missouri.edu/exploreguides/hort/g06201.pdf
<table>
<thead>
<tr>
<th>Vegetable</th>
<th>Amount to Plant</th>
<th>Planting Instructions</th>
<th>Time Required</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seeds or plants per 100-ft. row</td>
<td>Estimated yield per 100-ft. row</td>
<td>Distance between plants</td>
</tr>
<tr>
<td>Artichoke, Jerusalem Asparagus</td>
<td>40-50 tubers</td>
<td>150-200 lb.</td>
<td>24-30 in.</td>
</tr>
<tr>
<td>Asparagus</td>
<td>50 roots</td>
<td>80-100 lb.</td>
<td>18-24 in.</td>
</tr>
<tr>
<td>Bean, Bush (lima)</td>
<td>1/2 lb.</td>
<td>30 lb.</td>
<td>3 in.</td>
</tr>
<tr>
<td>Bean, Bush (snap)</td>
<td>1/2 lb.</td>
<td>50 lb.</td>
<td>3 in.</td>
</tr>
<tr>
<td>Bean, Pole</td>
<td>1/2 lb.</td>
<td>50 lb.</td>
<td>3-4 in.</td>
</tr>
<tr>
<td>Beet</td>
<td>1 oz.</td>
<td>75 lb.</td>
<td>2-3 in.</td>
</tr>
<tr>
<td>Broccoli</td>
<td>50 plants</td>
<td>80-100 lb.</td>
<td>18-24 in.</td>
</tr>
<tr>
<td>Brussels sprouts</td>
<td>50 plants</td>
<td>80-100 lb.</td>
<td>18-24 in.</td>
</tr>
<tr>
<td>Cabbage</td>
<td>75-100 plants</td>
<td>150-200 lb.</td>
<td>12-18 in.</td>
</tr>
<tr>
<td>Carrot</td>
<td>1/4 oz.</td>
<td>100-150 lb.</td>
<td>1-2 in.</td>
</tr>
<tr>
<td>Cauliflower</td>
<td>50-75 plants</td>
<td>80 lb.</td>
<td>18-24 in.</td>
</tr>
<tr>
<td>Celeriac</td>
<td>200 plants</td>
<td>100-150 lb.</td>
<td>6 in.</td>
</tr>
<tr>
<td>Celery</td>
<td>150-200 plants</td>
<td>200 lb.</td>
<td>6-8 in.</td>
</tr>
<tr>
<td>Chard</td>
<td>2 oz.</td>
<td>100 lb.</td>
<td>4-6 in.</td>
</tr>
<tr>
<td>Chinese cabbage</td>
<td>1/2 oz.</td>
<td>200-300 lb.</td>
<td>12-15 in.</td>
</tr>
<tr>
<td>Collards</td>
<td>1/2 oz.</td>
<td>80-100 lb.</td>
<td>12-15 in.</td>
</tr>
<tr>
<td>Corn, Sweet</td>
<td>4 oz.</td>
<td>100-150 lb.</td>
<td>9-12 in. (single)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15-25 ft.</td>
<td>36 in. (hills)</td>
</tr>
<tr>
<td>Cucumber</td>
<td>1 oz.</td>
<td>100-150 lb.</td>
<td>12 in. (single)</td>
</tr>
</tbody>
</table>
Color

- Golden Delicious versus Arkansas Black apples
- Fruit colors of bell peppers
- White, yellow, and bi-color sweet corns
- Potatoes, carrots, etc.

What do your buyers want? What will attract them to your stall at the farmers’ market?
Flavor and nutritional value

- Super-sweet & sugary-enhanced sweet corn
- Tomato cultivars
- Vidalia versus other onions (really?)
- Antioxidants in different brambles and blueberries
- Anti-cancer components of different broccoli cultivars
Disease and insect resistance

• V, F, N designations in seed catalogs
  – Verticillium Wilt, Fusarium Wilt, Nematodes
  – But there are many more resistance designations (well over 100 crop-disease resistance designations in the Siegers catalog)

• Resistance to one or more key diseases of apples

• Stewart’s wilt resistance in sweet corn
Post-harvest stability, quality

- Shipping versus fresh-market sweet corn
- Summer versus fall apples
- Susceptibility to cold-injury in spinach

Although picking sooner or later affects post-harvest stability (think peaches or tomatoes), variety selection also influences post-harvest quality. Varieties best-suited to farmers’ markets often are not the same as those grown for sale to a local grocery store or for wholesale.
Market niche

• Acceptable to consumer
• Retailer
• Wholesaler
• Institution or restaurant ...

Can you grow a cultivar at a density or spacing that aids in harvest AND satisfies the needs of the buyer? Can you do it profitably? (Remember, the market niche for a cultivar is not infinite in size ... another growers’ success may or may not be an indicator that you can succeed by doing the same thing.)
Profitability

• $\$\$ per square foot or acre
  – Based on yield, price, and amount actually sold ...
  minus input costs
  – Requires accurate record-keeping
Certified organic production?

- Requirements for seed purchasing
  - The National Organic Program (NOP) requires crop and plant producers to use organic seeds, annual seedlings and planting stock within their operations unless they can verify that such sources do not exist.
  - Untreated seed is not the same as organic seed
  - Heirlooms to hybrids can be grown organically – or not

Information on Cultivar Performance

- Seed and plant stock catalogs, suppliers
- Research reports
- Extension programs
- Other growers, farmers markets
- Your experience and records
Study catalogs carefully

• Great source of \textit{variety-specific} information.
• Companies spend a good deal of time and effort evaluating their varieties under specific conditions and provide valuable information.
• For example, lettuce: leaf or head, cold or heat tolerant, high tunnel or field grown, organic, salad mix component, disease or insect resistance or susceptibility, grows well in containers ...
Varietal evaluation

• Midwest Vegetable Variety Trial Reports
• Can be found online at: https://ag.purdue.edu/hla/fruitveg/Pages/MVVTRB.aspx
• Created by Extension and University research stations from states across the Midwest.
The annual Midwest Vegetable Production Guide for Commercial Growers includes listings of several varieties suitable for commercial production ... but it is not all-inclusive.

Apple and Peach Cultivars and Rootstocks

- Rootstocks determine size and (to some extent) disease resistance
- Disease-resistant cultivars allow minimal fungicide use (see http://www.ca.uky.edu/agc/pubs/id/id93/intro.pdf and http://www.extension.purdue.edu/extmedia/BP/BP-132-W.pdf, as well as nursery catalogs)
- Different cultivars provide harvests over a range of several weeks ... see nursery catalogs
Apple Rootstocks

<< Back to Apple Tree Varieties

The use of clonal rootstocks for apples began in the mid 1900’s. Selections from the East Malling Research Station, Kent, England were introduced to commercial fruit production as a means to control tree vigor, promote early fruiting, and improve tree efficiency. The widespread acceptance of this technology led the way for rootstock breeding in the United States, Poland, and the former Soviet Union. The M and EMLA rootstocks from East Malling, the Bud rootstocks from the former Soviet Union, and more recently, the G rootstocks from Geneva, New York have become the most commonly used rootstocks for apple production in the United States and throughout the world.

M-9 (337)
A dwarfing rootstock, ideal for high density plantings. M9-337 is a virus certified clone of the original Malling 9 and has been used successfully throughout the world. Trees on M9-337 are very precocious and tolerant to a wide range of soil and climate conditions. Due to the poor anchorage of this rootstock, tree support is essential in establishing trees.

M9-NIC 29
A selection of Malling 9 developed in Belgium. M9-Nic29 is recommended for use with cultivars that are less vigorous such as Empire or Honeycrisp. M9-Nic29 has slightly more vigor than other clones of Malling 9 yet is similar in other horticultural characteristics.

Apple rootstocks:  http://www.acnursery.com/rootstock.php  (also see other nursery lists and references)
Strawberries

• June bearing - traditional strawberry matted row production, harvested in May/June time frame. Wide range of maturities could allow extended harvest of 5-6 weeks or more

• Everbearing - harvest fluctuates throughout year, from individual plants not allowed to runner, until frost ends season. Very similar total yields to June bearing

• Plasticulture - higher management system, berries planted in the fall on raised plastic beds, harvest the next season, beginning several weeks earlier than June bearing plantings

• High-tunnel production ... what varieties are best suited?
Sweet Corn

- Many types of sweet corn, varying in sugar/starch content, insect and herbicide tolerance, maturity, color, etc.
- Standard, sugary enhanced (SE), shrunken (SH2), and combinations
- Yellow, white, bicolor
- GMO traited - *Attribute* insect protection, *Performance* insect/herbicide protection
- Consider resistance to Stewart’s wilt (bacterial disease transmitted by corn flea beetles)
- To prevent starchy, tough kernels, isolate supersweets (SH2) from SE types by at least 100 ft. in commercial plantings or by a 10-day difference in silking dates.
Tomatoes

- Wide range of maturities, color, sizes, acidity, etc.
- Heirloom (open pollinated)
- Hybrid
- Globe (round), beefsteak (large), cherry, Roma, pear, plum, grape
- Consider disease resistance (V,F,N, ... and more)
Evaluating plant performance on your farm ... observe and record

- Germination
- Plant stand
- Insect and disease occurrence
- Dates of harvest
- Yield by date
- Percent culls
- Market price, total sales, unsold compost
Consider cultural practices when choosing crops, varieties, and cultivars.

- Location, including drainage
- Soil types: pH, sandy soil, clay soil, loamy soil
- Layout of site
- Rotation
- Planting method – direct seed or transplant
- Pest management
Resources

• Seed and nursery catalogs
  – Seed suppliers include Johnny’s, Siegers, Seedway, Rispens, Rupp, Stokes, and more
  – Fruit nurseries include Stark’s, Adams County, Moser Fruit Tree Sales (including Grandpa’s Orchard), Raintree, Van Well, Cummins, Nourse, Indiana Berry, and more
# To reach us

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