

### **PREPARING A NEW GENERATION** OF ILLINOIS FRUIT AND VEGETABLE FARMERS

# **EVALUATING AND SELECTING**



Elizabeth Wahle January 2015



11

### 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 cant 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 diseasesusceptible



'**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





# 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)



	Ripe	Ripening Date by Variety							Ripe	ning Date by V	ariety		
Berries &	June	Julv	Aug.	Sept.	Oct.		Plums &		Ju	ne Julv	Aua.		
Grapes	1234	1234	1234	1234	1234	-	Prunes	6	1 2	3 4 1 2 3 4 1	2 3 4		
Blackberries Natchez Ouachita Apache						10.00	Methley Santa Ros Ozark Pre Damson	sa emier					
Hull Triple Crown Chester							Elephant Castleton Stanley (F	Heart (Prune) Prune) (Prune)					
Jewel (Black) Canby (Red)							Linpless	(Frane)	1		Dinenia		Variatu
Royalty (Purple)				Ripenin		ng Date by Variety			Poschos &	Ripenn	Ripening Date by var		
Dorman Red Heritage (Red)		Арр	les	July 1 2 3	Aug 4 1 2 3	4	Sept. 1 2 3 4	Oct. 1 2 3 4		Nectarines	July 1 2 3 4	Aug. 1 2 3 4	Sept. 1 2 3 4
Bunch Grapes Fredonia Mars (Seedless)		Ginge Gala Ozarl	er Gold « Gold							Yellow Peaches Red Haven Late Sun Haven New Haven			
Delaware		Hone	osh v Crisp							Topaz			
Niagara Concord Muscadines		Shen: Daybi Cortla	shu reak Fuji and							Washington Jay Haven Indian Cling			
Nesbitt Late Fry		Empir Red [ Bram	re Delicious Iey							Red Globe Loring Contender Crest Haven			
		Golde Jonag Red V	en Delicious gold Winesap							Jersey Queen Biscoe Elberta			
		Mutsu	u (Crispin)							J.H. Hale Monroe Encore			
		Sunce Red F	risp Rome han							Laurel Flame Prince Parade			
		Braeb	nan							Ouachita Gold Fairtime			
		York	ern Sny							White Lady			
		Fuji Goldr	ush Isas Black							Georgia Belle Blushing Star Snow Giant			
		Grann Pink I	ny Smith Lady							Nectarines Summer Beau Sunglo			
Perdue's Mc http://www.caroli	ountain <sub>nafarmers</sub>	Fruit .com/per	Farm, T due/email	aylors, s/2010/en	SC nail2010-	<u>06</u>	<u>-04.html</u>			Flavortop Red Gold Zephyr Fantasia Honey Rovale			

### ADAMS COUNTY NURSERY, INC.



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ACNINC. Growing wit	<ul> <li>About Adams County Nursery</li> <li>Order Fruit Trees</li> <li>Fruit Tree Bookstore</li> <li>Orchard Supplies</li> <li>Frequently Asked Questions</li> <li>Fruit Tree Articles</li> <li>Planting Guide</li> <li>Home Orchard Calendar</li> </ul>
Fruit Tree Types	
Apricot Trees Aprium & Pluot Trees Cherry Trees Nectarine Trees Peach Trees	Apple Tree Varieties Select an Apple Variety : Acey Mac View
Pear Trees	Apple Tree Varieties in order of Ripening (Early to Late)
Pricing Information       Pricing Information       Maturity Chart	The list below identifies the ripening order for our apple varieties. Use this list to choose apple trees which yield fruit at different times throughout the season. The harvest dates listed here are approximate for south central PA. Adjust according other locations.
Maturity Chart (PDF Format) Apple Pollination Chart (PDF Format) Our Guarantee Apple Rootstock Info	<ul> <li>Yellow Transparent - July 1</li> <li>Yellow Transparent Perrine - July 1</li> <li>Lodi - July 5</li> <li>Pristine (CO-OP 32) PP#9,881 - July 10</li> <li>Redfree - August 5</li> <li>Ginger Gold® (Mountain Cove cltv.) - August 12</li> <li>Zestar!® (Minnewashta cltv.) PP#11,367 - August 15</li> <li>Dandee Red PP#16,620 - August 15</li> <li>Sansa - August 15</li> <li>Initial™ (X 6162 cltv.) - August 20</li> </ul>

### http://www.acnursery.com/acn\_apple.php

# Accomplishing succession of harvests

### **Choosing varieties**

 Planting a range of cultivars with different maturity dates

# Why? Allows for extended harvest and sales of product.

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.

### **Repeating plantings over time**

 Planting the same cultivar periodically over the growing season







# ATTRA for Continuous Harvest

A Publication of ATTRA - National Sustainable Agriculture Information Service • 1-800-346-9140 • www.attra.ncat.org

By Janet Bachmann NCAT Agriculture Specialist © 2008 NCAT 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.

#### Contents

Soil Temperature chart..... Succession Planting chart..... References Resources

ATTRA—National Sustainable ATGriculture Information Service is managed by the National Center for Appropriate Technology (NCAT) and is funded under a grant from the United States Department of Agriculture's National Business-Caoperative Service. Visit the NCAT Web site (www. ncot.org/soc\_current. php) for mole information on our sustainable andiculture projects.



Photo by Edwin Remsberg, USDA/CSREES.

The best approach to planning for a continuous harvest is to keep good production records from previous growing seasons and to compare notes with other local growers. You also can find information in seed catalogs and Extension bulletins. You need to know, or be able to estimate:

- appropriate planting dates
- number of days to harvest
- length of harvest from first to last pickings

These factors are affected by several things. Weather, for example, is a major variable. Appropriate planting dates are commonly scheduled around the average annual frostfree date in the spring and the average 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. avant-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 (50-55°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. Sowing sweet corn about one week before the average frost-free date is a rule of thumb for the 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.





HORTICULTURAL

Vegetables

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muextension.missouri.edu

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### Vegetable Planting Calendar

Lewis W. Jett Department of Horticulture

#### Planning and Planting Guides

	Approx. P per Person	lanting per Year	Seed for	Min. Space Hand	Row 9 (In.) Fleid	Inches Between Plants	Depth to Plant	Days from Planting to Eating	Vitamin Co A	ntent* C
Vegetable	Freah	Process	100 ft row	Cultiv.	imple.	In Row	(inches)	Stage	I.U. /100 g	mg
RICH IN VITAMINS A &	C									
Spinach	5-10 ft	10-15 ft	1 ounce	18	42	3	0.25	40-50	11,790	30
Turnip greens	5-10 T	10-15 ft	0.5 ounce	18	42	3	0.25	35-45	10,600	50
Collards	5-10 ft	10-15 IL	0.5 ounce	24	42	12	0.25	30-05	7,630	44
Mustard oreens	5-10 ft	10-15 ft	0.5 ounce	18	42	3	0.25	30-40	7,180	45
Cantaloupe	3-5 hills	3-5 his	0.25 ounce	48	60	60	0.5	80-90	3,420	33
Braccoll	5–10 plants	5-10 pl	0.5 ounce**	30	42	24		70-80	3,400	74
RICH IN VITAMIN A										
Carrot	5-10 ft	10-15 ft	0.25 ounce	18	42	3	0.25	70-85	12,500	5
Swiss chard	5-10 ft	10-15 ft	2 ounces	18	42	3	0.5	55-65	9,690	17
Sweet potato	10-20 pl			30	42	12		150	9,510	23
winter squasn	3-5 fils		0.5 ounce	40	60	60	U.5	100	6,190	
RICH IN VITAMIN C	2.5 ml	5 10 1	0.405 outpott	10	60	26	around	75.00	1 100	22
Tomato	a-o pi	5-10 pi	u. 125 ounce	40	60	30	ground	70-90	1,100	20
Pepper	2-3 pl		0.5 ounce**	30	42	18	olaneu	70-80	740	99
Cabbage	3-5 pl	3-5 pl	0.25 ounce**	24	42	12		70-80	90	31
Chinese cabbage	5-10 ft	F	0.5 ounce	24	42	6	0.25	75-80	260	31
Cauliflower	3–5 pl	5–10 pl	0.25 ounce**	24	42	24		65-75	90	28
Kohirabi	3—5 ft		0.25 ounce	24	42	4	0.25	55-65	Trace	37
OTHER GREEN VEGE	TABLES									
Asparagus	10-15 roots	10-15 rts	1 ounce	48	48	18	0.5	3 years	1,040	23
Peas Reserves hereb	10-15 π	25-30 π	1 pound	24	42	2	1	65-75	720	15
Green beans, bush	3_5 blo	20-30 lt 3-5 bis	0.5 pound	24	42	36	-	50-60	660	14
Okra	3-5 ft	5-10 ft	2 ounces	30	42	12	0.5	55-60	740	20
STARCHY VEGETABLE										
Potato	50-100 ft		10 pounds	30	42	12	4	100-120	20	15
Sweet corn	15-25 ft	30-50 ft	0.25 pound	36	42	10	0.5	70-85	390	8
Lima beans, bush	10-15 ft	10-15 ft	1 pound	24	42	3	1	70-80	290	15
pole	3-5 his	3-5 his	0.5 pound	30	42	36	1	85-95		
Crowder peas	10-15 π 40, 05 m	15-25 π	0.5 pound	24	42	3	1	/5-85	3/0	2
Peanuts	10-25 pi		u.s pound	30	42	0	1	135	0	
OTHER VEGETABLES	10_15.0	10-20.0	1 nound	24	42	-		50-50	120	5
Boote	5-10 #	10-20 ft	2 ounces	18	42	3		55-65	20	7
Cucumber	2-3 his	3-5 his	0.25 ounce	36	48	48	0.5	65-70	0	ś
Eggplant	2-3 pl	2-3 pl	0.5 ounce**	24	42	24		80-90	30	5
Endive	35 ft		0.5 ounce	18	42	6	0.25	80-90	3,000	11
Lettuce, head	5-10 ft		0.25 ounce**	18	42	6	0.25	55-80	540	8
Lettuce, all other	5-10 ft		0.25 ounce	18	42	3	0.25	35-50	1,620	18
Onions, ary Onions, aroon	20-0010		0.5 ounce	10	42	2	U.25	25-25	50	24
Parsnips	10-15 ft		0.5 ounce	24	42	3	0.5	150	0	12
Pumpkin	3-5 his		1 ounce	48	60	60	0.5	110	3,400	_
Radish	5-10 ft		1 ounce	18	42	1	0.25	25-35	30	24
Rhubarb	2-3 rts	2-3 rts		48	48	36	2	2 years	20	6
Saisify	10-15 ft		1 ounce	24	42	3	0.25	150	?	?
Squash, summer Turnin	2-3 nis 10-15 ft		0.5 ounce	48	42	48	0.5	80-90 50-60	Trace	11
Watermelon	3–5 his		1 ounce	96	120	96	0.5	85-95	590	6

\* Vegetables are primary sources of vitamins A and C. They also are good sources of other vitamins and minerals. In addition, they provide important bulk to our diets. The figures for vitamin content were taken from USDA Handbook 8, Composition of Foods. Figures indicate amounts of vitamins per 100 gram sample (about ½ pound) for cooked vegetables unless vegetable is normally eaten raw. The average active adult needs about 5,000 international units (I.U.) of vitamin A and 75 milligrams (mg) of vitamin C daily.

G 6201

\$1.00

\*\* For direct seeding. Normally these vegetables are planted in the garden as plants.

Couple variety-specific information with general guidelines on yield and maturity to plan plantings that meet market needs.

### http://extension.missouri.edu/explorep df/agguides/hort/g06201.pdf



### VEGETABLE PLANTING CHART

	Amount to	Plant	F	Time Required				
Vegetable	Seeds or plants per 100-ft. row	Average amount suggested per person	Estimated yield per 100-ft. row <sup>a</sup>	Distance between plants	Distance between rows	Planting depth re	Frost sistance <sup>c</sup>	Approx. number of days (or years) to harvest <sup>d</sup>
Artichoke,	40-50 tubers	5-10 ft.	150-200 lb.	24-30 in.	36-48 in.	2-3 in.	FT	130-150
Jerusalem Asparagus	50 roots	10-15 roots	80-100 lb.	18-24 in.	36-60 in.	6-8 in.	VH	2 years
Bean, Bush (lima)	1/2 lb.	10-15 ft.	30 lb.	3 in.	18-24 in.	1-1 1/2 in.	WL	50-60
Bean, Bush (snap)	1/2 lb.	10-15 ft.	50 lb.	3 in.	18-24 in.	1-1 1/2 in.	T	50-60
Bean, Pole	1/2 lb.	5-10 ft.	50 lb.	3-4 in.	30-36 in.	1-1 1/2 in.	Т	60-70
Beet	l oz.	5-10 ft.	75 lb.	2-3 in.	12-18 in.	1/2-1 in.	Т	55-65
Broccoli	50 plants	5-10 plants	80-100 lb.	18-24 in.	30-36 in.	b	FT	70-80
Brussels sprouts	50 plants	3-5 plants	80-100 lb.	18-24 in.	30-36 in.	b	FT	70-80
Cabbage	75-100 plants	3-5 plants	150-200 lb.	12-18 in.	18-30 in.	b	FT	70-80
Carrot	1/4 oz.	5-10 ft.	100-150 lb.	1-2 in.	12-18 in.	1/4 in.	FT	65-75
Cauliflower	50-75 plants	3-5 plants	80 lb.	18-24 in.	24-36 in.	b	FT	60-65
Celeriac	200 plants	5-10 ft.	100-150 lb.	6 in.	18-24 in.	b	FT	100-120
Celery	150-200 plants	4-6 plants	200 lb.	6-8 in.	24-36 in.	b	FT	100-110
Chard	2 oz.	5-10 ft.	100 lb.	4-6 in.	18-24 in.	1/2 in.	FT	50-60
Chinese cabbage	1/2 oz.	5-10 ft.	200-300 lb.	12-15 in.	24 in.	1/4 in.	FT	80-90
Collards	1/2 oz.	5-10 ft.	80-100 lb.	12-15 in.	18-24 in.	7 1/4 in.	VH	70-80
Corn, Sweet	4 oz.	15-25 ft.	100-150 lb.	9-12 in. (single) 36 in. (hills)	24-48 in.	1/2-1 in.	Т	70-90
Cucumber	1 oz.	2-3 hills	100-150 lb.	12 in. (single) 36 in. (hills)	48-72 in.	1/2 in.	WL	60-75

### Color

What do your buyers want? What will attract them to your stall at the farmers' market?

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







# 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 postharvest 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) (http://www.ams.usda.gov/AMSv1.0/NOPNationalOrganicProgramHome) 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 <u>variety-specific</u> 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: <u>https://ag.purdue.edu/hla/fruitveg/Pages/M</u> <u>VVTRB.aspx</u>
- Created by Extension and University research stations from states across the Midwest.



### http://www.btny.purdue.edu/pubs/id/id-56/ID-56.pdf

## Midwest Vegetable Production Guide for Commercial Growers

Illinois University of Illinois Extension C1373-14

Indiana Purdue Extension ID-56

Iowa Iowa State University Extension and Outreach

Kansas K-State Research and Extension

Minnesota University of Minnesota Extension BU-07094-S

Missouri University of Missouri Extension

Ohio Ohio State University Extension Bulletin 948 The annual Midwest Vegetable Production Guide for Commercial Growers includes listings of several varieties suitable for commercial production ... but it is not allinclusive.



# Apple and Peach Cultivars and Rootstocks

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







#### **Contact Information**

Address: 26 Nursery Road

P.O. Box 108 Aspers, PA 17304

Phone: (717) 677-8105

Fax: (717) 677-4124

Office Hours: (year round) Mon - Fri : 7:00 to 5:00

(November, March & April) Sat : 7:00 - 12:00

#### Fruit Tree Links

<u>PSU Fruit Production Guide</u> Great Resource for the Home Gardner! <u>Nourse Farms</u>

Hollabaugh Fruit Farm

#### Order Fruit Trees Fruit Tree Bookstore Orchard Supplies Frequently Asked Questions Fruit Tree Articles Planting Guide

Home Orchard Calenda

#### **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 for 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: <u>http://www.acnursery.com/rootstock.php</u> (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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