



University of Kentucky  
College of Agriculture,  
Food and Environment  
*Cooperative Extension Service*  
*Horticulture*

# Pumpkin production basics

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# Site selection

## Well-drained soil

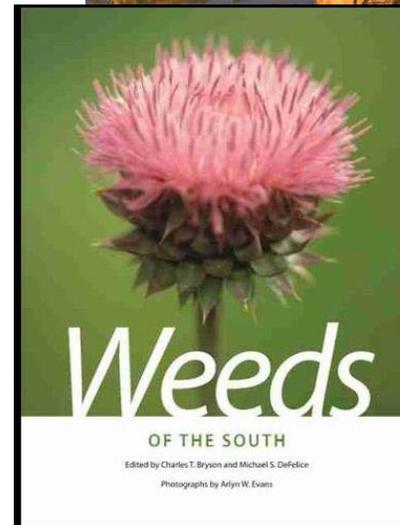
Select sites that have not had other vining crops, tobacco, tomato, or pepper for at least 3 years

- This will help prevent soilborne disease issues

Avoid sites with history of aggressive weeds

- Or have a good plan to deal with weeds

Know the weeds on your farm



# Production systems

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## No-till

- Typically a rye stubble that has been terminated with herbicide
- May also use roller-crimper
- May be more difficult in heavier soils
- Keeps fruit cleaner
- Less mud
- Often without drip irrigation
  - Although less expensive, may be risky



# Production systems

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## Plasticulture (Black or white plastic)

- On raised beds with drip irrigation
- Often used for higher yields
- Used to encourage faster growth and earlier maturity
- Requires good pre-plant preparation
- Can use fertilizers post-plant that can be injected through drip lines
- Great option if worried about weeds and lack of rain



# Production systems

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## Bareground

- Pre-emergent herbicides often used
- Applying pre-plant fertilizer is very important
- Can side dress with a variety of fertilizers
- Very muddy if rainy
- Fruit will be dirtier
- Often no drip irrigation



# Soil management

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Test soil early (the previous fall) to make appropriate preparations

Soil pH 5.5-6.8

If lime or sulfur needed, apply ~6 months in advance to take full effect

P and K are usually not deficient in KY soils

- If needed, should be applied prior to planting and laying plastic

Consider the previous crop when deciding how much N to apply

- If using drip irrigation and black plastic:
  - 30-50 lbs of N/acre preplant (broadcast)
  - 5 lb of N/acre/week ~2 weeks after transplanting

Fertigation recommendations on page 108 of ID-36

# Variety selection

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Pie pumpkins (4-8 lbs), planted at 3 ft in row x 5 ft between row

- 'Fieldtrip'—105 days, 5-7 lbs, high yielding, flatter than Cannon Ball, long stem, intermediate powdery mildew resistance (PMR)
- 'Cannon Ball'—90 days to maturity, 3-5 lbs, orange to dark orange, round and smooth, long shelf life, powdery mildew tolerant (PMT)

Medium pumpkin (5-10 lbs), planted 3 ft x 6 ft

- 'Magic Lantern'—115 days, 15-22 lbs, dark orange, dark green handle, PMT
- 'Magician'—90 days, 10-15 lbs, dark orange, PMT



'Fieldtrip'

# Variety selection

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Large pumpkins (15-35 lbs), planted 3 ft x 7 ft

- 'Aladdin'—115 days, 25 lbs, good yield potential, nice stems, intermediate PMR
- 'Apollo'—110 days, 18-32 lbs, round to tall, dark orange, ribbing, intermediate PMR
- 'Kratos'—100 days, 20-30 lbs, deep ribs, large thick handle, intermediate PMR

Extra large, planted 8 ft x 7 ft

- 'Cronus'—115 days, 25-60 lbs, blocky, good stem, intermediate PMR

For more cultivar information, see page 105 of UK ID-36



'Apollo'

# Planting

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Look at days to maturity and calculate backwards from your target harvest date (important for Halloween/carving pumpkins)

## Direct seeding

- More common than transplanting, especially for large acreages
- Plant seeds 1-2 inches deep
- For western KY, aim a June 15<sup>th</sup> planting date or before

If transplanting, leave time for the plants to get acclimated in the field

- May experience transplant shock
- Harden plants off outside for 1 week before transplanting



# Plant nutrition

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Fertilizers are most effective when applied to plant roots

In some cases, it is either not possible, easier, or quicker to apply some foliar fertilizers

- This should not be regular practice
- Epsom salts (magnesium sulfate) can be applied via foliar methods
  - 2-4 lbs/acre or 1-2 tbs/gal



# Pollination

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Pumpkins produce both male and female flowers on same plant

Female flowers may wither and die before pollination in high temps

- 90°F days, 70°F nights
- Same may happen under extreme shade
- Pollen sterility at high temps

At least 1 strong beehive/acre recommended

If spraying insecticides, spray in the evening to avoid killing helpful pollinators



# Insect pest management

Seed treatments

Remove compromised plants

Consider using a preventative insecticide

- If drip irrigating, can use imidacloprid through the drip for control of cucumber beetles

Don't overuse one type of insecticide

Always read the label before using

See page 110 of ID-36 for a list of approved insecticides



Whitney Cranshaw, Colorado State University, Bugwood.org



Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org

# Weed management

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Managing weeds is extremely important

Weeds can:

- Harbor disease
- Harbor insects
- Compete for water and nutrients
- Complicate harvest

If your pumpkins are part of agro-tourism on your farm

- Can be unsightly for visitors
- Not good for U-pick



# Weed management

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## Stale seedbed technique

- Prepare soil, allow flush of weeds, then cultivate before seeding or transplanting

## Pre-emergent herbicides are common

- Pre-emergent refers to the weeds, not the crop
- Strategy
- Sandea
- Poast
- Dual Magnum

Read the labels before use. See page 116 of ID-36.  
Know what weeds you need to manage.



# Weed management

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Post-emergent herbicides may also be used

- Post-emergent refers to the weeds, not the crop
- Do not let weeds get too big (6-8 inches max)
- Shielded sprayer is recommended

If using raised beds, consider using a cover crop in the alleyways/space between the beds to help control weeds

- Teff
- Ryegrass



# Irrigation

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Irrigation is less common in large acreages

- Many growers rely on rain

Water is critical during flower and fruit set

If irrigating

- 8-10 mil drip lines
- 1-2 inches of water per week
- Could mean the difference between high profits and crop failure in dry years

# Harvest

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Immature, green pumpkins will not ripen or “color-up” if picked early

In emergency situations, pumpkins can be picked a week or two early, but some color change needs to have occurred

- Mature green stage: Skin is tough and cannot be punctured easily

Best harvested when rind is hard and has good color

Cut pumpkins from vines carefully, leaving 3-4 inch stems

- The stems are very important for marketability
- Use pruning shears or sharp knife
- Do not carry pumpkins by the stem

Pumpkins will continue to color after being cut

- Sunny days help



Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org

# Storage

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An early harvest may occur with high temps, good irrigation and fertility

Do not store on bare soil

Spread out a layer of dry straw

Keep them dry

Good air circulation

Should be harvested and stored before air temps drop into 30-40°F range



# Other concerns

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## Mammals

- Deer can be catastrophic
- Depending on the size of your planting, an electric fence may be possible and necessary

Remember to include a drive row for spraying and harvesting

- Weekly fungicide applications are recommended
- The width of the row will depend on the size of your machinery/equipment, such as length of boom sprayer



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# Specialty pumpkins

## Miniature pumpkins

- Pie and Jack-o-Lantern types
- Valued for decoration
- Many new cultivars are available
- Tried in western KY in 2020

Cultivar	Powdery Mildew <sup>z</sup>	Downy Mildew (1-5) <sup>y</sup>	Growth Habit	Comments
Crunchkin	UN	4.6	Small bush	Shortened length, moderate vine diameter; slow, well-contained growth that does not spread widely
Flame	UN	4.0		
Orangita	IR	3.4		
Lil Orange Mon	UN	2.4	Large bush	Thick and well-anchored vines; robust, spreading, and mounded but orderly growth habit; large leaves
Gold Dust	HR	3.8	Small vine	Thin and sometimes frail vines that are easy to damage if moved; growth slows once fruiting starts
Gold Speck	IR	3.8		
WeeeeeOne	IR	4.8		
Bumpkin	IR	3.0	Large vine	Thin to moderate vine diameter, average to spreading growth that continues with fruit production
Jack-B-Quik	UN	4.0		
Munchkin <sup>x</sup>	UN	4.0		
Jill-Be-Little	R	2.0	Very large vine	Moderate vine diameter; rampant, very wide-spreading growth; fruit production continues apace
Spark	HR	2.6		

<sup>z</sup> Resistance descriptors obtained from seed source: HR = highly resistant; R = resistant; IR = intermediate resistance; UN = unknown or not specified.

<sup>y</sup> A rating of the area of leaf canopy infected with downy mildew during the initial harvest (21 Sept.). Rating scale: 1 = 1–20%; 2 = 21–40%; 3 = 41–60%; 4 = 61–80%; 5 = 81–100%.

<sup>x</sup> Noted by seed source as being more susceptible to mosaic viruses.

# Miniature pumpkin trial results

Most marketable pounds per cultivar may not be useful for many growers  
 Marketable count may be more useful



'Lil Orange Mon' had the highest yield in pounds, but not in count

Cultivar	Marketable					Unmarketable <sup>v</sup>			
	Yield/plot (lb)	Count/plot	Fruit wt. (oz) <sup>x</sup>	Fruit thickness (in) <sup>w</sup>	Fruit width (in) <sup>w</sup>	Yield/plot (lb)	Count/plot		
Lil Orange Mon	57.0	ay	55.0	16.4	2.4	4.2	14.1	a	13.8
Bumpkin	36.0	b	65.0	8.7	2.3	3.3	10.5	ab	19.0
Spark	34.2	bc	96.0	5.7	1.7	2.8	6.5	bc	19.8
Orangita	31.8	bcd	42.8	11.8	2.6	3.5	8.1	bc	11.4
Jill-Be-Little	29.9	bcde	83.0	5.7	1.8	3.0	6.6	bc	22.4
Flame	27.1	cdef	44.2	9.8	2.3	3.3	6.4	bc	7.2
Gold Dust	23.8	cdef	67.4	5.6	1.9	2.8	4.3	c	14.6
Munchkin	20.9	def	70.0	4.8	1.7	2.7	4.0	c	11.0
Crunchkin	20.4	def	47.0	6.9	1.9	2.9	4.1	c	15.4
WeeeeeOne	19.2	ef	80.8	3.8	2.3	2.6	5.2	bc	14.8
Jack-B-Quik	18.9	ef	63.6	4.7	1.7	2.6	4.9	bc	17.0
Gold Speck	16.0	f	74.0	3.5	1.7	2.5	4.6	c	20.0

<sup>z</sup> Yield and fruit count means are for 10 plant plots with a 60 ft<sup>2</sup> area (multiply by 726 for yield or count/A). Each plot was replicated five times, and results are derived from a sample size of 50 plants/cultivar at the beginning of the trial.  
<sup>y</sup> Means within columns followed by the same letter are not significantly different (Duncan's multiple range test LSD,  $P \leq 0.05$ ).  
<sup>x</sup> Calculated by dividing the marketable fruit weight by the total number of fruits collected from each plot.  
<sup>w</sup> Measurements were collected from five fruits/plot only during the initial harvest on 21 Sept. Fruit thickness does not include the stem (handle) and width is the measure across the base (bottom).  
<sup>v</sup> Primary reasons for culling include warts caused by edema located on the fruit's base or side with soil contact, cracking due to excess moisture, rots, animal damage, discoloration, and lopsided or misshapen fruits.

# Pie pumpkin cultivar trial

14 cultivars were evaluated in 2020 in central KY

Pumpkins were evaluated for visual characteristics as well as culinary attributes

Cultivar	Seed Source	Days To Harvest <sup>1</sup>	Total Marketable Yield (lb/acre)	Pumpkins		Average Fruit Weight (lb)		Fruit Weight Variability (CV) <sup>2</sup>	Cull weight <sup>3</sup> (% weight)	Fruit Height (in) <sup>4</sup>	Fruit Width (in) <sup>4</sup>	Flesh Thickness (in) <sup>4</sup>	
				no./acre									
Bisbee Gold	RU	90	33,500	a <sup>5</sup>	7,160	bcde	4.7	c	22	0.0	6.5	6.9	1.1
Speckled Hound (squash)	SW	95	33,400	a	6,920	bcde	4.8	bc	33	2.8	4.8	7.7	1.5
Baby Wrinkles	CL	105	28,400	b	5,210	f	5.4	b	28	2.2	4.8	7.0	1.1
Darling	RU	90	28,300	b	6,770	cde	4.2	cd	25	8.3	4.8	5.7	1.1
Lumina (squash)	SW	90	27,500	bc	2,860	g	9.6	a	35	0.0	4.8	8.8	1.4
Fall Splendor Plus	CL	105	25,000	bcd	6,850	bcde	3.7	def	27	0.0	4.8	6.2	1.1
New England Pie	JO	105	24,300	bcd	8,320	ab	3.0	fgh	33	0.0	4.8	5.9	0.9
Jack Sprat	SW	100	22,900	cde	9,800	a	2.3	hi	25	1.6	4.8	5.4	0.8
Mystic Plus	CL	105	22,800	cde	5,830	ef	3.9	de	20	1.2	4.8	6.8	1.1
Spookie	HO	90	21,800	def	6,770	cde	3.3	ef	39	0.4	5.8	6.3	1.2
Small Sugar New England	HO	100	20,400	def	6,770	cde	3.1	fg	32	1.7	4.8	6.1	1.1
Little Giant	SW	105	18,900	ef	8,010	bc	2.4	ghi	37	4.4	4.8	5.2	0.8
Baby Pam	RU	100	17,100	fg	7,550	bcd	2.2	i	31	1.8	4.8	5.2	1.0
Cinnamon Girl	JO	85	13,800	g	6,380	def	2.2	i	25	8.1	4.8	5.6	0.8
Naked Bear	SW	105	13,400	g	6,300	def	2.2	i	30	0.8	4.8	5.4	0.7

<sup>1</sup> Days to harvest from seed catalogs.

<sup>2</sup> CV = coefficient of variability; a smaller CV means that there is less of a spread of harvested pumpkin weights, compared to a cultivar with a higher CV.

<sup>3</sup> Weight of culled pumpkins divided by sum of marketable + immature+ culled pumpkins X 100.

<sup>4</sup> Values are the average of four pumpkins, one sampled from each replicate.

<sup>5</sup> Means in column followed by the same letter are not significantly different (Waller-Duncan Multiple Range Test LSD, P < 0.05).

# Pie pumpkin cultivar trial

Considering yield, fruit attractiveness, roasted pumpkin evaluations, and powdery and downy mildew resistance ratings, the following were deemed the best of the trial:

‘Bisbee Gold’

‘Baby Wrinkles’

‘Fall Splendor Plus’

‘Jack Sprat’

**Table 3.** Powdery and downy mildew severity ratings conducted on 25 Aug. 2020.

Cultivar <sup>1,2</sup>	Powdery mildew		Downy mildew	
	Leaf under sides <sup>3</sup>	Leaf top sides <sup>3</sup>	Leaf under sides <sup>3</sup>	Leaf top sides <sup>3</sup>
Speckled Hound	44.1	7.3	16.8	4.1
Lumina	55.5	3.8	7.6	1.7
Baby Pam	56.8	6.8	4.6	1.3
Baby Wrinkles (pm)	58.1	9.8	8.8	4.1
Jack Sprat (pm)	60.4	13.0	6.4	1.3
Bisbee Gold	61.1	7.1	7.1	2.3
Mystic Plus (pm)	71.3	15.0	12.7	4.3
New England Pie	73.1	12.3	22.6	9.3
Spookie	73.6	10.5	21.2	5.5
Little Giant (pm)	75.0	16.7	5.0	1.0
Fall Splendor Plus (pm)	75.5	19.5	9.5	3.3
Darling (pm)	76.4	15.2	10.0	3.0
Naked Bear (pm)	76.9	19.8	8.3	4.3
Small Sugar New England	80.2	12.6	11.2	3.6
Cinnamon Girl (pm)	80.2	14.8	6.4	2.4

<sup>1</sup> Ranked in increasing percent coverage by powdery mildew on the underside of leaves.

<sup>2</sup> (pm) indicates that powdery mildew resistance was advertised in seed catalogs.

<sup>3</sup> Averages of seven sampled leaves.

# Take home message

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Rotate, rotate, rotate

Consider variety choices carefully

- Depends on market, clients, end goal

Manage weeds early on

- Have a plan, know your weeds

Follow a preventative spray program to manage disease incidence and severity



# Resources

UK ID-36

Southeastern US Vegetable Crop Handbook

Weeds of the South

Midwest Cover Crops Field Guide

