

Crop Profile for Pumpkins in Illinois

Prepared October, 2000

General Production Information

Fresh Market Pumpkins	
Acres Used:	2,130
Value of Production:	\$3,200,000
Number of Operations:	262

Cultural Practices

Illinois had the most acreage in 1992 with 8,297 acres. The heart of pumpkin production in Illinois was Tazewell County, which accounted for 2,730 acres.

[Morton](#) lies in Tazewell County and is considered the "Pumpkin Capital of the World." This designation comes from being the home of Nestle Food.

"Pumpkin varieties are changing rapidly with the hybrid varieties becoming more prominent. Varieties such as 'Spirit' and 'Half Moon' have performed well in trials in Florida. 'Munchin' and 'Jack-be-Little' are popular miniature varieties." -Dickinson

Many pumpkin varieties produce large plants with long vines. In general, the plants should be spaced 4 to 5 feet in the row with 8 to 9 feet between the rows. Smaller-fruited varieties can be grown at higher populations.

Pumpkins are most commonly direct-seeded but for early spring crops, containerized transplants can be used. Plastic mulches can be used to speed crop development, conserve moisture and fertilizer, and control weeds. For spring crops, use black plastic; for October crops use white plastic. The white plastic is needed to help cool the soils for summer production.

Pumpkins require moderate amounts of fertilizer, the exact amounts determined by soil testing. Phosphate and other micronutrients should be incorporated in the bed at planting. Some nitrogen and potassium should be placed in the bed area with most being banded in several applications through the early part of the season. For double-cropping on mulched beds with drip irrigation, the N and K should be injected for the pumpkin crop.

One difficulty with pumpkin production is disease control. Viruses can be especially troublesome and can discolor the fruits. Diseases, such as downy mildew and powdery mildew, require timely fungicide application. Suitable weed control will require a combination of mechanical and chemical measures. Pumpkins are also sensitive to nematodes so that field rotation will be needed.

Insects such as cutworms, vine borers, and wireworms can be controlled by timely insecticide applications. Control of all pumpkin pests is required to maintain the foliage in optimum condition for superior yield and maximum fruit color development.

Pumpkins should be harvested when the rind surface is hard and the fruits have developed full color. The fruits should be clipped from the vine leaving a 3 to 4 inch stem. Take care during handling to ensure that the stems are not knocked off which makes the fruit undesirable for a jack-o-lantern. Fungal diseases must be controlled to preserve the healthy condition of the stem.

For Weeds, Click [HERE](#) or go to <http://ext.agn.uiuc.edu/CropProfiles/CROP/cucurbits/CucurbitsIL.htm>

Insect Pests

Crop Loss and % of Area Infested by Insect Pests

Insects	Scientific Name	Avg. % Crop Loss*	% Crop Area Infested*
Aphids	<i>Aphis gossypi</i>	24.6%	11,023
Cucumber Beetle	<i>Diabrotica undecimpuncta</i>	25.9%	103,125
Mites	<i>Tetranychus urticae</i>		
Squash Bug	<i>Anasa tristis</i>	0.8%	12,159
Squash Vine Borer	<i>Melittia cucurbitae</i>	21.7%	795

*Based on US Averages

Aphids

Appearance: Winged aphids are 1/25 to 1/18 inch long with clear wings. Most aphids are green with black antennae and legs. They feed by inserting their mouth parts into the plant and sucking out the sap. Within 24-48 hours, aphids re-generate without mating. The offspring are able to reproduce in 5-7 days.

Damage: Leaves damaged by the aphid have a distorted, cupped appearance. The leaves curl downward around the colony. Aphids also excrete a great deal of sap, called honeydew. On top of the honeydew, grows a sooty black mold causing a great eye sore. Aphids are also known to transmit several viruses to infect plants. Virus infected plants have a mottled or mosaic appearance of dark and light green.

Control: Are hard to control once the population is large; the sprays will not penetrate the entire population. Aphids are subject to natural enemies such as lacewings, lady beetles and larvae, syrphid fly larvae and parasitic wasps which eat aphids. Be sure to control insecticides so no sprays to harm the predators are administered.

Cucumber Beetles

Appearance: Both appear in later spring, but the striped has a worse effect all year round. Beetles are about 1/5 inch long and yellow-green along the forewing for the striped beetle. On the spotted cucumber there are an average of 12 spots. Cucumber beetles look very similar to corn rootworm beetles. The underside of the beetle is black while the corn rootworm has a yellow belly. Become active in mid spring and there are no current prediction methods available. There are two generations per year.

Damage: Heavy feeding can kill small plants within 1-2 days. The beetles like to feed on the thick, fleshy cotyledon leaves. The striped variety often feed on stems, foliage and fruit, while the spotted beetles like to feed on the leaves. Often times, the bacteria carried by cucumber beetles causes bacterial wilt. Hubbard and butternut squash are the types susceptible to this virus.

Control: Usually appear in mid to late May, but the timing differs with the years. Systemic soil insecticides are the best control for the early season out break of the beetles. Foliar insecticides, such as pyrethroids and Sevin XLR provide the best control of the beetles because they have 5-7 days of residual activity. There is no real benefit to continuing application of insecticide after the first generation has subsided. If the plants are not touching within the row, treatment is justified if the field averages more than five beetles per plant.

Mites

Mites are non-insect pests and usually are common in hot and dry weather. They are 1/60th of an inch and have eight legs. Spider mites have the ability to spin silk webbing on plants. Infestations can usually be spotted on the edge of the field, if it is caught in the early stages. The use of carbaryl (Sevin) will kill of natural mite enemies and therefore help to speed up mite build up.

Damage: Spider mites feed on the undersurface of leaves, sucking out fluid from within the plant and leaving behind a speckled, yellow to bronze or grayish leaf. During times of severe infestation, mites will also turn to fruit for feeding.

Control: If insecticides are used on a weekly basis, infestations can start anywhere within the field-not only on the edges. When scouting fields, examine 20-30 plants for mite evidence- concentrate on the borders of fields in most cases. If insecticides are necessary, use Malathion.

Squash Bug

Appearance: Adult squash bugs are 1/2 to 3/4 inch long and are a dark to grayish brown color. They are flat/ flat backed with wings not covering the orange and brown striped edges of the abdomen. Newly laid eggs are 1/16 inch long and start out orange-yellow and turn metallic bronze in a few days. Egg laying begins in mid-June and hatch usually occurs 10days later. Midwest squash bugs have five nymphal stages and take 5-6 weeks to reach adulthood. New adults and females mate immediately; females appearing in late July or later do not mate or lay eggs, they enter diapause which is an inactive stage. Squash bugs are very mobile and tend to move around fields pretty easily.

Damage: Adults and nymphs feed by sucking sap from the plants. The feeding causes small yellow specks on leaves, which will later turn brown. If the feeding is severe, the damaged leaves turn brown and die. Vines which are fed on wilt at attack point, turn brown and die. Along with the vines, the leaves attached will turn black and eventually die as well. This infestation is not severe, nor will it cause fast wilt or rapid damage. If populations are controlled, affected plants do have the ability to recover; hot, dry weather will often cause the plants to wilt as well. If populations do get too high, they can cause fruit to collapse or be unmarketable.

Control: Squash bugs must be controlled when the plants are seedlings and during the early flowering stage. During the seedling stage, the root systems are not developed and the feeding by large numbers of overwintered adults can kill plants. Another critical time to prevent squash bugs is during early flowering. They will damage plants, reduce yield and become too large to control if they are not monitored. Past this stage, the squash bugs are very hard to control because they feed on the underside of plants. This way, the sprays cannot get to the insects.

Squash Vine Borer

Appearance: The adult of the vine borer is a clear winged moth that is a little larger than 1/2 inch long. The wings are 1 and 1/4 to 1 and 1/2 inch long and are a cloudy greenish-brown color. The hind wings are

clear with a fringe of reddish-brown hairs. The body is reddish white with bands of black on the abdomen. The moth is a daytime flier and lays its eggs at the base of plants. The eggs are small, brown and 1/20 inches long. They hatch in 7-10 days, after which the larvae immediately bore into the stem of the plant. They spend 14-30 days feeding within the stem and will burrow in to the ground in a silken cocoon to overwinter. In some areas the larvae may pupate immediately and a 2nd generation of moths will appear in late summer or early fall.

Damage: Presence of the squash vine borer is often not noticed until the damage is done in most cases. Tunneling within the stem by the larvae destroys the water and food conducting tubes, which will eventually cause the plant to wilt and die. Therefore the borer must be controlled before eggs hatch and larvae enter the stem. They cause the most damage in winter squash, especially the Hubbard.

Control: Early signs of larval feeding indicate that eggs have been laid and will hatch at once. Two insecticide applications spaced 5-7 days apart will control the majority of the newly hatching larvae before they enter vines. Timing, not quantity of spray is the key control factor.

Insecticide Rates, REI, PHI and Primary Targets

Trade Names	Active Ingredient	Product rates		Unit rate	REI hrs	PHI days	Primary Target
		low	hi				
Agri-Mek	Abamectin	.01	.02	lb (do not exceed 1.6lb/acre/season)	12	7	mites
Asana	Esfenvalerate	.03	.05	lb	12	3	squash bug, squash vine borer
Capture	Bifenthrin	.04	.1	lb	24	3	cucumber beetles, aphids, squash bug, squash vine borer, mites
Furadan	Carbofuran	0	2.4	oz/1000 ft row	48		cucumber beetle
Kelthane	Dicofol	.35	.3	lb	12	2	mites
M-Pede	Insecticidal Soap	.	1.25	fl oz/50 gal. water		0	aphids
Malathion 57 EC	Malathion	0	1	lb	12	3	aphids

Methoxychlor 2 EC	Methoxychlor	.5	1.5	lb	12	7	cucumber beetle, squash vine borer
Pounce, Ambush	Permethrin	.1	.2	lb	12	7	cucumber beetle, squash bug, squash vine borer
Sabadilla		0	5	lb		1	squash bug
Sevin	Carbaryl	0	1	lb	12	3	cucumber beetle, squash vine borer
Slam Adios	Carbaryl plus feeding attractants	0	.7	lb	12	3	cucumber beetle
Thiodan	Endosulfan	.5	1	lb	24	1	aphids, squash vine borer

Diseases

Crop Loss and % of Area Infested by Diseases

Disease	Scientific Name	Avg. % Crop Loss*	% Crop Area Infested*
Black rot	<i>Mycosphaerella melonis</i>		
Cucumber Mosaic	CMV	4.4%	123,750
Powdery Mildew	<i>Erysiphe cichoracearum</i>	8.3%	18,534
Powdery Mildew	<i>Sphaerotheca fuliginea</i>	6%	42,357
Squash Mosaic	SMV		
Watermelon Mosaic	WMV	55.4%	108,807
Zucchini Yellow Mosaic	ZYMV	4.4%	123,750
	<i>Fusarium spp.</i>	4.3%	213,636

*Based on US Averages

Common Name: Powdery Mildew

Aggravating factors: Begins to emerge in late summer months- during times of warm daytime temperatures, cool nights and high relative humidity. Moisture film is not required for growth, therefore rainfall is not a consideration.

How disease is spread: Infected plants are characterized by white, powdery spots or blotches on leaf surfaces. These dusty, white spores spread over the whole plant as the disease continues to develop. All infected leaves will turn yellow, shrivel up, then die as a result. The leaf loss causes lack of shade for fruit, therefore the mildew indirectly causes the malformation of the fruit.

Comments: Most damaging if the disease appears 3-4 weeks before harvest. Fungicide applications should be made at relatively high pressures to ensure total plant coverage.

Control: Use of fungicide is necessary due to the little natural resistance within the plant. The first application of a fungicide or fungicide combination can include both protection against powdery mildew and black rot in pumpkins. For effective control, applications must be made prior to symptom emergence- around late July to early August. Applications made after mildew appears will be less effective. A second application must be made in mid- August.

Common Name: Black rot and other fruit rots

Aggravating factors: Excessive rain, poorly drained soils and lack of plant rotation.

How disease is spread: An indication of black rot presence is the appearance of small, brown to black spots on leaves and vines in early to mid-July. Vine lesions and sores can crack to allow a brown, gummy fluid to seep through. The fungus produces pinpoint, black fruiting structures on plant vines. The fruit is also affected; dark spots appear on fruit surface which are colonized by secondary soft-rot organisms. These organisms then penetrate the surface and cause rotting within the fruit.

Comments: Other fungi such as Fusarium and Phytophthora may also cause significant damage during wet summers.

Control: To prevent black rot, use a 3 yr. rotation with non-cucurbit crops. Avoid poorly drained soils and be sure to use high quality seed. Applications of fungicides must be made in mid to late July in order to suppress injury. During late July applications, use a fungicide or combination of fungicides to attack both black rot and powdery mildew. Wet summers may require additional fungicide applications.

Common Name: Virus Diseases; cucumber, squash, watermelon and zucchini yellow mosaics

How disease is spread: All the mentioned diseases, except squash mosaic, are spread via aphids. Squash and cucumber mosaic are also seed-borne. These viruses do not survive in soil for a long time.

Comments: Viruses cause stunted plant growth. Younger plant leaves yellow or become mottled and distort. Leaves and fruit become mottled in older plants. In a severe outbreak, plants will not produce any fruit.

Control: Weed control around plant area will help reduce viral transmission. Reflective mulches will also help reduce aphid feeding, therefore the spread of viral diseases.

Fungicide Active Ingredients, Rates, REI, PHI and Primary Targets

Trade Name	Active Ingredient	Product rates		Unit	REI	PHI	Primary Target
		low	hi				
Benlate 50 WP	Benomyl	4	8	oz	24	14	powdery mildew, black rot
Bravo 720F	Chlorothalonil	1.5	3	pt	48	0	powdery mildew, black rot
Manex II 75 WP	Mancozeb	2	3	lb	24	5	black rot
Quadris	Azoxystrobin	.18	.25	lb	4	1	anthracnose, belly rot, downy mildew, gummy stem blight, leaf spots, powdery mildew
Ridomil/Bravo 81 W	Chlorothalonil plus metalazyl	2	3	lb	48	0	downy mildew
Terranil 6F	Chlorothalonil	1.5	2	pts	48	0	powdery mildew, black rot
Topsin M 70 WP	Thiophanate Methyl	4	8	oz	12	0	powdery mildew, black rot

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