

# Pumpkin & Squash IPM Element

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The purpose of this document is to consolidate current Ohio information on Integrated Pest Management (IPM) in the form of general working practices or tactics for a specific crop. The second intent is to use this checklist as an evaluation instrument for growers applying to conservation programs such as Environmental Quality Incentives Program (EQIP). This document is intended to help growers identify areas in their production system that possess strong IPM qualities and also point out areas for improvement.

Growers should review the seven sections of this document and indicate which practices they **currently use** on this crop in their operation. There is a point value associated with every IPM practice; the higher the number, the greater the relative importance of the practice. After going through the list, add the associated values for each section to get the **Baseline IPM Score**. Growers will complete this evaluation every year of their contract, and maintain at least 60% of the total points available each year of the contract to be considered in compliance and eligible for a payment.

## Major Pests of Ohio Vine Crops - Primary concerns are diseases, insects, and weeds

<b>Diseases</b>	<b>Insects</b>	<b>Weeds</b>
Damping off	Striped cucumber beetle	Annual grasses
Powdery mildew	Spotted cucumber beetle	Annual broadleaf weeds
Black rot	Aphids	Perennial weeds
Anthracnose	Squash vine borer	
Gummy stem blight	Squash bug	
Downy mildew	Western corn rootworm	
Squash Mosaic Virus	Seedcorn maggot	
Watermelon Mosaic Virus	Spider mites	
Cucumber Mosaic Virus		
Zucchini Yellow Mosaic Virus		
Bacterial wilt		
Nematodes		
<i>Fusarium</i> belly rot		

### Educational IPM Considerations

Place a check mark in the right hand column for activities currently used or expected to adopt on your farm.

Activity	Points	IPM Score			
		Baseline	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr
Join local or state grower associations that handle this commodity.	5				
Attend winter or summer educational meetings or field days annually to keep current on pest management recommendations.	10				
Access University based vegetable information websites for research based information	5				
Obtain the latest Ohio Vegetable Production Guide (Bulletin 672) and other commodity specific reports / production guides.	10				
Subscribe to "free" VegNet newsletter for updates on disease, insect, and weed development, plus management options during the growing season.	10				
Research alternative markets that encourage less pesticide use either through specific use reduction requirements (organic, eco-, IPM labels) or simply by permitting more insect feeding, etc.	5				

**Your section total is \_\_\_\_\_pts.**

### Pesticides and Record Keeping

Place a check mark in the right hand column for activities currently used or expected to adopt on your farm.

Activity	Points	IPM Score			
		Baseline	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr
Calibrate insecticide and fungicide sprayer at least once a year.	10				
Calibrate herbicide sprayer at least once a year.	10				
Use drift control nozzles for pesticide applications	10				
Maintain accurate and organized spray records.	15				
Maintain accurate records of planting dates, field locations, varieties, and fertilizer applications.	10				
Analyze spray records to determine Environmental Impact Quotient.	10				
Among pesticides of comparable efficacy, use the one with the lowest Environmental Impact Quotient.	10				

**Your section total is \_\_\_\_\_pts.**

## Pre-plant IPM Considerations

Place a check mark in the right hand column for activities currently used or expected to adopt on your farm.

Activity	Points	IPM Score			
		Baseline	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr
Soil test annually; amend soil with fertilizer or compost according to guidelines and yield of crop. ( <b>Nutrient Management – 590</b> )	15				
Adjust mineral soil pH to 6.5 – 6.8.	10				
Apply 100 % of P and K broadcast according to soil test.	10				
Apply 60 to 80 percent of the recommended N pre-plant. The remaining N can be side dressed before vine tip or applied through the trickle irrigation system.	15				
Adjust N application to account for any N given by cover crop, compost or other sources of organic nitrogen.	10				
Select a well drained site for added Phytophthora control.	15				
Incorporate organic matter three weeks prior to planting to avoid seedcorn maggot.	15				
Use fungicide treated seed to protect against seedling diseases.	15				
Treat seed with Clorox for control of bacterial diseases.	10				
Select hybrids well adapted for your growing area with good tolerance or resistance to powdery mildew and virus diseases, such as watermelon mosaic virus.	15				
Direct seed into no-till or zone-tilled fields. ( <b>No-Till – 329</b> )	10				
Practice weed seed exclusion tactics such as high pressure washing machinery shared between farms.	15				
Buy certified seed and weed free soil mixtures; determine weed seed content of all seed and do not plant seed contaminated with weed seed not known to occur on your farm.	15				
Use site free of perennials such as quack grass, Johnson grass, Yellow nutsedge, or Canada thistle if possible.	15				
Use a combination of fall/spring tillage and fall/spring application of a broad spectrum herbicide to control established perennials or rotate with a herbicide resistant crop on which a broad spectrum herbicide was used.	15				
Apply pre-plant herbicides to control seedling broad leaf weeds and annual grasses if necessary.	10				

Use stale seed bed technique.	10				
Select site not planted to vine or solanaceous crops for at least 2 years. ( <b>Conservation Crop Rotation – 328</b> )	15				
Use drip tape and mulch. ( <b>Micro irrigation – 441</b> )	10				

**Your section total is \_\_\_\_\_pts.**

### **At-planting IPM Considerations**

Place a check mark in the right hand column for activities currently used or expected to adopt on your farm.

Activity	Points	IPM Score			
		Baseline	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr
Apply pre-emerge herbicide up to but no more then two days after planting for control of annual grasses, and annual broadleaf weeds.	10				
Apply systemic insecticide to soil or use insecticide seed treatment at planting for several weeks control of cucumber beetles or other early season pests (seedcorn maggot) especially if planting into wet, cool, and highly organic soils.	10				
Use row covers to eliminate early season insect feeding on seedlings.	10				

**Your section total is \_\_\_\_\_pts.**

## In-season IPM Considerations

Place a check mark in the right hand column for activities currently used or expected to adopt on your farm.

Activity	Points	IPM Score			
		Baseline	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr
Control nearby weeds (white cockle, wild ground cherry, horse nettle, milkweed, ragweed, pokeweed, nightshade, and various mints) that may harbor virus potentially vectored to crop by insects.	15				
Use cultivation to control weeds and prevent weed seed production before vines close.	10				
Apply shielded post emergence herbicides prior to vining to control annual and perennial grasses.	10				
Watch for weeds that are not common or are new to the field, physically remove them in order to prevent seed production.	15				
Scout twice per week for cucumber beetles at field edges, especially if a systemic insecticide was not used at planting.	15				
Treat field with insecticide for cucumber beetle when below thresholds are exceeded: > 0.5 cucumber beetles at cotyledon or first leaf stage > 1.0 cucumber beetles from 2 <sup>nd</sup> – 4th leaf stage	10				
Protect honey bees by properly timing insecticide sprays for late evening first then early morning second; always before temperatures reach 65-70 F.	15				
Use EC over WP product formulations to protect honey bees.	15				
Move or cover hives prior to when insecticides will be sprayed.	15				
Select insecticides that are least toxic to honey bees.	15				
Scout for squash bugs weekly, starting around vine tip; apply controls if squash bugs exceed threshold.	15				
Set up pheromone traps to monitor for squash vine borer in early June, spray stems 2-3 times every one to two weeks when trap catches increase.	15				
From fruit maturity to harvest, scout pumpkins for aphids, cucumber beetles, squash bugs, and their damage, treat only if damaging fruit finish.	15				
If field has a history of anthracnose or gummy stem blight, treat with appropriate fungicide at vine tip and every 7 to 10	15				

days after until harvest.					
Scout for powdery mildew, key time around July 15th, if colonies found apply appropriate fungicide every 7 to 14 days.	15				
If phytophthora is known to be a problem in the area, do not use surface water sources to irrigate crop.	15				

**Your section total is \_\_\_\_\_pts.**

### Harvest IPM Considerations

Place a check mark in the right hand column for activities currently used or expected to adopt on your farm.

Activity	Points	IPM Score			
		Baseline	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr
Do not bruise or cut fruit.	15				
Do not leave fruit lying in wet field.	15				

**Your section total is \_\_\_\_\_pts.**

## Post Harvest IPM Considerations

Place a check mark in the right hand column for activities currently used or expected to adopt on your farm.

Activity	Points	IPM Score			
		Baseline	1 <sup>st</sup> Yr	2 <sup>nd</sup> Yr	3 <sup>rd</sup> Yr
Cure fruit for 10-12 days ca. 80 F and 75% humidity.	10				
Keep fruit dry and above 40 degrees Fahrenheit to prolong quality.	10				
Update field weed maps, use to make treatment decisions next season.	15				
Control weeds after harvest to prevent further spread and seed production	15				
Plow down residue as soon as possible after harvest to reduce weed residue, fungal inoculum, and insect over wintering locations.	15				
Evaluate new IPM practices used on the farm this year, even if used on limited acreage. Implement successful practices over greater acreage next season.	10				
Plant a cover crop as soon as harvest is complete. ( <b>Cover Crops – 340</b> )	15				

Your section total is \_\_\_\_\_ pts. Total points for Element is 740.

**Baseline IPM Score** (Add the scores of the previous 7 sections) \_\_\_\_\_

End of Year 1 at least **60% of total IPM Element points** \_\_\_\_\_

End of Year 2 at least **60% of total IPM Element points** \_\_\_\_\_

End of Year 3 at least **60% of total IPM Element points** \_\_\_\_\_