

Carrot IPM Elements

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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 Carrots - Primary concerns are diseases, insects, and weeds

Diseases	Insects	Weeds
Damping off	Aster leafhopper	Annual grasses
Nematodes	Aphids	Annual broadleaf weeds
<i>Cercospora</i>	Carrot weevil	Perennial weeds
<i>Alternaria</i> leaf spot	Cutworms	
Aster yellows		

Educational IPM Considerations

Please circle the points in the right hand column of activities currently performed on your farm.

Activity	Points	IPM Score			
		Baseline	1 st Yr	2 nd Yr	3 rd 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

Please circle the points in the right hand column of activities currently performed on your farm.

Activity	Points	IPM Score			
		Baseline	1 st Yr	2 nd Yr	3 rd 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

Please circle the points in the right hand column of activities currently performed on your farm.

Activity	Points	IPM Score			
		Baseline	1 st Yr	2 nd Yr	3 rd Yr
Soil test annually; amend soil with fertilizer or compost according to guidelines and yield of crop. (Nutrient Management – 590)	15				
Adjust mineral soil pH to 6.0-6.8.	10				
Apply 100 % of P and K broadcast according to soil test.	10				
Split apply N, pre plant and side dress.	15				
Adjust N application to account for any N given by cover crop, compost or other sources of organic nitrogen.	10				
Select a deep porous field or use raised beds. (Bedding – 310)	15				
Use fungicide treated seed to protect against seedling diseases.	15				
Use hot water treated seed to control Alternaria	15				
Select hybrids well adapted for your growing area with good disease tolerance or resistance.	15				
Practice weed seed exclusion tactics such as high pressure washing machinery shared between farms.	15				
Buy 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				
Choose fields not planted to carrots and parsnips for at least 2 years. (Conservation Crop Rotation – 328)	15				
Rotate away from last years carrot field at least 0.1 miles to delay infestation by carrot weevil. (Conservation Crop Rotation – 328)	15				

Your section total is _____ pts.

At-planting IPM Considerations

Please circle the points in the right hand column of activities currently performed on your farm.

Activity	Points	IPM Score			
		Baseline	1 st Yr	2 nd Yr	3 rd Yr
Apply pre-emerge herbicide for control of annual grasses and broadleaf weeds.	10				

Your section total is _____ pts.

In-season IPM Considerations

Please circle the points in the right hand column of activities currently performed on your farm.

Activity	Points	IPM Score			
		Baseline	1 st Yr	2 nd Yr	3 rd Yr
Control nearby weeds that may harbor virus potentially vectored to crop by insects.	10				
Use cultivation as primary weed control tool when practical.	10				
Apply post emergence herbicide to control grasses and broadleaf weeds.	10				
Update field weed maps, use to make treatment decisions next season.	15				
Watch for weeds that are not common or are new to the field, consider adopting a zero threshold for these weeds and physically remove them in order to prevent seed production.	15				
Monitor aster leafhopper and other pest activity; apply controls only if thresholds are exceeded.	15				
Once aster leafhoppers are detected, collect a few specimens and send to Plant Pathology at Wooster, OARDC, to be bioassayed for presence of aster yellows. If aster yellows is found, treat leafhoppers with insecticide.	15				

Your section total is _____ pts.

Harvest IPM Considerations

Management	Activity	Points
	None described	

Post-Harvest IPM Considerations

Please circle the points in the right hand column of activities currently performed on your farm.

Activity	Points	IPM Score			
		Baseline	1 st Yr	2 nd Yr	3 rd Yr
Top carrots prior to storage unless specified by market, store near 32 F, but not in high humidity conditions or with apples and pears.	10				
Plow down residue as soon as possible after harvest to reduce weed residue, fungal inoculum, and insect overwintering 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 cover crops soon after crop is harvested. (Cover Crops – 340)	15				
Update field weed maps, use to make treatment decisions next season.	15				
Control weeds after harvest to prevent further growth and seed production.	15				

Your section total is _____ pts. Total points in Element is 520.

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 _____