

## Elements of IPM for Cauliflower in New York State

MAJOR PESTS		
Insects	Diseases	Weeds
diamondback moth	Alternaria leaf spot	broadleaves
imported cabbageworm	black rot	annual grasses
cabbage looper	blackleg	perennial weeds
cabbage maggot	clubroot	
cabbage aphids	downy mildew	
flea beetles	Fusarium yellows	
	Sclerotinia white mold	
	root rot	
	sugar beet cyst nematode	

A. SITE PREPARATION AND SELECTION	Acreage Goal	Points
<b>For Direct Seeded cauliflower skip to A II</b>		
<b>I) Seed beds:</b>		
1) Rotate and isolate seedbeds from production areas to reduce incidence and spread of Alternaria leaf spot, black rot, blackleg, downy mildew, root rot, and club root diseases.	100%	10
2) Lime seedbeds to pH 7.2 to 7.5 for clubroot control.	20%	3
3) Scout for black rot and destroy any black rot infested beds.	100%	10
4) Strive for weed-free beds, to insure weeds do not interfere with transplant operations.	75%	3
<b>II) Fields:</b>		
1) Do not plant into fields with a history of Fusarium yellows or widespread clubroot.	75%	5
2) Adjust (spot treatment with lime) pH to between 7.2 and 7.5 in spots where clubroot was noted in previous crops.	75%	5
3) Review weed map/list of fields to choose appropriate weed control strategies. See the Weed Assessment List available for use in satisfying this element.	50%	5
<b>III) Crop Rotation</b>		
1) Plant cauliflower where crucifers were not grown for at least 3 years to reduce Alternaria leaf spot, black rot, downy mildew, root rot, Sclerotinia white mold, sugar beet cyst nematode; 4 years for blackleg; 7 years for clubroot, Fusarium yellows.	100%	10

<b>IV) Fertility</b>		
1) Soil test at least once every 3 years. Maintain records. Fertilize according to test results.	100%	5
2) Do not apply animal manure after planting. Make sure all preplant applications of manure are properly incorporated into the soil before planting.	100%	5
3) Apply any fertilizer/manure according to a Farm Nutrition Plan.	20%	3
<b>B. PLANTING</b>		
<b>I) Seed and Seedlings:</b>		
1) Use certified, hot-water treated seed to reduce Alternaria leaf spot, black rot, blackleg OR use seed tests to determine if seed is infected.	50%	5
2) Use insecticide application for cabbage maggot control only when fields are at risk from peak adult flights.	50%	5
3) Transplants, particularly those from out-of-state, should be inspected and used only if they are free of diamondback moth, black rot, black leg, club root, and Alternaria leaf spot.	50%	5
<b>C. PEST MONITORING and FORECASTING</b>		
1) Scout weekly for insects and diseases: For cabbage looper, diamondback moth, imported cabbageworm, cabbage aphids, black rot, downy mildew, Alternaria leaf spot, Fusarium yellows, and Sclerotinia white mold use recommended scouting techniques. Scout 1 to 3 times per week for flea beetles when plants are in seedling stage. For cabbage maggot, clubroot, root rot, and sugar beet cyst nematode note presence.	100%	10
2) Make a weed map to evaluate effectiveness of weed control strategies. See the Weed Assessment List available for use in satisfying this element.	50%	5
3) If black rot occurs in field do not cultivate or spray until foliage is dry and clean equipment after use in infected fields.	100%	10
<b>D. PEST MANAGEMENT</b>		
1) Follow established thresholds for pests as available.	50%	10
2) Use the EIQ to help determine which labeled pesticides have the least impact on the environment and on natural enemies.	35%	5
3) Apply pesticides using techniques to provide good coverage. At least once per season test sprayer coverage using water sensitive paper.	50%	10
4) If pesticides do not appear to be effective, contact Cooperative Extension to check for resistance to pesticides.	10%	3
5) Keep records of pest densities, biological control techniques used, cultural procedures, and pesticide applications. Keep records of pest populations for each field for review in future years. Keep records of natural enemy populations, if possible.	100%	10
6) If Alternaria is found to be present then try to tie plants late and harvest earlier to avoid infection spread and increase.	20%	3
7) If flea beetles or aphids are not at or above thresholds, use Bt materials for lepidopteran insect control.	20%	3
8) Calibrate sprayer annually.	100%	10

<b>E. POST HARVEST</b>		
1) For early and midseason fields disk/plow cauliflower residues to promote breakdown of tissues infected with black rot, Alternaria leaf spot, blackleg, clubroot, downy mildew, root rot, and Sclerotinia white mold.	75%	3
2) Make a weed map/list of the field for use in planning for next year. See the Weed Assessment List available for use in satisfying this element.	50%	5
3) Establish cover crop for weed control, nitrogen retention for early and mid season fields.	10%	5
4) For late season plantings interseed a cover crop at last cultivation.	20%	5

Direct Seeded:

Total Points Available: 150

Points needed to qualify (80%): 120

Transplanted

Total Points Available: 176

Points needed to qualify (80%): 141

TO LEARN MORE...

Specific information on how to apply and use these IPM elements can be found in the following publications:

A Grower's Guide to Cabbage Pest Management in New York, Number 101b, 1991

[Integrated Crop and Pest Management Guidelines for Commercial Vegetable Production.](#)

[A Method to Measure the Environmental Impact of Pesticides.](#) 1992. New York Food and Life Sciences Bulletin Number 139.

The above reference material can be obtained from county Cornell Cooperative Extension offices.