

## Elements of IPM for Kraut Cabbage in New York State

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

<b>A. SITE PREPARATION AND SELECTION</b>	<b>Acreage Goal</b>	<b>Points</b>
<b>For Direct Seeded cabbage 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) Scout for black rot and destroy any black rot infected beds.	100%	10
3) Strive for weed-free beds.	75%	5
<b>II) Fields:</b>		
1) Adjust pH to between 7.2 and 7.5 in fields with a history of club-root.	75%	5
2) Avoid fields with history of Fusarium yellows or use yellows resistant varieties.	100%	10
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
4) Do not plant thrips sensitive varieties adjacent to small grains or hay fields that can be a source of thrips.	100%	5

<b>III) Crop Rotation</b>		
1) Plant cabbage 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
<b>B. PLANTING</b>		
<b>I) Seed and Seedlings:</b>		
1) Use varieties that are resistant or tolerant to onion thrips, black rot, and/or Fusarium yellows as appropriate.	75%	10
2) Use uninfected, hot-water treated seed to reduce Alternaria leaf spot, black rot, blackleg OR use seed tests to determine if seed is infected.	50%	5
3) Use insecticide application for cabbage maggot control only when fields are at risk from peak adult flights.	50%	5
4) 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.	50%	5
5) If possible direct seed rather than transplant for black rot control where it is a threat.	5%	3
<b>C. PEST MONITORING and FORECASTING</b>		
1) Scout weekly for insects and diseases: cabbage looper, diamondback moth, imported cabbageworm, onion thrips, cabbage aphids, cabbage maggot, black rot, clubroot, downy mildew, Alternaria leaf spot, Fusarium yellows, root rot, sugar beet cyst nematode, and Sclerotinia white mold. Scout 2 to 3 times per week for flea beetles when plants are in cotyledon stage (direct seeded).	100%	10
2) Update weed map/list of the field when crop is no taller than 6 inches for use in evaluating the current year's weed control and for use in determining if a post emergent treatment is needed. 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 available thresholds established for pests.	50%	10
2) Choose labeled pesticides that have the least environmental impact. Choose pesticides which preserve natural enemies.	35%	10
3) Unless black rot infections are apparent very early in the season, Do NOT use copper sprays to control black rot since they are not effective.	100%	5
4) 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

E. POST HARVEST		
1) For early and midseason fields disk/plow cabbage 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 (or update if one has been made for this field previously) 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

Direct Seeded:

Total Points Available: 144

Points needed to qualify (80%): 115

Transplanted

Total Points Available: 166

Points needed to qualify (80%): 132

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.