INSECT PEST SCOUTING SHEET FOR CRUCIFER CROPS

(Open Field and High Tunnel Crops)

Scouting for insect pests should be regularly and this guide can be used a field scouting guide for basic information. For pest management information, small organic and high tunnel crop producers should use ANR-2190, "Organic Vegetable IPM Slide Chart," after proper insect identification. Conventional producers should consult the Southeastern Vegetable Production Handbook. Always consult the insecticide label for correct usage.

Sampling method: For large acreage, divide the field into four quadrants and scout each quadrant intensively. In a small area, sample 10 locations randomly with four to five plants at each location (sample size of 40 to 50 plants). Count the number of caterpillars separate from aphids or other insects, and refer to the economic thresholds (ET). Use the attached scouting sheet and study the example before scouting. Remember that the accuracy of IPM decision increases with large sample size.

Name	Identification	Plant Injury	Sampling Method & Economic Threshold (ET)
Beet armyworm (BAW) 	Plump green caterpillars up to 30 mm long with three longitudinal stripes on dorsal surface; pair of black spots on the second body segment behind the head	Damaging to young leaves in the fall season; rapid defoliator if uncontrolled in open field and high tunnel crops	• Use pheromone-baited sticky traps for monitoring pest pressure/activity. • Look for egg masses under the leaf (covered with white fuzzy scales). • ET = 3% infested plants with live caterpillars or egg masses
Cabbage aphid 	Many species of aphids can be present at one time; soft-bodied insects with winged and wingless forms; winged forms are migratory and may be darker in body color with transparent wings	Large number of aphids can deform plant parts	• Use a good quality magnifying lens for identifying various forms on the underside of leaves. • Sudden presence of ants or lady beetles in the vicinity of crop may indicate building population of aphids.
Cabbage butterfly/ Imported cabbageworm (ICW) 	Green velvety caterpillars have row of faint yellow spots on each side of body; pupate on undersurface of leaves attached by a silken thread	Velvety caterpillars may feed in groups on old leaves, particularly near leaf veins; caterpillars may move closer to the stalk or near the center head in late stages	• Prefer cabbage, broccoli, and cauliflower but can feed on a variety of other crops • ET (together with DBM and CL) = see scouting sheet for example
Cabbage looper (CL) 	Green caterpillar with several fine longitudinal stripes; head is slightly tapered with broad abdomen; three pairs of green thoracic legs; larvae move in looping fashion	Caterpillars cause leaf skeletonization (everything except the veins are consumed); may occur together with other caterpillars	• Use pheromone-baited sticky traps for monitoring pest pressure/activity. • Larvae are often hard to see, but look for feeding injury (loss of leaf lamina between viens) or green fecal pellets. • Detect small caterpillars and treat crop early. • ET (together with ICW and DBM) = see scouting sheet for example • ET = 0.5 in seedling stage, 1.3 in precupping, and 0.5 in head formation stages

ET = Economic threshold (number of insects above which there will be economic losses)

Name	Identification	Plant Injury	Sampling Method & Economic Threshold (ET)
Cabbage webworm (CW) 	Yellowish gray caterpillars about 15 mm long; five brown longitudinal stripes on dorsal surface; has distinct body hair	Minor pest in Alabama; larvae cause leaf deformation/webbing; may be found inside webs along the leaf veins (underside)	• Look for webbed leaves.
Cross-stripped cabbageworm (C-CW) 	Very common in open field and high tunnel crops; late instar caterpillars have grayish blue body with numerous black transverse stripes; stout body hair visible on dorsal surface	Caterpillars feed on buds and tender leaves in masses after hatching, then move out to other leaves; builds up on uncontrolled vegetation	• Larvae feed in groups early on and feeding injury is easy to detect. Treat leaves when larvae are small and in groups. • Detect small caterpillar and treat crop early if more than 3% of plants are infested.
Diamondback moth (DBM) 	Pale green or translucent caterpillars about 7–8 mm long; abdomen is tapered with anal prolegs sticking out (forked appearance); caterpillars wiggle rapidly when disturbed; pupae attached in loose cocoon on leaves; adult moths have diamond-shaped markings on folded wings	Most active in early spring and summer; larvae feed on underside and riddle leaves with holes rapidly; may have resistance to many synthetic insecticides	• Use pheromone-baited sticky traps for monitoring pest pressure/activity. • Look for window-pane effect from small larvae feeding on leaves. • Control is late if cabbage heads are deformed. • ET = 0.5 in seedling stage, 1.3 in precupping, and 0.5 in head formation stages • ET (together with ICW and CL) = see scouting sheet for example
Flea beetle 	Small insects that jump readily using muscles in their hind legs; hind legs appear swollen	Common in spring on seedlings; shot-hole feeding symptoms on small leaves	• Use a good quality magnifying lens when scouting seedling. • Shot-hole leaf injury is distinctive. • Scout on field edges that usually get the worst damage from flea beetles.
Harlequin bug 	Brightly colored bugs with piercing-sucking mouthparts (orange, red, and yellow patterns on adults); eggs are barrel-shaped with black bands on top; overwinter as adults	Nymphs and adults feed on leaf veins causing extensive browning or wilting of leaves; extensive feeding will cause plants to wilt and die	• Look for colorful adults or masses of nymphs feeding together. • ET (Georgia) = one adult bug per 10 plants
Yellow-margined leaf beetle (YMLB) 	Adult beetles are 5 mm long and dark brown with a yellow wing margin; eggs are bright orange, oval shaped, and laid in masses; caterpillars are dark brown with black head; body is covered with stout hair	Caterpillars feed together in mass during early instar and then scatter later; caterpillars cause extensive leaf feeding and crop damage occurs rapidly	• Look for adult beetles aggregating on leaf surfaces. • Highly attracted to turnips and napa cabbage compared to other crucifers. • Turnips should be scouted at least weekly to detect rapidly growing populations (turnip and napa cabbage can be used as a trap crop).

ET = Economic threshold (number of insects above which there will be economic losses)

IPM SCOUTING SHEETS FOR CRUCIFER CROPS
(See scouting example on next page.)

Location: _____ Scout's name: _____

Observation date: _____ Crop growth stage: _____

Crop scouted: _____

Field No./Quadrant	Flea beetles number or % leaf damage	Aphid numbers or number of infested leaves	Yellow-margined leaf beetle	Caterpillars (ICW=Imported cabbage worm; CL=looper; DBM=diamondback moth)			Other insects, including beneficial
				Species	Large	Small	
				Total numbers (add columns) >>			
					Multiplication factor=1	Multiplcation factor=0.1 for ICW and DMB, 0.7 for CL	
				Larval Units			
				Total Larval Units >>			

IPM decision/remarks:

OBSERVATION SHEET
EXAMPLE OF CATERPILLAR PESTS

Crop scouted: Cabbage

Crop growth stage: Precupping stage

Field No./Quadrant	Flea beetles number or % leaf damage	Aphid numbers or number of infested leaves	Yellow-margined leaf beetle	Caterpillars (ICW=Imported cabbage worm; CL=looper; DBM=diamondback moth)			Other insects, including beneficial
				Species	Large	Small	
				ICW	1	2	
				CL	0	3	
				DMB	0	3	
				Total numbers (add columns) >>	1	2 ICW 3 DBM 3CL	
					Multiplication factor = 1	Multiplcation factor = 0.1 for ICW and DMB, 0.7 for CL	
				Larval Units	1	(0.1 × 5) = 5 (3 × 0.7) = 2.1 Total = 2.6	
				Total Larval Units >>	1 + 2.6 = 3.6		

IPM decision/remarks: Larval units should not exceed 0.5 for seedling, 1.3 for precupping, and 0.5 for head formation stages. 3.6 exceeds the threshold for caterpillar numbers at precupping stage, so control measures are necessary to save the crop.

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For more information about insect pests and other technical issues, download the Farming Basics Mobile App and call a Commercial Horticulture REA.

For more information, contact your county Extension office. Visit www.aces.edu/directory.

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