

Growing Mustard Greens

Fresh market vegetables continue to increase in popularity throughout the area. Small producers of vegetables may be able to expand production for local sale by adding another crop such as mustard greens to their present commodities. Mustard greens, grown mainly for their tender leaves and stems, are short-season crops that can be planted in the spring or fall. They belong to the same plant family as cabbage, kale, and collards and are used for their tangy flavor.

Varieties

Mustard greens vary in leaf shape, size, and appearance. Some varieties are curled like curly kale, while others are smooth and broad-leafed. Stem color varies from green to white. Some of the “mustard spinach” varieties such as ‘Tendergreen’ are said to resemble spinach in flavor. Other varieties that may be available are ‘Florida Broadleaf,’ ‘Green Wave,’ ‘Savanna,’ and ‘Southern Giant Curled.’

Soil and Fertility

Well-drained, sandy loam soils are ideal for growing mustards, although the greens grow well in a variety of soil types. The desired soil pH should be about 6.5, so lime needs to be applied if soil pH is much below 6.5. Fertilize according to soil tests. For soils testing in the optimum range, the recommended fertility would be 50 pounds per acre each of N, P₂O₅, and K₂O broadcast and disked in prior to planting followed by 25 to 30 pounds per acre nitrogen sidedressed when plants are several inches tall, if needed.

Culture

Mustard is not as cold tolerant as kale. Therefore, the leaves may tend to fall with the onset of harsh, cold weather in late December and early January. Mustard is also not likely to survive a hard winter in Maryland, and plants that do survive will normally bolt (produce flowers) early in the spring rather than producing desired vegetative growth. Therefore, production for spring harvest should come from seeding in late winter rather than from a late fall planting.

Seed as early as the ground can be worked for a spring crop and in early to mid-August for a fall crop. Rows are usually 16 to 24 inches or more apart, depending on seeding and cultivating equipment available. This will require about 3 to 4 pounds of seed per acre. Plants may be thinned to 4 to 5 inches apart as they enlarge. Successive plantings about every 10 days should be made for continuous production.

Irrigation may be needed for stand establishment following summer seeding and during the summer and early fall when rainfall is limited in warm weather.

Pest Management

Weeds, diseases, and insects can reduce the quality, yields and profit of mustard. For growers who want to use them, pesticides are available to help reduce losses from these pests. Check a current revision of Extension Bulletin (EB) 236, *Commercial Vegetable Production Recommendations* for the most recent information on pesticides. **Carefully**

read and follow all label instructions on any pesticide used.

Weeds

Weeds will compete with the crop for nutrients, water, and sunlight and may be a contaminant of the harvested product. Organic growers can utilize cultivation and hand hoeing to reduce weed problems. Herbicides are labeled for preplant incorporated and preemergent weed control as well as postemergent control of grasses. Check EB 236 for the latest recommendations for materials, rates, and application methods.

Insects

A number of insects can damage mustard, including aphids, leafhoppers, leafminers, flea beetles, beet armyworm, cabbage looper, diamondback moth caterpillar, and imported cabbageworm. For control of several of these insects, growers may use insecticides such as *Bt* that are approved for organic production. Other insecticides are listed in EB 236. **Be sure to check any pesticide label for reentry and days-to-harvest restrictions.** A brief description of insect pests of mustard greens and the damage they cause is as follows:

Aphids—Small, soft-bodied insects that remove plant sap through sucking-type mouthparts. There are several species that may differ slightly in color. Aphids may live in small compact colonies. Damage from aphids appears as stunting of growth, distortion of leaves, and a potential reduction of yield. Bodies of killed aphids may remain attached to the undersides of leaves as a contaminant. Some aphids may secrete honeydew that supports the growth of sooty black mold.

Leafhoppers—Small, generally yellow-green insects that feed on sap from the underside of leaves. Adults are highly mobile, winged, and up to $\frac{1}{8}$ -inch long. Nymphal stages are wingless. Injury appears as curling and yellowing of leaf edges.

Leafminers—Small insects whose larvae are creamy-white maggots that make light-colored, irregularly winding mines in the leaves. As the larva increases in size, the mine widens to form an irregular blotch at one end. Severe infestations may cause the leaves to turn

brown or white, and infested leaves are unmarketable.

Flea Beetles—Small, often dark-colored insects as adults that may jump away quickly when disturbed. Adults eat small holes in leaves and may kill small plants in the 2- to 3-leaf stage.

Beet armyworm—Soft-skinned, dull green caterpillars about an inch long with a band of many fine, wavy broken lines down the back and a light-colored stripe along each side. They often feed on buds and terminal growth.

Cabbage looper—Light green with several white stripes along the body, about $1\frac{1}{2}$ inches long. Because it has no legs in the middle of the body, it moves in a characteristic “looping” motion. Loopers may feed between the veins making ragged holes in older leaves.

Diamondback moth caterpillar—Larvae are greenish-yellow and up to $\frac{5}{16}$ -inch long. Their bodies are pointed at both ends and covered with fine, scattered, erect, black hairs. Larvae may wriggle and drop from the leaf on a silken thread when disturbed.

Imported cabbageworm—The larva is a sluggish, velvety green worm with a faint yellow stripe on its back. A large larva may grow to $1\frac{1}{4}$ inches long.

Diseases

Proper rotations, field selection, spacing, fertilizer application, and irrigation practices can reduce the loss of mustard from diseases. Mustard should not follow or precede other crops in the same family such as cabbage, broccoli, and collards. Check a current revision of EB 236 for specific fungicides that may be registered for use.

Harvest

Harvest mustard leaves when they reach a height of 6 to 8 inches and before they become tough and fibrous. This will usually be about 40 to 50 days after seeding depending on weather. Harvest by cutting the entire plant just aboveground or by stripping off the larger leaves. The crop can be sold loose, or plants or leaves can be tied together in bunches. Mustard has a very high yield potential and may produce up to 1 pound of greens per foot of row.

Costs and Returns

Yield and Price Assumptions

	<u>Yield (lb/A)</u>	<u>Gross Returns (\$/A)</u>	
		<u>\$.25/lb</u>	<u>\$.50/lb</u>
Average	7,000	1,750	3,500
Good	14,000	3,500	7,000

Estimated Costs Per Acre of Mustard

<u>Item</u>	<u>Cost/A</u>
Cover Crop (Rye)	\$30.00
Lime (1,000 lb)	13.00
Fertilizer	
Nitrogen (80 lb x .30)	24.00
Phosphate (50 lb x .30)	15.00
Potash (50 lb x .16)	8.00
Seed (4 lb x 5.00)	20.00
Herbicide	
Treflan (1 pt x 4.20)	4.20
Insecticide	
Thiodan (1 qt x 6.50)	6.50
Harvesting and Packing	
Labor (180 hours x 7.00)	1,260.00
Boxes (400 x 1.00)	400.00
Machinery Costs	
Soil preparation, planting, etc.	61.00
Irrigation (3 x 20.00)	60.00
Land Charge	50.00
Total	1,951.70

Handling and Marketing

To maintain quality of harvested mustard, keep it cool and prevent loss of moisture. In hot weather, harvest early in the morning when the temperatures are cooler. Move harvested greens to a shaded location immediately after harvest. Cool water from a well may be used to wet down and cool mustard harvested late in the day. If mustard greens

must be stored, ideal conditions would be 32°F and 95-percent relative humidity. Sell the greens as soon as possible after harvest. Remind consumers to keep the greens cool and use or refrigerate them as soon as possible. Mustard must be cooled and shipped in waxed cartons with slurry ice to be sold wholesale, however, few small producers have the equipment to do this. Shipment for

wholesale markets would need to be in refrigerated trucks to maintain quality.

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