

Collard seed

Brassica oleracea (Cruciferae)

Fast Facts:

Acres in Washington: 100-150 acres Per Acre Value: \$1,500 average Value of Production in Washington: \$150,000 average Number of Growers: less than 10
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Description of crop:

Collard seed is a direct-seeded biennial kale that is planted in late August and harvested the following July. The crop is hand-hoed to remove weeds and rogued to remove plants not displaying true varietal characteristics. Cultivation is less frequent for collard seed than for many other seed crops, because collards outgrow weeds competing for water, sunlight and nutrients. The crop is insect-pollinated. At harvest, the crop is cut, windrowed and dried in the field for 10 to 14 days. After drying, the crop is threshed, and the seed is sent to a conditioning plant, where it is cleaned to 99 % purity.

Companies control the location of seed crop fields to prevent cross pollination. Isolation distances of up to more than 2 miles can be necessary to prevent cross pollination between varieties of a seed crop and also between other members of the family such as other kales or kohlrabi.

Key pests:

In eastern and western Washington, cabbage maggot is the most severe pest. Other insect pests include sugarbeet leafhopper, cabbage aphid, turnip aphid, loopers and cutworms. Weed pests include nightshades, pigweeds, lambsquarter, wild buckwheat, volunteer crops, foxtail and barnyard grass. White mold (*Sclerotinia sclerotiorum*) is the primary disease of concern in eastern Washington. Pest problems in western Washington are more extensive. Aphids, seedpod weevil and cabbage maggot are severe pests. Other insect pests include cabbage looper, springtails, webworms, diamondback moth, cutworms, symphylans and wireworms. Weed pests include shepherdspurse, quackgrass, wild oat, Canada thistle, bolt thistle, vetch, nightshades and bed straw. Shepherdspurse, groundsel and henbit are the more problematic weeds. Weeds are serious pests due to two issues. The seeds that the weeds produce are often very difficult to sort out of the seed crop. If the contaminating seeds are too costly or impossible to sort out, the seed crop is considerably lowered in value or rendered unmarketable. Weeds also serve as a host for insects and diseases. The most serious diseases are powdery mildew, downy mildew, black rot (*Xanthomonas campestris* pv. *campestris* and *X. campestris* pv. *armoraciae*), black leg (*Phoma lingam*), Alternaria black spot and white mold (*Sclerotinia sclerotiorum*). Bacterial soft rot of the heads and gray mold (*Botrytis cinerea*) can occur in spring following winter injury. Ring spot (*Mycosphaerella brassicicola*) is seldom of

economic significance. Black rot and black leg are of quarantine significance and largely managed by strict screening of stock seed lots so that only non-infected stock seed is planted.

Key pesticides:

In eastern Washington, acephate and diazinon controls aphids. Cabbage maggot is controlled with chlorpyrifos before planting, and sugarbeet leafhopper is controlled with esfenvalerate. In western Washington, chlorpyrifos and permethrin are used for insect control, and endosulfan is applied mid-bloom to control seedpod weevil, cabbage maggot, cutworms and loopers. Trifluralin is used on all acreage as a preplant incorporated to control broadleaf weeds, and Fluazifop-butyl is applied occasionally after harvest to control grasses. Hand-hoeing supplements weed control. Cultural practices such as extending the rotation period to 3 to 5 years helps reduce inoculum levels of pathogens in the soil, particularly to manage *Alternaria* black spot, white mold, club root, and other diseases. Stock seed is treated with mefenoxam, thiram, and sometimes fludioxonil to control seedling blights. The loss of benomyl as a seed treatment in 2006 created significant concern about black leg becoming established in the seed production area again as benomyl seed treatment largely eradicated the problem from the cabbage seed industry. Thiabendazole has proved an effective alternative so an emergency seed treatment registration for stock seed lots was approved. Iprodione is applied to control *Alternaria* black spot and white mold. Boscalid and cyprodinil + fludioxonil are also used for white mold and gray mold (for the latter, in spring following any winter injury, for the former, starting at early petal fall). Mefenoxam, metalaxyl, and cymoxanil control downy mildew. Azoxystrobin and pyraclostrobin are used to control powdery mildews, *Alternaria* black spot and white mold. Mancozeb and chlorothalonil are used for general disease control. Due to over-wintering damage, copper hydroxide is usually applied in late winter or early spring to control bacterial soft rots. Copper hydroxide is applied to control bacterial soft rots and with mancozeb to help prevent black rot. Black-rot infected crops or seed lots are destroyed to prevent spread of the disease. The black rot bacterium can be spread by water, insects, equipment and animals. It persists in infected plant debris for up to two years and in the soil for months.

Critical pest control issues:

The loss of dimethoate was significant. Mitigation to comply with urbanization, salmon and water buffer issues are expensive. Efficacious herbicides are critical for seed production. Weeds not only compete with the seed crop but act as host for insects and diseases. Weed seeds if they cannot be easily sorted out from the seed crop will cause the value of the seed crop to drop or even cause the crop to be unmarketable. The loss of benomyl as a seed treatment in 2006 created significant concern about black leg becoming established in the seed production area again as

benomyl seed treatment largely eradicated the problem from the cabbage seed industry. Finding more effective alternatives than copper hydroxide for control of black rot is a high priority need for cabbage seed production.

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Location

of production: Collard seed is grown in Grant, Adams, Skagit and Whatcom Counties.

Collard Seed Production in Washington State



■ Area of Collard Seed Production