

Broccoli Seed



In 2005, Yuma County was the home of about 650 acres of broccoli seed crops valued at over \$0.5 million.

Many plants in the Brassicaceae family, such as broccoli and cole crops, are important vegetables worldwide. Plants from the Brassicaceae family are mostly native to Europe, the Middle East, and Asia. There are about 350 genera and 3,000 species in the Brassicaceae and many occur in the north temperate zone. All are hardy, cool season crops that are susceptible to the same insects and diseases.

The plants related to broccoli include many vegetables: cauliflower, cabbage, brussel sprouts, collards, kale and kohlrabi. There are also some oilseeds, such as canola. Nasturtiums, an ornamental, are also found in the Brassicaceae and many of the members of the family are found in the wild.

Each field grown for broccoli seed is isolated from an adjacent flowering brassica by a distance of 2 miles. Broccoli seed is grown from transplants planted in early fall, seed is harvested the following May.

All of the cole crops can be crossed and as many of the flowers cannot be fertilized by their own pollen, the self incompatible makes it easy to make hybrid selections. Many hybrids have been released for commercial cultivation and hybrid seed production is now the norm.

Broccoli flowers form an inflorescence where the individual flowers are often perfect with four sepals and petals.

Broccoli is a relatively recent introduction into the United States. It was grown in the 1800's, but was not popular until later. The first shipment from the west to the east was in 1923 and was really only found in Italian areas of the country. Broccoli means 'little sprouts' in Italian. It became an important vegetable in the US during the 1930's.

There has been a lot of breeding work done in broccoli to improve the adaptability to growing areas, improving quality, and increasing disease resistance. The varieties can also be classified as early, midseason, and late and, many contain genes which promote genetic resistance for many diseases.

The fruit of broccoli is called a silique each of which contains between 10-30 seed. The silique, incorrectly but, commonly called a pod, is 1 to 4 inches long. It takes about 144,000 broccoli seed to make up a pound. And, a well-fruited broccoli plant may produce one-quarter pound of seed.

After leafy growth ceases, as for example the completed growth of the head of the broccoli, the flowering stem elongates. It is characterized by numerous branches (mostly from a main stem), small leaves, and numerous bright yellow or occasionally white flowers which have four petals, 1/2 to 1 inch long and, appear to form a cross.

Broccoli flowers open during at daybreak and, pollination occurs a few hours later. In most cultivars, nectar is secreted by two nectaries located between the bases of the flower.

The nectaries secrete nectar during the 3 days the flower is open. The flowers are highly attractive to pollinating insects for both nectar and pollen. When the seed-producing acreage is large, beekeepers frequently harvest a crop of excellent honey.

Yields of 900 to 1,300 pounds of seeds per acre of broccoli can be expected, depending upon soil, climate, and cultural practices. One acre should produce enough seed to plant several hundred

acres.

All broccoli seeds crops require cross-pollination. The pollen must be effectively transferred between plants that are cross-compatible.

The construction of the broccoli flower is such that many kinds of insects can reach the pollen and nectar, including honey bees, wild bees, and flies.

Broccoli seed crops that come into bloom at temperatures below the minimum of about 55 degrees F might have difficulty setting seed since bees do not forage below this critical temperature.

In general, the honey bee is the primary pollinator of broccoli seed crops and they can be transported to the fields to be pollinated when desired. Honey bees increase seed production by 300 percent over plants not freely visited, and this visitation also considerably enhances the seed quality.

Broccoli seed from flowers receiving adequate bee visits, are three times larger as those from flowers not visited by bees.

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