

Cultivation of Black Cumin

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Common name: Kalonji

Scientific name: *Nigella sativa*

Family: Ranunculaceae

Origin: Western Asia and Southern Europe

Chromosome No.: (2n = 2x = 12)

Introduction

Black cumin (*Nigella sativa*) is an erect-stemmed annual herb in the Ranunculaceae family of flowering plants is used as a spice. The native place of black cumin is western Asia and southern Europe, but these days it is being grown all over India. The black cumin seeds and its oil have been used for many decades to cure various diseases throughout the world. The seeds have an aroma like fennel and have a pungent flavor somewhat similar to nutmeg and its seeds have also been used as a condiment too. It is an important drug in Unani and Ayurveda systems of Indian traditional medicine.

Botanical Description

A glabrous annual herb grows to height of about 1-2 feet. Leaves are alternate, feathery, finely divided and greyish green in colour. Flowers are star shaped and bluish-white in colour. Petals are absent. The fruit is globose capsule with small trigonous black seeds.

Method of Propagation

Black cumin is propagated either by seed sowing or by replanting the previous year root stocks or bulbs. Seed sowing is done during October-November by broadcasting and line sowing methods. Bulb sowing is possible when moisture content of soil is adequate for deep ploughing *i.e.* neither too dry nor too wet.

Climatic conditions and requirement:

Black cumin is a cool season crop and it is cultivated in the northern plains during winter season. During sowing, moderately warm weather with a temperature of 20-25°C is



desirable. Cold weather is good for the early growth and warm sunny weather is good for seed formation and maturity. It is grown under wide range of environments, but grown well in cooler regions with the optimum temperature of 12-14°C and a rainfall of 400-500 mm. The plants of this crop are very susceptible to water logging and frost at early stage of crop growth. Plant begins flowering 80-100 days after sowing depending on the cultivars. Seed reaches physiological maturity in 130-150 days after sowing.

Soil

Black cumin can be grown on wide range of soils which are rich in organic matter and free from water logging. The loamy, medium to heavy soils with good fertility level are most suitable for cultivation. It can be grown well on soil having 5.0-8.5 pH.

Recommended varieties

Ajmer Nigella-1 (AN-1), Ajmer Nigella-20 (AN-20), Azad Kalonji, Rajendra Shyama, Pant Krishna, NS-44, NS-32 and Kalajeera.

Preparation of land

The field is ploughed to the fine tilth by giving 2-3 ploughing with a sufficient interval. The first ploughing should be done by soil turning plough followed by light ploughings by harrow or cultivator. The ploughing should be shallow, not more than 8-10 cm depth.

Time of sowing

The seed sowing is done in mid-September to mid-October.

Seed rate

The crop is grown through seeds and the recommended seed rate per hectare is 5-7 kg.

Seed treatment

The seeds should be treated with Trichoderma culture @ 10.0 g/kg seed before sowing to check the incidence of soil borne diseases.

Sowing method

The crop can be sown by two methods *i.e.* line sowing and broadcasting. The line sowing is better because it facilitates inter culture operations easily. The seeds are sown at row spacing of 30 cm × 15 cm and at a depth of 1.5-2.0 cm. Light irrigation can be given, if initial moisture is less and seeds germinate within 10 days after sowing.

Manures and Fertilizers

A well rotten FYM or compost about 5-10 t should be incorporated thoroughly into the soil during final preparation of field. Well rotten manures are advisable as partially rotten manures hampers the chlorophyll synthesis in plant at sufficient/excess soil moisture conditions and also invites soil borne diseases. The manure and fertilizers requirement are 40 kg N, 20 kg P₂O₅, and 20 kg K₂O. Full dose of phosphorus, potash and 1/3 dose of nitrogen should be applied as basal dose and rest of the nitrogen in two equal split, first at 30 days after sowing, while rest at flowering as top dressing in standing crop.

Weed management

Black cumin requires only 2-3 hoeing or weeding. First and second weeding should be done at 30 and 60 days after sowing. If required, third weeding can be done. During first weeding the plants should also be thinned to the desired distance. The pre-plant incorporation of Basalin @ 0.75 to 1.0 kg/ha or per-emergence application of Oxadiargyl @ 0.075 kg/ha or premergence application of Stomp @ 0.75 to 1.0 ka/ha after dissolving in 400-500 liters of water is recommended.

Irrigation

The first irrigation can be given just after sowing for proper germination of crop. Subsequent irrigations at 15-25 days intervals are given to the cumin crop. The critical stages for irrigation are seed formation and flowering stage. Therefore, the crop should not face the water stress problem at flowering and seed formation stages. Irrigation should be given as per requirement of the crop because excess moisture causes root rot problem in black cumin plants.

Harvesting and yield

The crop matures in 135-150 days after sowing. It should be harvested when the seed attained full maturity in capsule and have turned to full brown or black in colour. If harvesting is delayed it may cause shattering of seeds. Average seeds yield of about 5-10 q/ha can be obtained from Nigella crop. The seeds are separated from fruit capsule by rubbing the plants or beating by the stick. Thereafter, the seeds are winnowed and dried.

References

- Bose, T. K., and Som, M. G. (1986). Vegetable crops in India. Naya Prakash.
Chadha, K. L. (2001). Handbook of Horticulture. ICAR, New Delhi, India.