

ORGANIC RED GRAM OR PIGEON PEA



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Organic Red Gram/Pigeon Pea: An Introduction

Scientific name of Red gram is *Cajanus cajan*. Red gram is also known as pigeon pea. Common names in India are: arhar dal or toor dal. It is a very important pulse crop in India.

Crop Significance

The nitrogen fixing capability of the crop makes it an ideal choice as intercrop. Both mono-cropping and intercropping systems are followed for red gram cultivation in the country.

Growing Organic Red Gram/Pigeon Peas: Climate

The critical flowering and pod formation phase of the crop requires a temperature of more than 30°C and low moisture. General temperature requirement is less than 25°C.

Growing Organic Red Gram/Pigeon Pea: Soil

Red gram requires well drained, medium to heavy soils of pH range from 5-7 for growth. Soils with water-logging nature, high saline content are unsuitable for red gram cultivation.

Growing Organic Red Gram/Pigeon Pea: Planting

Red gram is grown during the monsoon months (June and July). The ideal time for sowing is from mid-week of June to mid-week of July.

Intercropping

The nitrogen fixing nature of the crop makes it an ideal intercrop. Sorghum, pearl millet, maize, sugarcane, soybean/cowpea or cotton are usually intercropped with red gram. A widely practiced arrangement in cotton is the 8:2 rows of growing cotton and red gram respectively. It is recommended to intercrop red gram with green gram and soybean/cowpea during 1st year of field conversion to organic. It has shown significant raise in soil nutrient quality. Though monocropping in red gram is practiced, it is generally avoided because of increased chances of pest and disease infestation. In order to control this, mixed planting of red gram seeds with sorghum seeds (1-2%) or any other millet is recommended. A 2:2 rows of green gram and red gram respectively has been recognized beneficial. Random planting of marigold (100/acre) also help in pest and insect control.

Seed Treatment

A mixture of *Trichoderma viride* (8g/kg seed) and beejamrut (200g/kg seed) is to be made. The seeds should be shade dried after treatment with the above specified mixture. The seeds should then be treated with Rhizobium and PSB biofertilizer (5 g each/kg seed) and again shade dried. Thus treated seeds should be sown with a time gap of 4-6 hours of treatment

Sowing Process

Seeds are sown by drilling (4-6 cm depth) on wet soil. Crop variety and duration determine the spacing and quantity used. Long duration varieties needs 12-15 kg seeds/ha spaced at 60cm x 20 cm. Medium duration varieties follow spacing of 60cm x 20 cm at rate of 15 kg seeds/ha. Early maturity varieties require 20kg seeds/ha to fill a spacing of 120cm x 30 cm

Field Preparation

Red gram being a deep rooted crop, requires loosening of soil for root penetration. Tillage operations thereby require one deep tillage up to 1.5 feet, followed by a shallow tilling. A nutritional and preventive application of 20 q FYM/12 q compost/ 10 q of vermicompost+5kg PSB to soil during the last tilling is deemed beneficial. Soil treatment can be done by application of 500 liters of jeevamrut/ha to the soil

Intercultural Practices

Pruning of the main shoot tip and secondary branch tips are done between 50-60 days of germination. This results in production of large number of tertiary shoots bearing pods. This activity increases yield by 30- 50%

Weed Management

Weed management is essential during the first 2 months of crop growth. The standard weeding schedule for red gram is 25 and 60 days after sowing. The cut weeds could be used as mulches for the crop.



Green Manuring

Pre-monsoon sowing of 1-2 kg seeds of sun hemp, horse gram, cow pea, green gram, black gram and sesbane are recommended. The crops can be cut down and incorporated by shallow tilling into the soil after 30 days of growth. Red gram could be sown in field one week after green manuring process. Incorporation of 10 q of neem leaf manure into soil has been found to reduce soil borne pathogens and nematodes.

Irrigation

Red gram requires very little water during its growth. Its water requirement has been calculated to be 40 cm for its entire cycle. Moisture is a critical factor during the budding, flowering and pod formations stages of red gram

Major Pests

Pod borers/boll worms (*Helicoverpa*), aphids, jassids, thrips, mites etc are some of the major pests on red gram. Boll worm incidences is more damaging and hence of major concern.

Pest Management

Some of the pest management measures are:

- Increasing biodiversity through planting of trees like neem, babul, pongam on the farm bunds
- Intercropping of red gram with moong, soybean, groundnut
- Random planting of marigold and hibiscus (*Hibiscus subdariffa*)
- Spraying jiggery powder (10 kg/ha) on soil surface, acts as an ant attractant; the ants predate on the larvae in soil
- Installation of bird perches to attract predatory birds
- Release of *Chrysoperla* (5000 eggs) a fortnight after sowing and *Trichogramma* (50,000 eggs) 30 days after sowing

- Spraying 5% neem seed kernel extract at 15 days interval
- Spraying of 1000 ml of HNPV (nuclear polyhydrous virus) per ha helps control caterpillars
- Spraying of garlic, chili and neem crushed in cow urine on leaves

Storage Pest Management

Beetles affect red gram seeds in storage. Mixing of crushed neem leaves with seeds before storage in gunny bags is recommended. The gunny bag treatment with 5% neem oil reduces any chance of storage pest attack

Disease Management

Fusarium wilt disease is a major problem in red gram. Phyto-sanitation, crop rotation, use of resistance varieties and seed treatment are the general measures taken against diseases incidence in red gram.

Harvesting and Yield

The browning of 80% of pods and heavy shedding of leaves are the symptoms of pod maturity for harvesting. Intercropping in rain fed areas results in average yield of 15-20 q/ha while mono-cropping under irrigated conditions provide 25-30 q/ha of crop



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Contact us at

info@agrihortico.com

agrihortico@gmail.com

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