

Sesame Recommendations for the Northern Territory

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INTRODUCTION

Sesame (*Sesamum indicum*) is well adapted to the semi-arid tropical regions of the world, and generally cultivated under a system of small scale agriculture. India, China and Burma are the largest producers.

Sesame grows to a height of 1.0 to 2.0 metres, bears its flowers in the axil of the leaves, with the seeds contained in pods which may open when ripe. Sesame seed can be black, brown or white in colour, and contains about 50% oil and 21% protein. Sesame is used for confectionery, culinary and cosmetic purposes.

Australia presently imports approximately 5,500 tonnes (\$8 million) of dehulled seed and 1,000 tonnes (\$3 million) of sesame oil annually.

SOILS

Sesame is adapted to a range of soil types, but performs best on well drained, moderately fertile soils of light to medium texture and neutral reaction. The crop is extremely sensitive to waterlogging. Even short periods of waterlogging will result in significant reductions in plant numbers and seed yield.

CLIMATE

Sesame is suited to the growing conditions experienced during the wet season in the Top End. It normally requires temperatures greater than 25°C for rapid germination, growth and flower formation; a temperature of less than 18°C after emergence severely retards growth.

The crop is fairly drought-tolerant, and once established is capable of withstanding a higher degree of moisture stress than many field crops. The dry conditions, normally experienced from mid-April, are advantageous for ripening and producing high quality seed.



CULTIVARS

The recommended cultivars for the Northern Territory are Edith and Giles. Both cultivars are dehiscent, white-seeded with a growing period of 110-130 days, depending on the finish of the wet season. Flowering commences 30-35 days after sowing.

Sesame's semi-determinate growth habit allows plants to respond to good growing conditions, while producing reasonable seed yields under relatively adverse conditions. Commercial yields of 1,000 kg per hectare have been achieved.

FERTILISER

The amounts of fertiliser required will vary depending on soil type and cropping history. The following general recommendations should apply:

Phosphorus and Sulphur

- (a) Virgin Soil - 30 kg/ha of both phosphorus and sulphur, traditionally applied as single superphosphate at 350-400 kg/ha.
- (b) Previously Cropped Soil - 10-20 kg/ha of both phosphorus and sulphur (single superphosphate at 110-225 kg/ha).

Nitrogen

Research on sandy soils indicates that nitrogen should be applied at 60 kg/ha. This can be applied as 130 kg/ha of urea, 175 kg/ha of nitram, or 290 kg/ha of sulphate of ammonia. Nitrogen should be drilled at sowing. However care must be taken to avoid contact between the seed and the fertiliser as the seed can be killed by such contact.

In some soils, potassium and micronutrients such as zinc and copper may be deficient. For more specific recommendations contact your local Extension Officer or Agronomist.

SOWING TIME

Optimum time of sowing at Douglas Daly and Katherine is between early and mid January. Within these dates sowing should be completed as soon as possible, as good establishment is the key to high yields and effective weed control. Better use of optimum sowing conditions can be achieved if fertiliser and herbicide are applied prior to sowing.

SOWING RATE

An established sesame population of 300,000 plants per hectare is essential for achieving high yields and effective weed control. Higher populations can result in increased crop moisture stress in adverse conditions. They can also result in the crop being susceptible to lodging from wind.

Trials showed that the highest seed yields were achieved if sesame was sown at a row spacing of between 32 cm and 50 cm. Wider rows resulted in decreased weed control and yield, while narrower rows resulted in a yield reduction.

Depending on the germination percentage of the seed used, a sowing rate of 3-3.5 kg/ha will give the required plant density. Sesame can be planted in furrows of 2-3 cm depth with slight soil coverage.

WEED CONTROL

Weed control is important in sesame as seedling growth is slow for the first four weeks, making them poor competitors.

There are no herbicides registered for use in sesame.

INSECT CONTROL

Most sesame crops will require at least one application of insecticide to maximise yield. The two major pests and their control are described below.

Heliothis sp. can severely damage sesame in the flowering and pod fill stages. The adult moths lay minute white eggs on the flowers and pods during the night. The eggs hatch a few days later and develop into caterpillars which feed voraciously on the reproductive parts of the plant.

Sesame leaf-roller (*Antigastra catalaunalis*) caterpillars roll up young leaves, web them together with silk and then feed inside the rolled-up mass. Severe defoliation can occur if the pest is not controlled. In addition to leaf damage the caterpillars also feed on flowers and bore into pods causing a reduction in yield.

INSECTICIDES

Only methomyl (350-435 g a.c./ha) is currently registered for use in sesame.

DISEASES

Large Cercospora Leaf Spot

This is caused by the fungus *Mycosphaerella sesamicola*, anamorph *Pseudocercospora sesamicola*. Spots on the foliage are large and irregularly-shaped. These often coalesce, killing portions or entire leaves on susceptible varieties during humid conditions produced by periods of rainy weather or overhead sprinklers. Previous experience in the NT indicates that it is important to select varieties with some resistance to this disease.

Small Cercospora Leaf Spot

This is caused by the fungus *Mycosphaerella sesami*, anamorph *Cercosporasesame*. This is characterised by scattered lesions on both leaf surfaces. This disease has not posed a danger in the NT.

Powdery Mildew

A white powdery coating on the foliage of sesame, caused by the fungus *Oidium* sp. It does not warrant control at present.

Charcoal Rot

The characteristic symptom is a girdling at or slightly above the soil line. Other symptoms include wilting with eventual death of plants which turn brown and remain upright. The presence of small black microsclerotia in the plant tissue, especially towards the base of the plant, is diagnostic of the casual fungus, *Macrophomins phaseolina*. To date, charcoal rot has not been a serious disease of sesame.

Little Leaf (*Mycoplasma*)

This disease causes greening of floral parts, axillary bud proliferation and little leaves. It is caused by a bacterium called Mycoplasma which is transmitted by the common brown leafhopper (*Orosius argentatus*). Control is not necessary as level of infection is usually very low.

HARVESTING

The present harvesting practice is to allow the crop to naturally dry down so that 95 per cent of capsules are brown before harvesting. Harvesting should be at a ground speed of about 6 kilometres per hour using a harvester fitted with an air reel set above and ahead of the crop and an extended front which gives a knife to auger distance of about 450 millimetres.

ADDITIONAL INFORMATION

Sesame receival standards are available from the NT GRAIN DEPOT or DBIRD.

Additional information may be obtained from the Department of Primary Industry, Fisheries and Mines at Katherine or Darwin.

Please visit us at our website:

www.nt.gov.au/dpifm

Department of Primary Industry, Fisheries and Mines

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