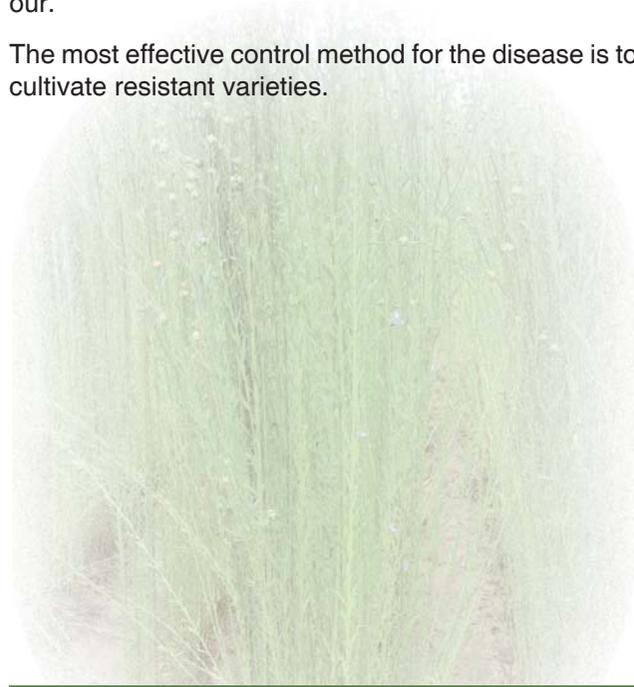


level get constricted, gradually wither and die out. In the case of very young seedlings, the edges of infected cotyledons roll inwards and ultimately the entire cotyledon falls off. In the older plants, the disease appears as small, ill-defined, dark green or brownish spots on the leaves, drooping of the plants and shrivelling of the leaves, followed by the death of the plants. The plants become light to dark brown in colour.

The most effective control method for the disease is to cultivate resistant varieties.



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Obtainable from

Resource Centre
Directorate Agricultural Information Services
Private Bag X144
PRETORIA
0001

Further information can be obtained from:

Directorate Plant Production
Private Bag X250
PRETORIA 0001

Tel +27 12 319 6072

Fax +27 12 319 6372

Email Thabo.Ramashala@daff.gov.za

FLAX



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Background

Fibre flax (*Linum usitatissimum*) is an annual plant that grows rapidly and reaches a height of 1 m, depending on the variety, plant density, soil fertility and available moisture. It has a distinct main stem with numerous branches at the top, which produce flowers. Flax plants can grow to the height of 120 cm and bear blue or white flowers that mature into bolls containing an average of 10 seeds each.

Origin and distribution

Flax is thought to have originated in the Mediterranean region of Europe. The Swiss lake dweller people of the Stone Age apparently produced flax utilising the fibre as well as the seed.

Flax as a new crop introduced in South Africa is evaluated by ARC in some parts of the country for adaptability. Flax is being grown in Western and Eastern Cape provinces under field trials.

Climatic and soil requirements

Fibre flax grows best in a cool and moist climate. In hot and dry climates, irrigation is necessary. The crop requires 150 to 200 mm of rainfall, distributed evenly over the growing season, with 250 mm falling just before planting. It grows best on well-drained deep friable loams that contain sufficient organic matter in their composition. It does not grow well on gravelly or dry, sandy soils. It is intolerant of salinity and the soil pH should be between 5 and 7.

Uses

Flax is cultivated for its fibre and oil. Linen is the most important product made from the fibre of the plant. Lower-quality fibre is used in the manufacturing of towelling, matting, rugs, twines, canvas, bags, and for quality papers, as for printing currency notes. The seeds contain 20 to 30 % protein, and are the source

of linseed oil, a drying oil, one of the oldest in commercial use.

Cultural practices

Planting

Seeds are sown in rows 11,5 to 75 cm apart, depending on whether the plant is grown for fibre (closer spacing) or seed (each plant is given more space). Flax should be sown at a depth of 2,5 to 3,2 cm with a grain drill rather than with a broadcast-seeder. Depending on the variety, 80 to 110 kg/ha are required.

Propagation

Propagation is usually by seed. Flax may also be propagated vegetatively from stem cuttings. It is a self-pollinating crop.

Fertilisation

The crop does not have a high requirement for nutrients, however, the root system is not extensive and so an adequate level of easily assimilated nutrients is needed. For proper fertiliser application it is recommended to test the soil for phosphorus and potassium. In the case of lower pH values lime should be applied to maintain the soil pH range of 6,0 to 6,5.

Irrigation

Flax responds well to irrigation, especially light irrigations, as it is a shallow-rooted crop. When the crop starts to ripen, irrigation should be withheld to speed up the maturing process.

Weed control

Weeds are generally a greater problem in flax than in small grain. A big reduction of the growth of weeds in a field may be effectively accomplished by a careful

and thorough harrowing and pulverising of the soil to a fine tilth. Hand-weeding is encouraged or else the roots of the crop will be damaged because most are found near the soil surface.

Pest and disease control

THE GREASY CUTWORM, *AGROTIS YASILON* ROTT. (LEPIDOPTERA: NICTUIDAE)

Cutworms sever the base of plants, thereby resulting in the death of the entire plant, which will then have an impact on fibre yield. Severe damage may be done in 1 or 2 days when the plants are young. In small plots the caterpillars of the first brood may be hand-picked and destroyed by searching the soil round the base of the plants cut by the insects. Bait can be used to control the pest.

THE LINSEED FLY, *DASYNEURA LINII* BARNES (DIPTERA: CECIDOMYIIDAE)

As the flies are attracted to light, light traps may be set up and the flies collected and destroyed. Sowing a resistant variety can control the fly attacks.

RUST DISEASE (*MELAMPSORA LINI*)

Rust is a fungus disease appearing as yellow orange pustules on the leaves and stem. The disease causes considerable reduction in yield and damages the fibre by breaking the stem at the tip point of attack and can even cause the death of the plant in the case of a severe attack. It causes a significant reduction in oil content. The infected leaves become chlorotic and die prematurely.

Good fall ploughing that buries straw and stubble assists in controlling the disease, however, the most efficient control for rust is the use of resistant varieties.

WILT DISEASE (*FUSARIUM OXYSPORUM*)

Wilt is a soil-borne fungus disease. It is most severe where flax is not rotated with other crops. The plants are attacked in all growth stages. Leaves at ground