ESTABLISHING OF COTTON

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PLANTING TIME

Irrigated cotton

One of the most important factors determining the planting time for cotton is soil temperature. Cotton should not be planted before the top 30 mm of the soil has maintained a temperature of 16 to 18 °C or higher for approximately 10 days. This means that the second half of October to mid-November can be considered the best planting time for all the cotton-producing areas of the Republic.

If the soil temperature is too low, germination is slow. Together with the severe incidence of seedling diseases ("damping-off") at low soil temperature, this causes a poor stand, which is one of the most important disadvantages of too early planting. With early planting there are advantages of higher yields and better fibre quality. Since red bollworm and red spider usually occur later in the season, these pests can be partially avoided.

When planting is delayed, pest control later in the season is of greater importance and early cold weather can also affect the yield and quality of the fibre.

Therefore: Plant cotton during the second half of October (that is when soil temperature reaches 16 to 18 °C).

Dryland cotton

In the Bushveld in Limpopo Province and the Lowveld in Mpumalanga as well as KwaZulu-Natal where dryland cotton is grown, soil temperature is not a limiting factor for the planting date for cotton. Even in marginal cotton areas it is possible to plant in early October.

The planting date for dryland cotton is determined by the availability of soil moisture as this ensures good germination and seedling development. Depending on suitable rainfall, planting normally takes place from October to November.

In the case of late rains where planting is delayed, and the crop is only planted after the optimum planting time, a considerable reduction in yield can be expected.

PLANTING METHOD

Various mechanical planters are available in the RSA for cotton planting. The correct choice of planter plates is important to assure dense planting of seed. Precision planters which space seeds in groups of three to four at desired intra-row spacing are also on the market. This facilitates thinning. Planting to stand is only advisable under conditions that are extremely favourable for germination and emergence. Optimum soil temperature and moisture and seedbed condition are essential.

A uniform planting depth is promoted by an even seedbed of fine structure, but it must be firm and moist. Plant the seed about 20 mm deep in clayey soil, or to a maximum of 30 mm in sandy soil for the development of a strong, healthy seedling.

To ensure a good stand, a high seeding rate is applied and plants are thinned later. At a dense seeding rate the tender seedlings help each other to emerge. With acid-delinted seed a seeding rate of 20 to 25 kg/ha is sufficient.

The best stands are obtained where the seed is lightly pressed into a firm damp seedbed and covered with loose soil. The soil above the seed should be compressed as little as possible. A light irrigation of 15 to 20 mm after planting, or during emergence will promote a good stand. If rain compacts the soil, the surface can be lightly loosened with a spike-tooth rotary cultivator before emergence.

PLANT DENSITY AND ESPACEMENT

It is most important that plant population and therefore spacing be adapted to local conditions. In this way the best use is made of the available soil moisture.

By spacing rows 1 m apart, or using skip rows it is possible to control weeds by mechanical means. Research showed an increase in yield under irrigation with an interrow spacing of 600 to 750 mm.

The cotton is planted much denser than is necessary. The surplus seedlings must therefore be removed. If thinning is delayed too long, "long-legged" plants result which carry fewer bolls and lodge easily. Too dense a stand results in excessive competition between plants. This increases the moisture stress in the plant and results in shedding of squares and young bolls. Thinning may start within 3 weeks after emergence, but must be completed when seedlings are 6 weeks old.

In the case of irrigated cotton, the stand is thinned to a spacing of 120 to 200 mm in the row. The espacement for dryland cotton will depend on local conditions. In areas with an annual rainfall of about 600 mm, good yield can be expected with

spacing of 250 mm between plants in the row. In drier areas with less than 500 mm rain per annum it is wiser to space 300 to 350 mm apart in the row. With this lower plant population, unfavourable growing conditions are better withstood, and a better boll-set per plant is achieved to compensate for the fewer plants.

THINNING

Thinning is a simple but very important action done by hand. The use of thinning sticks makes this task easy and accurate. Lengths of twigs, polythene piping, or even khaki-bush stems can be cut to the desired length. The end of the thinning stick is placed against-the first seedling of a row. All surplus seedlings along the side of the stick are removed. A seedling is left close to either end of the thinning stick. Where wider gaps occur in the seedling row, two seedlings are left together in the open spaces. The labourers soon learn to judge the spacing and dispense with the stick.

When planting by a precision planter, thinning is even simpler as only the surplus seedlings are removed. Hand-hoes are used to chop down the extra seedlings in the row of dryland cotton with a wide spacing. Thinning is therefore often combined with hand-hoeing.

On average 10 labourers can thin 2 ha cotton per day. Supervision is required to maintain the desired plant spacing and progress.

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