



agriculture & rural development

Department:
agriculture
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PROVINCE OF KWAZULU-NATAL

PRODUCTION OF COWPEAS IN KWAZULU-NATAL

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Cowpeas are an under-utilized indigenous crop, which have many advantages for both small-scale and commercial farmers. As a food for humans, cowpeas can be used as a spinach, green bean, protein-rich seed, meat or coffee substitute. For livestock, cowpeas can be used as grazing, or baled for hay or silage. Cowpeas are also an excellent cover crop and soil improver since they add nitrogen to the soil and improve soil structure.

Cowpeas grow best in hot areas and can produce a yield of 1 ton seed and 5 ton hay/ha with as little as 300 mm of rainfall. One of the biggest advantages of the cowpea is its excellent drought tolerance; this is achieved by long tap roots and the plant's being able to restrict water use by mechanisms such as turning the leaves upwards to prevent them getting too hot and closing the stomata. If the crop is grown in the Mistbelt it is more prone to disease, than if grown in drier areas. Temperatures below 90C will cause seedling wilt in cowpeas, and if the crop is past the seedling stage low night temperatures will encourage disease and inhibit growth.

Soil fertility requirements

Cowpeas are more tolerant of soil acidity than maize and have been found to produce good yields (as much as 1 ton seed/ha) at over 70% acid saturation. Phosphorus is important for seed set and should be applied at 40 kg/ha, nitrogen should be applied at 20 kg/ha (as a "pop-up" application until the rhizobia become active). Although there are naturally occurring rhizobia capable of inoculating cowpea in most South African soils, it is advisable to inoculate the seed before planting to ensure effective nitrogen fixation. Cowpeas will leave about 20-30 kg nitrogen per/ha in the soil. Potassium is not necessary, provided the soil levels are more than 80 mg/L.

Cultivars

The cultivar chosen will depend on the intended use. For grain production a determinate cultivar e.g Rhino or Glenda should be chosen. For hay use an indeterminate cultivar e.g. Chappy or Bechuana White should be selected. If the crop is to be used for dual purposes then a semi-determinate cultivar should be used as the leaves can either be grazed or picked for spinach and the seed can be harvested. Three new semi-determinate cultivars will soon to be available, namely Agri-nawa, Rusty and Encore. Length of growing season varies with type: determinate - 100 days, semi determinate - 110 days, ranking - 120 days. See Table 1 for a list of commercially available cultivars. The climate will also have an effect on the length of the growing season: the hotter it is the shorter the maturity period.

Cultural practices

Determinate varieties should be planted in 45 - 50 cm rows and 10 cm apart in the row in order to obtain a population of 200 000 - 220 000 plants/ha. Indeterminate varieties are planted further apart in 75 cm rows and 10 cm intervals in the row, giving a plant population of approximately 130 000 plants/ha. Seed should not be placed more than 5 cm deep. Planting times are November to early December for hay and mid - December to mid-January for seed.

A possible weed control strategy is to start off with a clean and weed free seedbed (use Roundup or Gramoxone two weeks before planting) followed by light cultivation four weeks after planting. Once the crop has canopied at approximately the six week stage, the weeds ought to be suppressed through lack of light. However, tall weeds like khakibos and blackjack can be a problem in the later stages of the crop if they manage to get above the canopy. If the land to be planted has a problem with these weeds it would be advisable to either hand pull them or cultivate them before the crop canopies. The only registered herbicide is triafluralin (Treflan), which is a pre-plant herbicide for the control of annual grasses and certain broad-leaf weeds.

Although it is possible to grow cowpeas with minimal inputs it is advisable to at least control the insect pests if the crop is planted for seed. Cowpeas have two major insect pests in KwaZulu-Natal and they are aphids and thrips. The thrips damage the crop at flowering and create deformed pods or stop pod formation. Aphids are important virus carriers and can infest the crop very quickly. Spraying for these pests increases the yields from roughly 200 kg/ha to 1000 kg/ha. Cowpeas are susceptible to nematodes and thus should not be planted consecutively on the same land. Cowpeas are also susceptible to viruses, and therefore good quality seed should be used as some viruses are seed borne as well as being transmitted by insect vectors.

A basic insect control program would be as follows:

- spray insecticide at flowering to avoid thrips damage
- Spray again at late pod fill, using a pyrethroid, preferably with a sticker
- if , at any stage aphids are observed, spray without delay

If the crop is grown for seed, harvest when 75-80% of the pods are dry and cut hay when 25% of the pods are coloured. The harvesting process will be determined by cultivar choice. For ranking types, harvest in windrows and thresh; for determinate types, combine straight away or pull and thresh the same day. If a combine is used, a low drum speed is required. Hand harvesting is recommended for small areas.