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AGRONOMIC PROBLEMS OF SUNFLOWER IN KENYA

In Kenya sunflower is grown in the wetter high altitude and the drier low altitude areas.

The present studies were carried out at Kabete near Nairobi, with an altitude of 1800 m, an average day temperature of 16°C during the growing season from the end of March to half September. During this period rainfall averages 521 mm investigations were mainly done with the giant types of sunflowers, which make up the local Kenyan cultivars originally grown for the bird seed trade.

The agricultural scene of Kenya is dominated by small scale farms likely to plant areas of 1/2 to 1 ha to sunflower, although the traditional production of bird seed has been done from around 3000 ha in the limited large scale farming sector. These studies have, therefore, been geared to identify production problems in the small scale farming content.

Because rainy seasons are short, particularly in central and eastern Kenya, it is of the greatest importance to "plant dry", prior to the onset of the rains. Light rains will cause superficial weed seeds to germinate. This may lead to a severe early competition with the crop. It is therefore of much importance to conduct systematic weed control. A continuous weeding operation allowed sunflower to yield 1.711 kg/ha of dry seed. Postponement of weeding to 4 weeks after the onset of the rains led to yields of 1.451 kg/ha and when weeded at 8 weeks to 1.259 kg/ha.

In agreement with Johnson (1971), and Wilkins and Swallers (1972), these data clearly show the importance of early weeding. It is concluded that weeding should be made around 2 weeks from the onset of the rains.

Weed control can be effected by hand or with weedicides. At Kabete in the latter case alachlor was successfully, applied soon after the first rain following planting of the crop.

The tall Kenyan cultivar Giant White takes around 28 weeks from sowing to harvesting at Kabete. In the sixth week the plants initiate the generative phase by formation of the inflorescence by the growing point. In the 13th week the flower bud becomes visible and flowering occurs in the 21st week. Dry matter in the crop reaches its maximum around the 24th week at a level of 24.405 kg/ha. In the 16th week the leaf area index is maximal.

No significant differences were observed between applications of N (at 75 and 150 kg/ha), of P_2O_5 (at 70 and 140 kg/ha) and K_2O (at 35 and 70 kg/ha) and check plots without fertilizer applications (Olumber 1974). On the fertile Kikuyu loams at Kabete, of volcanic origin, fertilizer application may not be necessary during the first few years from opening new land. Elsewhere in Kenya a favourable affect of P_2O_5 has been shown up to levels of 120 kg P_2O_5 /ha (Ravagnan, 1970).

A simultaneous observation on the moisture content of the seeds, and on the occurrence of loss of seeds through bird attack and shattering, has shown a close relationship between these factors.

During the initial stage of their formation seeds have around 80% moisture. The heads maintained this moisture content until the 27th week, whilst in the seeds it drops to 32%. Subsequently when moisture content in the seeds further declines, crop losses become a real danger due to shattering and bird attack.

Observations on cv "Giant White" have shown that no obvious loss in dry matter occurs in other plant parts during the rapid build-up of dry matter in the seed (weeks 24 and 25). Defoliation experiments on cv Giant White have shown that removal of leaves (at onset of flowering) from the lower half of the plants had

no influence on the seed yield. However, removal of leaves from the top quarter of the plant was of the greatest importance for dry matter formation in the seed.

So early defoliation (1-3 weeks after the onset of flowering) considerably reduced seed yield. Removal of leaves carried out 4 weeks after flowering did not negatively affect the yield.

Thus today sunflower culture in Kenya is based on local cultivars with a long vegetation period and low oil yield (600-750 kg/ha). Our research showed it possible to select plants with a shorter vegetation period and higher seed yields from local populations, which will help produce seeds for the oil industry and not just for feeding birds.

References

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