

## Short Communications

## Response of Safflower to Different Nitrogen Levels in United Arab Emirates

Y M Ibrahim

Faculty of Agricultural Sciences, United Arab Emirates University, Al-Ain

Safflower (*Carthamus tinctorius* L.) is used for the production of vegetable oil, protein meal, and in industry. The crop can be grown successfully in the arid United Arab Emirates. Application of nitrogen was found to increase yield and improve growth (Rowe 1981, Ahmed *et al.* 1985, Zaman & Das 1990). Literature on the response of safflower to N in this area is lacking. Therefore, a study was carried out to find the best level of N that maximizes yield under Emirates condition.

Field experiment was conducted at Al-Oha, Al-Ain, UAE (Latitude 24° 15', Longitude 55° 45', and Altitude 301.6 m above sea level) in a sandy loam soil using Giza I cultivar. Five levels of N (0, 40, 80, 120 and 160 kg N ha<sup>-1</sup>) were tried in a Randomized complete block design with four replications, during 1990 and 1991.

The crop was sown on 11 and 18 November in respective years with a seed rate of 30 kg ha<sup>-1</sup> in rows 60 cm apart. Irrigation was performed with a drip method every other day till the soil reached the field capacity. Fertilization with other elements and other cultural practices were performed as practical in the area.

Application of N showed significant effect on growth, yield, and oil content of the crop in both seasons. Seed yield, stalk yield, number of capsules plant<sup>-1</sup> and grain weight plant<sup>-1</sup> were significantly increased by the increase in N level at 120 kg ha<sup>-1</sup> in both seasons. However, plant height was not affected in 1990, which agreed with Mane and Narkhede (1982b) findings, while it was significantly increased with high level of N in 1991 (Table 1). The harvest index was not consistent at the 1990 season (Table 1), but in 1991 the harvest index did not increase at lower levels of applied N (40 and 80 kg ha<sup>-1</sup>) compared to control (Table 2). This might be due to the fact that lower N levels increased the vegetative growth but not seed production.

Oil content was increased significantly with increasing N application reaching the maximum at 120 kg N ha<sup>-1</sup> (29.7% in 1990 and 24.6% in 1991).

However, at the higher dose of 160 kg N ha<sup>-1</sup>, the oil content was lower than other treatment including the control (Table 1). On the other hand, the oil content was higher for the season 1990 than 1991. The increase in oil content with N level contrasted El-Nakhalawy (1991) finding that high N rate increased seed protein content and reduced oil content. At the same time, it agreed with the reduction in oil content at high N-level (160 kg N ha<sup>-1</sup>). This suggested that EL-Nakhalawy might have used levels of N higher than 120 kg N ha<sup>-1</sup>.

In conclusion, N is the most important nutrient influencing the plant growth. Increasing N levels significantly increased yield, yield components and oil content was higher at 120 kg N ha<sup>-1</sup> during both seasons. Plant growth and yield were better in 1991 than 1990 due to better cultural practices. However, the content of the oil was higher in 1990 season.

## References

- Ahmed Z, Medekhar S & Mahmmmed S 1985 Response of safflower to nitrogen and phosphorus. *Indian Journal of Agronomy* 30 128-130
- EL-Nakhalawy FS 1991 Response of safflower to different levels of nitrogen, phosphorus and potassium. *Acta Agronomica* 40 (1-2) 87-92
- Mane VS & Narkhede BN 1982a Effect of spacing and fertilizer application on yield contributory characters of safflower (*Carthamus tinctorius* L.) Variety N-62-8. *Madras Agriculture Journal* 3 180-184
- Rowe AG 1981 Alternative crops. 3 : Safflower. *Zimbabwe Agriculture Journal* 78 (1) : 35-40
- Zaman A & Das PK 1990 Growth and yield performance of safflower under different nitrogen levels in semiarid tropics. *Annals of Arid Zone* 29(2) 141-143
- Zaman A & Das PK 1991 Effect of irrigation and nitrogen on quality of safflower. *Indian Journal of Agronomy* 36 (2) 177-179

