https://doi.org/10.29321/MAJ.10.A02632

Madras agric. J 70. (6): 375—376 June 1983

EFFECT OF PRE-SOAKING OF SUNFLOWER SEEDS IN MICRONUTRIENTS ON SEED AND OIL YIELD

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Field experiments involving the presoaking of sunflower seeds for 12 hours in water 0.5, 1.0 and 2.0 per cent soultions of zinc sulphate and manganous sulphate and 0.5 per cent sodium molybdate were conducted at the Agricultural Research Station, Bhavanisagar during1981-82 in soils low in available micronutrients. Pre-soaking the seeds in 2.0 percent Zn SO4 for 12 hours gave the highest seed and oil yield per hectare.

Of the oilseed crops, sunflower comes up well under varying agroclimatic conditions. In the recent years the scientific interest on sunflower production has increased owing to its high potentialities. One constraint that has a profound influence on the yield of sunflower is micronutrient deficiency in many of the soils. Beneficial effects of micronutrients in increasing the seed yield in sunflower have been reported by several workers (Soboleva, 1959; Channal 1979; Semikhenko *et. al.* 1975). However Studies on the micronutrient application to sunflower are few in India. To investigate the effect of pre-soaking of sunflower seeds in micronutrient solutions on the seed and oil yield of sunflower, field experiments were conducted at the Agricultural Research Station, Bhavanisagar.

MATERIAL AND METHODS

The expriments were conducted during Kharif 1981, and Summer, 1982 under irrigated conditions. The soil of the experimental field was red sandy loam in texture with near neutral pH (7.9), low available N (183 kg/ha), P (4.0 kg/ha) and K (213kg/ha) contents. The D. T. P. A. (Diethylene triamine penta acetic acid) extractable micronutrient contents in the soil were: Zn 1.1 ppm (low) Cu 0.4 ppm (low), Fe 3.0ppm (low) and Mn 4.0ppm. Sunflower variety Morden was the test crop The treatments consisted of pre-soaking of sunflower seeds for 12 hours in (1) water (control) (2) 0.5% solution of Zn SO4 (3) 1.0% solution of Zn SO4 (4) 2.0% solution of Zn SO4 (5) 0.5% solution of Mn SO4, (6) 1.0% solution of Mn SO4, (7) 2.0% solution of Mn SO4 and (8) 0.5% solution of sodium molybdate. Randomised blocks design was employed and each treatment was replicated four times. All treatments re-

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ceived recommended doses of NPK Sunflower seeds soaked in treatment solutions were dibbled at the rate of 3-4 per hill adopting a spacing of 45 cm 30 cm and later thinned to single plant at third leaf stage. Routine cultural operations were followed and the seeds were harvested at maturity. Treatment-wise seed yields were recorded. Seed samples from each treatment were analysed for their oil content as per the conventional methods and from this the per hectare oil production was computed.

RESULTS AND DISCUSSION

Seed yield was the highest in both the seasons when the seeds were presoaked in 2% Zn SO_4 soultion In the first season, seed soaking in 1% solutions of Zn SO4 and Mn SO4 and 0.5% sodium molybdate was found to be on par in yield with soaking in 2 / Zn SO4 solution alone. In Kharif, 1981, the highest yield obtained was 1195kg/ha while in Summer, 1982. it was 1531 kg/ha. Similar yield increase as a result of Zn SO4 sparying to sunflower was reported by Dranicharikova (1977) and this was attributed to the activation of several physiological and biochemical processes in plants by zinc. In the present investigation, the increased seed yield under two per cent Zn SO4 might be due to enhanced seed filling as could be seen from the highest 1000 grain weight under this treatment.

Different micronutirent treatments failed to influence the oil content in both the seasons. This might be due to the fact that in sunflower, the oil content is generally influenced more by the environmental factors than by fertilizer treatments (Marton and Fekete, 1975). This inference could be further confirmed buy the fact that the seed yield and oil content were more in Summer than in Kharif season (Table 1). Though significant differences were not found in the case of oil content of seeds among the various micronutrient treatments, the per hectare oil yield was the highest in both the seasons under the treatment of 2% Zn SO4 soaking. This increased oil yield was due to increased seed yield.

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Table. Effect of seed soaking in micronutrient solution in sunflower.

Treatments	*Kharif 1982*		*Summer 1982*	
	Seed yield (kg/ha)	Oil yield (kg/ha)	Seed yield (kg/ha)	Oil yield (kg/ha)
Water soaking	1054	446	1252	552
0.5% Zn SO4	1079	446	1280	572
1.0% Zn SO4	1181	471	1422	633
2.0% Zn SO4	1195	488	1531	675
0.5% Mn SO4	1032	418	1237	559
1.0% Mn SO4	1160	482	1307	578
2.0% Mn SO4	1100	432	1314	597
0.5% Sodium molybdate	1144	462	1311	602
C. D (P=0.05)	57.4	25.0	102	56