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Seed Quality of Soybean Varieties in Sorghum Based Cropping Systems *

S. JEYARAMAN[1] and Y. B. MORACHAN[2]

Singh et al. (1974) tried phosphorus level at 0, 15, 30 kg P_2O_5 and 0, 30 and 60 kg N per ha, and found both the phosphorus levels increased the Lipseed oil content considerably over control while nitrogen showed no response. The objective of the present study was to investigate the seed quaility of soybean varieties in sorghum based cropping systems.

MATERIAL AND METHODS

The experiment was conducted at Department of Agronomy, Agricultural College and Research Institute, Coimbatore during the South West monsoon season, 1978. Five soybeen varieties namely UGM_{20}, M_2, M_3, Cul 27/8 and Punjab-1 were tested. Three systems of cropping viz., uniform row with Co. 9 lab-lab (C_1); soybean varieties (C_2), and paired row system with soybean varieties (C_3) were adopted. Two levels of nitrogen 60 and 80 kg (N_1 and N_2) were imposed. A common dose of 60 kg P_2O_5 per ha and 45 kg K_2O per ha was applied basally in all treatments. The experiment was carried out in split plot design with three replications.

Seed protein per cent was calculated by multiplying the N content of grain with the factor 6.25 (Humphries, 1956). The seed oil was extracted from dried ground powder of soybean seeds with solvent ether extract in a soxhlet apparatus by following the standard method (A. O. A. C., 1960).

RESULTS AND DISCUSSION

In arriving at increased protein content of 1.34 per cent at 80 kg N per ha, the mean difference between two levels of nitrogen tried. The protein content of the soybean varieties is of the following increasing order UGM_{20}, Cul 27/8, M_3, M_2 an. Punjab-1. The systems of planting, however, did not influence the protein content in presence of the nitrogen levels or the varieties. This increase in protein content may be attributed to the uptake of higher nitrogen at 80 kg N per ha levels as evidenced in the results presented in Table I. This is in agreement with the findings of earlier reporters (Singh and Singh 1968).

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1, 2. Department of Agronomy, Agronomy, Agricultural College and Research Institute, Coimbatore 641 003.

The seed oil content was also significantly influenced by the levels of nitrogen and the mean increase of 1.13 per cent could be seen from the results presented in the Table II. The reason for the increase in the oil content could be attributed to the increased uptake of phosphorus at 80 kg N per ha level which indirectly influences the oil content. This is again also in agreement with the earliar reports by Kesavan and Morachan (1973) who have reported the increased oil percentage in soybeans when phosphorus in applied.

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TABLE I Per cent Seed Protein of Soybean Varieties

Cropping systems N levels Varieties	C_a 60 kg N	C_a 80 kg N	C_a Mean	C_b 60 kg N	C_b 30 kg N	C_b Mean	Mean	N levels varieties	60 kg N	80 kg N	Mean
UGM$_{2\,0}$	42.05	43.48	42.71	42.09	43.44	42.76	42.76	UGM$_{2\,0}$	42.07	43.41	42.74
M_2	42.09	43.53	42.81	42.09	43.36	42.72	42.77	M_2	42.09	43.45	42.77
M_3	42.10	43.46	42.78	42.05	43.40	42.72	42.76	M_3	42.08	43.44	42.76
Cul 27/8	42.09	43.45	42.77	42.03	42.46	42.71	42.75	Cul 27/8	42.06	43.43	42.75
Punjab-1	42.14	43.36	42.75	42.16	43.45	42.81	42.78	Punjab-1	42.15	43.41	42.78
Mean	42.10	43.44	42.77	42.09	43.41	42.75	42.76	Mean	42.09	43.43	42.76

Source	Harvesting stage SE$_d$	CD
Varieties	0 72	N. S.
Cropping systems	0.04	N. S.
V × C	0.10	N. S.
N	0.07	0.15
N at V	0.16	N. S.
V at N	0.13	N. S.
N at cropping systems	0.10	N. S.
Cropping systems at N	0.08	N. S.

TABLE II Per cent Seed Oil of Soybeans

Cropping Systems / N levels / Varieties	C_2 60 kg N	C_2 80 kg N	C_2 Mean	C_3 60 kg N	C_3 80 kg N	C_3 Mean	Mean	N levels / Varieties	60 kg N	80 kg N	Mean
UGM_{2e}	20.26	21.25	20.75	20.28	21.37	20.83	20.79	UGM_{2e}	20.28	21.31	20.79
M_2	20.21	21.34	20.77	20.28	21.42	20.85	20.81	M_2	20.25	21.39	20.82
M_3	20.27	21.42	20.85	20.28	21.45	20.86	20.86	M_3	20.28	21.44	20.86
Cul 27/8	20.29	21.43	20.86	20.27	21.38	20.82	20.84	Cul 27/8	20.28	21.41	20.84
Punjab-1	20.28	21.44	20.86	20.28	21.44	20.86	20.86	Punjab-1	20.28	21.44	20.86
Mean	20.27	21.38	20.82	20.28	21.42	20.85	20.84	Mean	20.27	21.40	20.84

Source	Harvesting stage SE d	CD
Varieties	0.20	N. S.
Cropping systems	0.13	N. S.
V × C	0.09	N. S.
N	0.04	0.08
N at V	0.29	N. S.
V at N	0.29	N. S.
N at cropping system	0.18	N. S.
Cropping system at N	0.18	N. S.