Table 4. Fertilizer recommendation for yield targets in groundnut - sorghum sequence based on initial soil test values of N, P and K

Yield targest q ha^{-1}	Fertilizer dose kg ha^{-1}			Post harvest soil analysis kg ha^{-1}			Output / input ratio
	N	P_2O_5	K_2O	N	P	K	
i) Groundnut - first season without FC							
20	-	-	-	289	17	292	-
25	37	13	49	327	13	298	31.2
30	73	25	76	366	5	304	20.4
ii) Sorghum - second season							
45	50	22	116	319	21	302	14.5
50	65	25	143	329	20	304	13.0
55	80	29	170	338	20	305	11.9

(Initial fertility : $KMnO_4$ - N 199, Olsen - p 27, NH_4OAc - K 268 Kg ha^{-1})

tested for difference. From the t.test values, it was confirmed that the variations were not significant, so the derived multiple linear regression equations can be utilised for predicting the post - harvest soil test value or the presowing soil test value for the next crop of sorghum in the sequence.

Thus by following the fertiliser prescription procedure appropriate fertiliser recommendations for specific yield targets in the cropping sequence of groundnut - sorghum could be prescribed.

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RELATIVE VIABILITY AND VIGOUR OF DIFFERENT GENOTYPES OF SOYBEAN (*Glycine max* (L.) Merril) DURING STORAGE.

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ABSTRACT

Seed viability and vigour studies with the twenty seven genotypes of soybean brought out the genotypic differences for germination potential, root and shoot length and dry matter production of the seedlings in storage. Large seeds retained by 15/64" (aperture width 6.00 mm) sieve maintained the viability and vigour during eight months storage period with minimum loss compared to medium and small seeds retained by 14/64" (aperture width 5.60 mm) and 13/64" (aperture width 5.20 mm) sieves.

Variation in loss of viability and vigour during storage among species (Agrawal, 1976) and varieties within the species (Agarwal, 1978) has been reported in several crops including soy bean (Sharma *et al.*, 1980: Banumurthy and Gupta, 1981: Minor and Paschal, 1982). Studies were carried out to determine the relative viability and vigour with different soybean genotypes in a

Table 1. Germination and Root Length of Eight-Month-Old seed of soybean Genotypes

Grade	Germination				Root length (cm)			
Genotypes	Large	Medium	Small	Mean	Large	Medium	Small	Mean
UGM 21	95 (77.10)	90 (71.58)	80 (63.45)	88 (70.71)	21.6	20.1	19.0	20.2
UGM 35	95 (77.10)	85 (67.22)	80 (63.45)	87 (69.26)	22.3	21.1	20.3	21.2
Co 1	95 (77.10)	85 (67.22)	70 (56.80)	83 (67.04)	22.0	20.6	19.3	20.6
JB 72-185	95 (77.10)	80 (63.45)	70 (56.80)	82 (65.78)	21.3	20.0	19.4	20.2
UGM 36	90 (71.58)	80 (63.45)	70 (56.80)	80 (63.94)	21.2	20.7	20.3	20.7
KHSB 2	90 (71.58)	80 (63.45)	70 (56.80)	80 (63.94)	21.6	20.0	18.4	20.0
KB 13	90 (71.58)	85 (67.22)	60 (50.75)	78 (63.18)	19.7	18,4	17.5	18.5
UGM 34	85 (67.22)	85 (67.22)	65 (53.75)	78 (62.73)	19.0	19.5	18.3	18.9
KB 16	90 (71.58)	80 (63.45)	60 (50.75)	77 (61.93)	20.4	18.3	18.4	19.0
UGM 32	90 (71.58)	85 (67.25)	50 (45.00)	75 (61.28)	21.0	19.5	18.9	19.8
UGM 30	80 (63.45)	80 (63.45)	65 (53.75)	75 (50.22)	20.3	19.3	17.8	19.1
JB 76-259	80 (63.45)	75 (60.00)	60 (50.75)	72 (58.07)	20.9	18.2	17.2	18.8
LBS 2	90 (71.58)	65 (53.75)	55 (47.90)	70 (57.74)	20.3	19.2	18.4	19.3
JS 70-11	80 (63.45)	75 (60.00)	55 (47.90)	70 (57.12)	19.1	17.8	17.5	18.1
UGM 33	75 (60.00)	55 (47.90)	55 (47.90)	62 (51.93)	19.6	18.2	16.0	17.9
UGM 29	70 (56.80)	65 (53.75)	45 (42.15)	60 (50.90)	20.4	17.1	16.6	18.0
DS 17-2	80 (63.45)	65 (53.75)	30 (33.21)	58 (50.14)	20.2	18.4	17.2	18.6
KHSB 3	65 (53.75)	60 (50.75)	45 (42.15)	57 (48.88)	20.4	17.7	15.5	17.9
KHSB 5	60 (50.75)	55 (47.90)	45 (42.15)	53 (46.93)	20.0	17.6	15.7	17.8
KB 17	60 (50.75)	55 (47.90)	45 (42.15)	53 (46.93)	20.5	17.8	15.7	18.0
Macs 92	80 (63.45)	50 (45.00)	30 (33.21)	53 (47.22)	19.1	18.5	16.3	18.0
KHSB 6	80 (63.45)	60 (50.75)	15 (22.77)	52 (45.66)	19.2	18.2	17.9	18.4
Macs 101	60 (50.75)	45 (42.15)	40 (39.24)	48 (44.05)	19.0	17.6	15.9	17.5
RP 75-303	50 (45.00)	35 (36.30)	30 (33.21)	38 (38.17)	18.7	16.6	14.7	16.7
VLS-1	40 (39.24)	35 (36.36)	30 (33.21)	35 (36.25)	18.1	16.2	14.9	16.4
25915	55 (47.90)	25 (30.00)	30 (33.21)	30 (32.12)	18.5	16.2	14.7	16.5
UGM 24	20 (26.62)	20 (26.62)	15 (22.77)	18 (25.34)	17.6	16.0	13.5	15.7
MEAN	70 (61.75)	65 (54.36)	50 (44.71)		20 0	18.5	17.2	
CD (P=0.05)	Genotype (8.048)**	Grade (2.683)**	Genotype (1.036)**	Grade (0.345)**				

Table 2. Shoot length and dry matter production of eight-month-old seed of soybean genotypes

Grade	Shoot length (cm)				Dry matter production (mg/seedling)			
Genotypes	Large	Medium	Small	Mean	Large	Medium	Small	Mean
UGM 21	26.7	27.2	22.4	25.4	97.2	75.0	66.9	79.7
UGM 35	28.0	27.0	25.8	26.9	100.1	84.1	75.2	86.5
CO 1	29.5	24.5	23.9	25.9	96.0	76.5	51.0	74.5
JS 72-185	28.6	27.8	22.6	26.3	98.3	71.1	50.2	73.2
UGM 36	29.9	24.0	26.7	26.9	91.7	70.3	57.1	73.0
KHSB 2	26.5	24.0	23.3	24.6	92.8	65.0	50.4	69.4
KB 13	24.2	23.4	20.4	22.6	85.4	70.1	55.3	70.3
UGM 34	24.7	23.7	20.4	22.9	79.1	68.2	50.4	65.9
KB 16	23.1	22.3	20.0	21.8	87.4	62.2	56.1	68.6
UGM 32	24.9	23.4	20.2	22.8	90.2	65.5	54.8	70.2
UGM 30	24.1	21.3	19.0	21.5	82.8	56.5	56.5	65.3
JS 76-259	23.7	21.5	18.9	21.4	70.2	60.9	46.3	59.1
LBS 2	24.3	23.9	21.9	23.4	80.1	67.2	50.8	66.0
JS 70-11	24.7	20.9	19.7	21.7	78.4	59.3	48.0	61.9
UGM 33	22.4	20.0	18.4	20.2	78.2	63.5	46.7	62.8
UGM 29	22.9	20.4	18.5	20.6	76.3	60.2	44.0	60.2
DS 17-2	22.8	21.1	19.3	21.1	74.2	63.7	47.2	61.7
KHSB 3	23.0	19.5	18.5	20.3	70.2	63.5	39.3	57.9
KHSB 5	21.8	19.9	17.1	19.6	65.0	65.0	44.2	58.1
KB 17	21.4	18.3	17.9	19.2	67.2	59.1	40.5	55.6
Macs 92	22.2	20.9	18.9	20.7	77.4	64.9	42.8	61.7
KHSB 6	24.2	21.7	19.5	21.8	78.0	65.2	50.0	64.4
Macs 101	21.2	19.8	18.3	19.8	65.2	54.9	34.8	51.7
PR 75-303	20.7	19.5	15.6	18.6	53.2	50.1	30.4	44.6
VLS 1	20.9	18.0	16.2	18.4	40.1	80.2	25.3	31.9
25915	20.1	19.5	18.0	19.2	70.5	50.7	25.0	48.7
UGM 24	20.0	18.6	14.8	17.8	30.0	34.8	20.2	28.3
MEAN	23.9	21.9	19.8		76.9	62.1	46.7	
	Genotype		Grade		Genotype		Grade	
CD (P=0.05)	1.565**		0.522**		9.015**		3.004**	

germplasm collection during storage under ambient conditions of Coimbatore, Tamil Nadu.

MATERIALS AND METHOS

Seeds of 27 genotypes of soybean produced under identical conditions were pre-cleaned, size graded using 15/64" (large), 14/64" (medium) and 13/63" (small) size round perforated metal sieves. The graded seeds were dried to 7-8 per cent moisture content, slurry treated with captan 75% (W.P.) and DDT 50% (W.P.) at 2 g and 200 mg respectively dissolved in 5 ml of water, per kg of seed and after air drying the seeds were stored, in cloth bags under ambient conditions (mean temp. 25 ± 0.7 ^{0}C and relative humidity 64 ± 3%) for eight months. Seed samples drawn initially and at the end of the storage period were analysed for germination in roll towel method using 4 x 100 seeds (ISTA, 1985). The root and shoot length measurements were taken from all normal seedlings, and expressed in cm. The seedlings after air drying, were oven dried at 85^{0} C for 24 h for dry weight estimation and expressed in mg/seedling.

RESULTS AND DISCUSSION

The germination values ranged from 95 to 97% in harvest fresh seeds, for the different genotypes. Germinability of eight-month- old seed differed significantly among genotypes and size grades (Table 1). Genotypes UGM 21, UGM 35, CO 1, JS 72-185, UGM 36 and KHSB 2 maintained their

viability in storage with germination of 80% and above, while UGM 24 recorded only 18% germination. The percentage germination ranged from 30 to 78 in other genotypes. Burgess (1938) in soybean, observed significant differences among varieties, for viability and vigour in storage. Large size seeds (76%) recorded significantly higher germination percentage than the medium (65%) and small size seeds (50%). The association between seed size and storability of seeds has been well documented by Verma and Gupta (1975) in soybean and according to Ovcharov (1969), large and small seed differed in their germination capacity after storage.

The root and shoot length measurements and dry matter production of seedlings from eight months old seed exhibited significant variations among genotypes and size grades (Tables 1, 2). Among the genotypes, UGM 35 recorded the maximum lengths of root and shoot and dry matter production of seedlings after eight months of storage while UGM 24 recorded the minimum. Seed vigour has been defined as the inherent ability of the seed to produce a vigourous seedlings (Hydecker, 1972). The root and shoot length and dry matter production of seedlings were higher in large seeds than in medium and smaller seeds. From the results of the present study, it is suggested that the genotypic configuration and the seed size differences cause variations in seed viability and vigour during storage.

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RUN OFF PARAMETERS - A COMPARATIVE STUDY OF TWO RIVER BASINS

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ABSTRACT

The morphological and climatic factors affecting runoff were studied using correlation and regression methods during 1989-'90. Two river basins of Kerala viz. west flowing Chaliyar and east flowing Kabbani were selected for the analysis. They were divided into sub-basins, each containing a river gauge station. Drainage area length and order of the main stream, maximum straight length of the sub-basin and rainfall were the chief factors influencing streamflow. Non-monsoon discharge was only a small fraction of the total discharge. Major portion of the monthly streamflow was from monsoon rainfall of the same month.

Rivers have a significant role in the geomorphological processes in human use. If the morphological balance of the river basin is disturbed the distributaries of all orders are affected, which, in turn affects the run off. A comparative study of the climatic and morphological parameters of Chaliyar and Kabbani river basins was conducted at Kelappaji College of Agricultural Engineering and Technology, Tavanur during 1989-'90. The data were analysed at the