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Effect of Preceding Crops in Economising the Fertilizer Requirement of Succeeding Fodder Soughum Crop

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Field experiments were conducted during 1985 and 1986 at College Agronomy Farm, Gujarat Agricultural University, Anand Campus, Anand on a sandy loam soil with 7.5 pH, low in total N, medium in available P_2O_5 and high in K_2O. Nine treatments (Table 1) consisting of five sole crops and four inter-cropping systems with pigenopea as the base crop in 1:2 ratio were laid out as main plot treatments and four levels of fer -tilizer (Table 1) were applied to succeeding fodder sorghum crop as sub-plot treatments replicated four times. The *kharif* crops were sown on 20th July 1985. The fodder sorghum CV. S-1049 was sown as 10th April 1986 and harvested on 12th June 1986. The data on pigeonpea equivalent were worked out for all the treatments laid out in *kharif* season and subjected to statistical analysis as presented in Table 1 along with green and dry fodder yields of sorghum as affected by different treatments.

The data (Table 1) on pigeonpea equivalent yield indicated that the yield differences of pigeonpea equivalent due to different treatments were significant. All the intercropping systems produced higher pigeonpea equivalent yields than those obtained due to the respective sole crop. However, they failed to produce significantly higher pigeonpea equivalent yield than that of sole pigeonpea except pigeonpea intercropping with groundnut and pearlmillet; the pigeonpea + groundnut system recorded significantly the highest pigeonpea equivalent(47.5 kg/ha). Sorghum as sole crop had produced the lowest pigeonpea equivalent (4.28 q/ha). Similar results were obtained by Reddy *et al.* (1979) and Singh *et al.* (1981).

The data on fodder yield of sorghum indicated that pigeonpea inter-cropped with groundnut gave significantly the highest green fodder yield but it was at par with that due to sole groundnut. The yield differences of dry fodder due to various treatments were, however, not significant even though pigeonpea intercropped with groundnut tended to produce higher dry fodder yield.

Application of fertilizer significantly increased the dry as well as green fodder yields of sorghum over no fertilizer. However, the yields differences due to different fertilizer application treatments were not significant. Thus the data indicated that the fertilizer requirement of fodder sorghum can be economised by 50 per cent by adjusting pegeonpea groundnut cropping system. The interaction effect of cropping systems and fertilizer levels was not significant in respect of green and dry fodder yields of sorghum.

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TABLE 1

Effect of preceding crops and fertilization on the yield of succeeding fodder sorghum

Treatments	*Grain yield q/ha*		*Pigeonpea equivalent q/ha*	*Fodder sorghum yield q/ha*	
	Pigeonpea	*Sole/ inter Crop*		*Green*	*Dry*
Preceding crops					
Pigeonpea (T-15-15) Sole	28.27	—	28.27	99.31	47.50
Pearlmillet (GHB-27) Sole	—	31.77	22.28	105.57	52.10
Sorghum (GSH-1) Sole	—	10.00	4.28	98.50	46.14
Groundnut (JL-24) Sole	—	27.22	35.00	116.18	56.52
Sesamum (Gujarat T-1) Sole	—	5.67	12.74	102.34	51.27
Pigeonpea + Pearlmillet	15.72	33.77	38.88	103.33	49.04
Pigeonpea + Sorghum	12.78	12.25	18.03	103.21	52.10
Pigeonpea + Groundnut	20.83	20.72	47.51	120.39	57.98
Pigeonpea + Sesamum	20.96	4.80	30.43	100.54	51.42
S. Em. ±	—	—	2.48	4.88	3.22
C. D. at 5%	—	—	7.24	14.25	NS
C. V. %	—	—	19.66	18.52	25.02

Fertilizer levels (kg/ha)

N	P_2O_5	K_2O			
0	0	0	(Control)	87.11	42.31
40	20	0	(50% of RD)	109.21	52.76
60	30	0	(75% of RD)	111.45	55.40
80	40	0	(RD)	114.18	55.50
S. Em. ±				2.09	1.14
C. D. at 5%				5.89	3.20
C. V. %				11.89	13.21

RD = Recommended dose NS = Not significant

Pigeonpea equivalent has been worked out for all the treatments by converting the economic yield of inter-crops/sole crop in terms of pigeonpea on the basis of marketable price ratio. The rates of pigeonpea, pearlmillet, sorghum, groundnut and sesamum have been taken Rs. 350, 250, 150, 450 and 800 per quintal respectively.

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