

## EFFECT OF INTERCROPPING OF COWPEA IN SORGHUM ON PRODUCTION OF RATOON SORGHUM

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An agronomic investigation to study the production of sorghum (*Sorghum bicolor* L. Moench) CSH-5 ratoon as affected by the preceding crop of *kharif* sorghum with planting patterns and intercropped with cowpea (*Vigna sinensis* L.) C-152 for grain and fodder under irrigated conditions, was conducted during the *rabi* seasons of 1979-80 and 1980-81 at the Instructional Farm, Mahatma Phule Agricultural University, Rahuri. There was no difference in grain and fodder yield and grain to fodder ratio of sorghum ratoon due to residual effect of planting patterns, intercropping of cowpea in *kharif* sorghum and their interactions.

Recently developed sorghum hybrids have a good ratooning ability (Mandal *et al.*, 1965; Shanmugasundaram *et al.*, 1967; Bapat and Choudhari, 1976; Duccan, 1979 and Shinde *et al.*, 1979). Ratooning of sorghum in *rabi* is becoming popular, particularly among the cultivators from the assured rainfall and irrigated areas due to its several advantages. Intercropping in sorghum is also beneficial over solid sorghum. It is one of the important tools for stabilizing production, particularly under rainfed conditions. To accommodate intercrops successfully, the plant geometry of sorghum is changed without affecting plant population. It is, therefore, essential to know the effects of various planting patterns of sorghum with intercrop during *kharif* on the succeeding ratoon sorghum. With these considerations in view the present experiment was planned and conducted at the Instructional Farm, Mahatma

Phule Agricultural University, Rahuri during *rabi* seasons.

### MATERIALS AND METHODS

The studies were conducted at the Instructional Farm, Mahatma Phule Agricultural University, Rahuri during *rabi* seasons of 1979-80 and 1980-81. The soil was 1.5m in depth, clayey, medium for total N (0.051%) and available phosphate (21.95 kg/ha) and rich in available potash (415.15 kg/ha) with pH of 8.00. The previous nine treatment combinations of three planting patterns of sorghum viz., normal (45 cm X 15 cm), paired (30-60 cm X 15 cm) and skipped row (45-90 cm X 10 cm) with intercropping of cowpea for grain and fodder and no intercrop. The experiment was laid out in factorial randomised block design with six replications and with gross and net plot sizes of 6.75 m X 6.00 m and 4.05 m X 5.10 m, respectively. Out of these six

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Table 1 : Mean grain and fodder yield (q/ha) and grain to fodder ratio of ratoon sorghum as affected by various treatments

Treatment	Grain yield (q/ha)		Fodder yield (q/ha)		Grain to fodder ratio	
	1979-80	1980-81	1979-80	1980-81	1979-80	1980-81
<b>A. Planting Patterns</b>						
1. Normal	16.44	23.75	36.71	53.45	0.44	0.44
2. Paired	13.50	21.24	36.98	55.45	0.36	0.38
3. Strip	11.14	19.15	37.92	55.89	0.30	0.34
S.E. $\pm$	2.10	3.83	2.20	1.87	0.05	0.04
C.D. at 5%	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
<b>B. Intercrops</b>						
1. No intercrops						
2. Cowpea (grain)						
3. Cowpea (fodder)	12.56	20.68	35.50	54.17	0.35	0.38
S.E. $\pm$	2.10	3.83	2.20	1.87	0.05	0.04
C.D. at 5%	N.S.	N.S.	N.S.	N.S.	N.S.	N.S.
General mean	13.70	21.38	37.21	54.93	0.36	0.38

N.S. = Not significant.

replications the ratoon sorghum was maintained on three replications during *rabi* seasons of 1979-80 and 1980-81

## RESULTS AND DISCUSSION

The data on mean grain and fodder yield and grain to fodder ratio of ratoon sorghum are presented in Table 1. From this data it would be seen that the grain and fodder yields and grain to fodder ratio of ratoon sorghum were more during 1980-81 than that in 1979-80. This was mainly because, during 1979-80 the general performance of ratoon was poor due to late harvest of *kharif*

sorghum because of heavy and prolonged rains at maturity.

### Effect of planting patterns :-

The data regarding mean yield of grain and fodder and grain to fodder ratio of ratoon sorghum in *rabi* would show that the differences were not significant due to planting patterns of *kharif* sorghum during both the years. All the growth and yield contributing characters of ratoon (data not given) were also not influenced by the planting patterns. This might have finally reflected on the yield of ratoon. Thus, it

could be said that there is no effect of planting pattern of *kharif* sorghum on the performance of its ratoon in *rabi*. These findings, in general, are in agreement with previous findings of Anonymous (1980 and 1980a) and Anonymous (1981a and 1981 b). However, it was observed that ratoon raised from paired planting, increase the grain yield of ratoon at Jalgaon (Anonymous 1981).

#### *Effect of intercrops :*

The grain and fodder yield and grain to fodder ratio of ratoon sorghum was also not influenced significantly by intercrop during both the years. The results of present investigation brought out that, in general, there was no adverse effect of intercropping of cowpea in *kharif* sorghum on growth (data not presented) and yield of ratoon. Kanakaraj and Palaniappan (1979) also reported that the grain and straw yield of ratoon sorghum were not influenced significantly by intercropping of cowpea (C-152). Similarly, intercropping of groundnut and cowpea in *kharif* sorghum did not affect the ratoon yield (Anonymous, 1980, 1981a and 1981b). However, intercropping of *tur* in *kharif* sorghum reduce the yield of ratoon as compared to no intercrop (Anonymous, 1980a). From these studies it could also be said that intercropping of short duration legumes may not affect the yield of ratoon.

#### *Effect of interactions of planting patterns x intercrops :*

The effect of interactions of planting patterns of *kharif* sorghum and intercrop on grain and fodder yield and

grain to fodder ratio of ratoon were found to be absent during both the years. Thus, it could be said from these studies that, ratoon can be raised from any combination of the above planting patterns and intercrops. The interaction effects of planting patterns and intercrop of cowpea and groundnut were also not observed by other workers on the yield of ratoon (Anonymous, 1981 a and 1981b).

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