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Impact of life saving irrigation on yield of *rabi* sorghum [*Sorghum bicolor* (L.)]

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ABSTRACT

The Operational Research Project is functioning at Zonal Agricultural Research Station, Solapur with one of the objective to test each component of the improved technology under farmers management condition and to popularize the productive technology and allied technologies amongst farmers in the watershed. The field verification trials regarding the effect of life saving irrigations on the yield of *rabi* sorghum (*Sorghum bicolor* L.) cv. M.35-1 was conducted on farmers field at Konheri watershed, Tal. Mohol, Dist. Solapur during the period from 1992-93 to 1999-2000. The results revealed that two life saving irrigations, one at earhead initiation and second at flowering stage gave 88 and 65 per cent more grain and fodder yields of *rabi* sorghum without irrigation.

Key words : Life saving irrigation, *Rabi* sorghum, Water shed.

INTRODUCTION

Water is essential for food production, drinking, domestic uses and industrial use. It is also a part of the larger eco system on which bio diversity depends. Precipitation, converted to soil moisture and ground water and thus accessible to vegetation and people is the dominant pre-condition for biomass production and social development in drylands. The rainfed areas in India occupy about 67 per cent of arable land and contribute to the production of a major nutritive cereals, pulses, oilseeds and cotton to the national gallery. These regions, unfortunately suffer from poor productivity because of degraded lands of poor water holding capacity, multiple nutrient deficiency, small land holdings and erratic rainfall.

Rabi sorghum is the major food and fodder crop of the scarcity zone of Maharashtra. Due to erratic, scanty and ill distributed rainfall in this zone, the productivity of *rabi* sorghum is always unstable and very low. In spite of the adoption of the improved management practices, the fluctuations in yields due to adverse conditions of seasons are of common occurrence. Use of harvested rain water as life saving irrigation to *rabi* sorghum can be beneficial proposition to have stability and increase in sorghum production. Based on the three years experimental data collected at the Dry Farming Research Station, Solapur, it revealed that the yield of *rabi* sorghum (M.35-1) was increased 66 per cent with one life saving irrigation (6 cm depth) applied at pre boot stage (Anonymous, 1982). Two irrigations one at pre soaking and second at grand growth stage of *rabi* sorghum (CSH-8R) gave maximum grain yield which was 19 per cent higher than control (Khade, 1986). Similar results were reported by Dhonde *et al.* (1986) and More *et al.* (1994).

In view of the above facts, the field verification trials to assess the impact of life saving irrigation on yield of *rabi* sorghum was carried out on farmers field at Konheri watershed, Tal. Mohol, Distt. Solapur.

MATERIALS AND METHODS

The verification trials on *rabi* sorghum [*Sorghum bicolor* (L.)] cv. M.35-1 was conducted on farmers field at Konheri watershed, Tal. Mohol, Distt. Solapur (M.S.) under the Operational Research Project for Dryland Agriculture Solapur, during the period 1992-93 to 1999-2000. The mean annual rainfall of the region is 540 mm. Two life saving irrigations at critical growth stages *i.e.*, one at earhead inititation stage (35 DAS) and second at flowering stage (65 DAS) was given. The soils of the experiment were medium to medium deep clay to clay loam in texture, slightly alkaline in reaction, low to medium in available nitrogen, low in available phosphorous and high in available potassium. The twenty-eight field trials were conducted on 0.20 ha area each and recommended dose of fertilizer (50:25 kg N and P_2O_5 per ha) was given at the time of sowing with the help of two bowl ferti seed drill having 45 cm spacing between the rows.

RESULTS AND DISCUSSION

The data regarding the effect of life saving irrigation on grain and fodder yield (q/ha) of *rabi* sorghum is presented in Table 1. The data revealed that the maximum grain and fodder yields (15.45 and 36.62 q/ha resp.) was obtained with two life saving irrigations to *rabi* sorghum as against without irrigation (8.23 and 22.21 q/ha). The grain and fodder yields were increased to the tune of 88 and 65 per cent, respectively with two life saving irrigations.

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Table 1 : Effect of life saving irrigation on grain and fodder yield of *rabi* sorghum (q/ha)

Year	No. of trials	Yield (q/ha)				Per cent increase over without irrigation	
		With irrigation		Without irrigation			
		Grain	Fodder	Grain	Fodder	Grain	Fodder
1992-93	4	16.22	35.57	7.70	21.05	110.64	68.98
1993-94	4	18.38	38.80	8.62	18.92	113.22	105.47
1994-95	4	10.61	29.72	5.32	15.25	99.44	94.88
1995-96	4	12.60	32.68	6.48	16.95	94.44	92.80
1996-97	4	16.30	42.80	10.25	25.50	59.02	67.84
1997-98	4	16.01	40.35	8.80	24.90	81.93	62.05
1998-99	4	19.16	41.72	10.68	31.50	79.40	32.44
1999-2000	4	14.26	31.29	8.01	23.62	79.40	32.47
Mean		15.45	36.62	8.23	22.21	87.72	64.88

Conclusion:

Application of two life saving irrigations to *rabi* sorghum with improved dryland technology increased grain yield by two folds.

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