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Letters to the Editor

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INFLUENCE OF COMMENCEMENT OF SOWING RAINS ON CROP PRODUCTION IN SOME DRY DISTRICTS OF RAJASTHAN

In the drier areas of Rajasthan, rainfall is received mostly during southwest monsoon season from late June to early September. Considerable year to year variations in the date of commencement of rains adequate for sowing are observed (Krishnan 1978). Rainfall of at least 20 mm received in one or two consecutive days will provide enough moisture for sowing crop and, therefore, is considered as sowing rain. The dates of commencement of sowing rains were classified as early (upto 1 July), normal (1-15 July) and late (after 15 July) by Krishnan *et al.* (1980) for this region. Experiments conducted by Dry Farming Research Unit (AICRPDA, 1976) at Jodhpur indicated that pearl millet (*Pennisetum typhoides* Burm) and Sesamum (*Sesamum indicum* L.) give very poor yields when planted with late sowing rains whereas moong (*Vigna radiata* L. *Wilczek*), Cowpea (*Vigna unguiculata* L. Walp), Castor (*Ricinus communis* L.) and sunflower (*Helianthus annus* L.) gave fair yields. Some observations made on variability in net sown area and the yield of principal rainfed crops of Rajasthan as influenced by the commencement of sowing rains are reported in this paper.

2. The average net sown area for the years 1956-77, its coefficient of variation and the percentage area under cultivation to the total area in the district for different arid districts (based on data from Board of Revenue, Government of Rajasthan, Ajmer) are given in Table 1. The coefficient of variation in the net sown area is maximum of 39 per cent in Jaisalmer district and minimum of 2 per cent in Jhunjhunu district. The coefficient of variation in annual rainfall is maximum of 59 per cent in Jaisalmer and minimum of 37 per cent in Jhunjhunu district. The present analysis is restricted to Jaisalmer, Barmer, Bikaner and Jalore districts having coefficient of variation in the net sown area more than 10 per cent.

3. The mean annual rainfall, dates of commencement of sowing rains and their relative probabilities of occurrence reported by Krishnan (1978) show that the commencement of sowing rains will be delayed beyond 15 July in about 32 to 50 per cent of the years in Barmer, Bikaner, Jalore and Jaisalmer districts.

4. The average area under cultivation of pearl millet and rainy season pulses, its coefficient of variation and the percentage of the net sown area under these crops in the four selected districts are given in Table 2. Pearl millet is the major crop grown in Barmer, Jalore and Jaisalmer districts. Pulses average 21.4 and 40.1 per cent of the net sown area in Barmer and Bikaner districts. The coefficient of variation in the area under pulses is least in Bikaner district. The area under pulses in Jaisalmer district is low.

5. The yield of pearl millet and pulses during the years 1956-77 were also obtained from Board of Revenue, Government of Rajasthan and the average yield/ha of these crops during the years with early, normal and late commencement of sowing rains are given in Table 3. In Jalore district, the average yield of pearl millet during the years with early commencement of sowing rains was 302 kg/ha compared to 88 kg/ha of pulses thereby indicating that pearl millet is better suited during the years with early commencement of sowing rains. The yield of pulses during the years with normal and late commencement of sowing rains in Jalore district was slightly higher than that of pearl millet (Table 3). The average productivity of pulses in Bikaner district

TABLE 1

Net sown area in thousands of hectares and its variability (1956-77)

District	Net sown area (Mean)	C.V. (%)	Percentage area under cultivation to the total area in the district
Barmer	1257	19	44
Bikaner	558	12	20
Jaisalmer	147	39	4
Jodhpur	1061	6	46
Nagaur	1138	3	64
Churu	1131	3	67
Jalore	614	14	53
Jhunjhunu	444	2	74
Sikar	529	3	69
Pali	541	7	44
Ganganagar	1281	8	62

TABLE 2

Area under pearl millet and rainy season pulses

District	Pearl millet			Pulses		
	Mean (in (thousands of ha)	C.V. (%)	% of net sown area	Mean (in thousands of ha)	C.V. (%)	% of net sown area
Barmer	913	26	72.6	370	81	21.4
Bikaner	207	20	37.4	229	19	40.1
Jalore	329	21	58.2	33	112	5.4
Jaisalmer	120	33	84.5	49*	130	—

*in ha only.

was higher than that of pearl millet. In Bikaner, we observed the yield of pulses is slightly less than that of pearl millet during the years with normal commencement of sowing rains. Though the yield of pearl millet is more than that of pulses only during the years with early commencement of sowing rains, the farmers preference for pearl millet in Barmer district is well indicated by its occupying 72.6 per cent of the net sown area. The average yield of pulses is also slightly higher in Jaisalmer district, though pearl millet occupies 84.5 per cent of the net sown area.

6. The extremes and average of net sown area, area under pearl millet with its relative coverage during the years with early, normal and late commencement of sowing rains are given in Table 4. The variation in the net sown area is minimum during the years with early commencement of sowing rains in all the four districts. During the years when net sown area is minimum, the percentage of area under pearl millet was higher irrespective of the date of commencement of sowing rains in all the cases except in Jalore district under early commencement of sowing rains. As the yield of pearl millet is higher than that of pulses during the years with early commencement of sowing rains in Jalore district, the reduction in area under pearl millet when minimum of net sown area was observed needs investigation. During the years when the net sown area was maximum, with late commencement of sowing rains, there was decrease in the area under pearl millet in Barmer and to some extent in Jalore districts. Therefore, whenever the net sown area is low, the farmers appear to be preferring to put relatively more area under pearl millet even with the late receipt of sowing rains. However, the area under pearl millet was found to decrease from 342 thousand ha during the years with early commencement of sowing rains to 299 thousand ha during the years with late commencement of sowing rains in Jalore district, 1013 thousand ha to 882 thousand ha in Barmer district and 128 thousand ha to 97 thousand ha in Jaisalmer district, indicating the response of the farmers to decreasing area under pearl millet in years with late sown conditions. Similar decrease in area under pearl millet has not been observed with the delay in commencement of sowing rains in Bikaner district.

7. The choice of crops under rainfed conditions depends upon the date of commencement of sowing rains. An analysis of the variations in

TABLE 3

Average yield (kg/ha) of pearl millet and pulses in (1956-77)

District	During the years with						Average	
	Early sowing rains		Normal sowing rains		Late sowing rains		Pear millet	Pulses
	Pearl millet	Pulses	Pearl millet	Pulses	Pearl millet	Pulses		
Barmer	139 (6)*	84	205 (10)	243	141 (6)	172	162	190
Bikaner	109 (5)	128	132 (10)	102	85 (7)	144	92	141
Jalore	302 (7)	88	187 (10)	201	179 (5)	188	229	170
Jaisalmer	105 (5)	108	128 (10)	179	99 (7)	76	97	123

*Figures in paranthesis indicate the number of years.

TABLE 4

Net sown area (in thousands hectares) as influenced by the commencement of sowing rains (1956-77)

District		Early sowing rains			During the years with normal sowing rains			Late sowing rains		
		Net area sown	Area under pearl millet	% of area sown under pearl millet	Net area sown	Area under pearl millet	% of area sown under pearl millet	Net area sown	Area under pearl millet	% of area sown under pearl millet
Barmer	Max	1508	1174	77.9	1597	1166	73.0	1421	725	51.0
	Min	1264	1012	80.1	449	422	94.0	938	797	85.0
	Mean	1412	1013	71.7	1217	926	76.1	1219	882	72.4
Bikaner	Max	589	215	36.5	614	219	35.7	631	250	39.6
	Min	504	232	40.0	384	182	47.4	392	188	48.0
	Mean	560	216	38.9	544	192	35.3	553	215	38.9
Jalore	Max	639	466	72.9	628	351	55.9	616	333	54.1
	Min	524	239	45.6	457	357	75.2	333	257	77.2
	Mean	589	343	58.2	587	334	56.9	492	299	60.8
Jaisalmer	Max	192	150	78.1	191	163	58.3	199	165	82.9
	Min	136	110	80.9	48	46	95.8	29	27	93.1
	Mean	170	128	75.3	145	125	86.2	131	97	74.0

the area under different crops under early, normal and late commencement of rains will clearly bring out the extent to which the farmers are aware of the improved cropping systems in dry farming tracts.

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