

STUDIES ON PRODUCTION POTENTIAL AND ECONOMICS OF CROP SEQUENCES

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ABSTRACT

A two years study was planned to find out crop yield, production potential and economics of six crop sequences. The highest grain and straw yields were obtained under the crop sequence of paddy-wheat-moong during both the years. Mean annual grain production of 77.00 and 70.42 q/ha obtained respectively under paddy-wheat-moong and maize-wheat-moong were at par and significantly superior over rest of four crop sequences. On an average of two years, net monetary return was highest from paddy-wheat-moong followed by maize-wheat-moong, paddy-gram-moong, maize-gram-moong, paddy-mustard-moong and lowest under maize-mustard-moong.

KEY WORDS: Crop sequence, Economics.

With the introduction of early maturing, photoinsensitive, fertilizer responsive varieties coupled with recent concept of minimum tillage in crop production and with increase in irrigation facilities, multiple cropping is being recommended to the farmers. But little scientific information is available regarding the performance of different crops under various crop sequences. Hence the present study was undertaken.

MATERIALS AND METHODS

Six different crop sequences viz. paddy-wheat-moong (PWM), maize-wheat-moong (MWM), Paddy-gram-moong (PGM), maize-

gram-moong (MGM), paddy-mustard-moong (PMM) and maize-mustard-moong (MMM) were compared to see their effect on production potential and economics of sequences. The experiment was conducted on one fixed site at the Agriculture Research Station, Banswara (Rajasthan) during 1979-80 and 1980-81 with four replications in randomised block design. The soil of experimental field was clay loam, well drained and uniform in texture. The field capacity, permanent wilting point, bulk density and pH of the soil were 16.2% , 8.6%, 1.44 gm. cm⁻² and 7.8 respectively. Values of organic carbon and available phosphorus and potash were 0.4%

Table 1. Details of crop, variety and date of planting and harvesting

Year	Crop	Variety	Date of planting	Date of harvesting
1979-80	Paddy*	Ratna	20.07.79	31.10.79
	Maize	G-S-2	13.07.79	25.10.79
	Wheat	K-Sona	29.11.79	19.03.80
	Gram	Dahod Yellow	29.11.79	19.03.80
	Mustard	T 59	29.11.79	19.03.80
	Moong	Pusa Baisakhi	01.04.80	07.06.80
1980-81	Paddy*	Ratna	12.07.80	23.10.80
	Maize	G-S-2	10.07.80	22.10.80
	Wheat	K-Sona	23.11.80	25.03.81
	Gram	Dahod Yellow	23.11.80	25.03.81
	Mustard	T 59	23.11.80	25.03.81
	Moong	Pusa Baisakhi	31.03.81	05.06.81

* Transplanting.

Table 2. Grain and straw yield (q/ha) of different crops under different crop sequences

Crop Sequences	Kharif		Rabi		Summer		Total Income Rs/ha/year
	Grain	Straw	Grain	Straw	Grain	Straw	
1979-80							
P-W-M	38.35	69.73	39.16	61.63	1.60	34.4	13791/-
M-W-M	30.23	47.81	40.03	62.10	1.57	33.1	13293/-
P-G-M	34.66	74.48	12.99	25.18	1.93	35.2	9817/-
M-G-M	33.00	51.79	13.25	24.33	1.93	36.2	10013/-
P-M-M	38.31	80.29	6.29	22.23	1.30	35.0	8266/-
M-M-M	31.35	51.29	7.81	23.57	1.28	36.1	8167/-
1980-81							
P-W-M	39.00	77.75	33.53	50.33	2.37	14.22	14391/-
M-W-M	31.06	48.84	36.19	52.80	1.76	11.16	13700/-
P-G-M	39.36	81.50	15.66	22.76	1.74	11.81	13035/-
M-G-M	33.48	47.78	15.79	22.76	1.63	10.46	12270/-
P-M-M	39.45	80.44	7.58	26.79	2.17	12.02	10130/-
M-M-M	33.69	52.90	8.00	23.70	1.63	11.15	9362/-

Table 3. Mean production potential (q/ha/year) and economics (Rs/ha/year) of different crop sequences.

Crop sequences	Mean annual production		Total monetary return Rs/ha/year	Cost of cultivation Rs/ha/year	Net monetary returns Rs/ha/year
	Grain	Straw			
P-W-M	77.00	154.03	14091/-	3103/-	10988/-
M-W-M	70.42	127.90	13496/-	2766/-	10730/-
P-G-M	53.17	125.46	1426/-	2275/-	9151/-
M-G-M	49.54	96.66	1141/-	2028/-	9113/-
P-M-M	47.55	128.38	9198/-	1841/-	7347/-
M-M-M	41.88	99.35	8764/-	1529/-	7235/-
CD. at 5%	6.3	12.6	-	-	-

and 45 and 450 kg/ha respectively.

All crops under different crop sequences received a recommended dose of fertilizers, irrigation and other cultural practices. Other details regarding variety and date of planting and harvesting are given in Table 1.

RESULTS AND DISCUSSION

The level of grain and straw yields of the crops due to respective crop sequences were practically the same during both the years (Table 2). Non-significant differences among crops may be ascribed to uniform soil conditions and cultural practices received by these crops.

There was a poor seed setting in moong crop during both years, because of high temperature during summer resulting in heavy vegetative growth and thereby comparatively more straw yield (Singh et al., 1979).

The data on the production potential of different crop sequences during both years (Table 3) show that on an average for two years, significantly low annual grain production obtained in crop sequences of PGM, MGM, PMM,

and MMM respectively, as compared to PWM and MWM. The grain production under the cropping patterns of PWM and MWM were at par. Similarly mean annual straw production under PWM sequence was significantly superior over all other crop sequences. On an average of two years, total production was highest in PWM followed by MWM, PGM, PMM, MGM and MMM crop sequences. It also appeared that crop sequences based on paddy crop, produced higher grain as well as straw and ultimately higher total production in comparison with sequences based on maize crop during both years. These results are in accordance with those reported by Sadanandan and Mahapatra (1972).

It is evident from Table 3 that due to higher grain and straw production, the cropping pattern PWM tended to top the other cropping patterns in respect of net monetary returns. The highest monetary return was obtained from PWM crop sequence, closely followed by MWM. Similarly lowest monetary return was obtained from MMM crop sequence.

On the basis of two years results, it may be concluded that both the crop sequences of PWM and MWM produced more grain yield as well as more net monetary returns.

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