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Research Notes

Identification of efficient rice cropping zone for union territory of Pondicherry

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Efficient zone is an area, which has suitable soil and climatic features to obtain the maximum productivity of a crop. The purpose of identification of such regions will be helpful for implementing or to introduce the new technologies or schemes for the specified crop. Normally relative yield index (RYI) and relative spread index (RSI) are used to identify the efficient zone.

In this aspect an analysis was carried out at TNAU, Coimbatore during 2002 to identify the efficient cropping region for rice in union territory of Pondicherry. The regional and union territory data related to area, production and productivity of rice were collected for ten years from 1984-'85 to 1993-'94. The collected data were used to compute relative yield index (RYI) and relative spread index (RSI) as suggested by Kanwar (1972).

$$RYI = \frac{\text{Mean yield of a particular crop in a district}}{\text{Mean yield of that particular crop in the state}} \times 100$$

$$RSI = \frac{\text{Area of the particular crop expressed as percentage of total cultivable area in the district}}{\text{Area of that crop expressed as percentage to the total cultivable area in the state}} \times 100$$

Criteria for efficient cropping zone

Particulars	High	Medium	Low
RYI	>125	75-125	<75
RSI	>100	75-100	<75

Efficiency category	RYI	RSI zone	Cropping
1	High	High	Most ECZ
2	High	Low & Medium	ECZ
3	Low & Medium	High	Not ECZ
4	Low & Medium	Low & Medium	Not ECZ

For each year, the RYI & RSI were calculated separately and finally mean of 10 years was arrived to fixup the efficient cropping zone. By combining both indices, four classes of cropping zones were identified.

In addition, coefficient of variation (CV) was also calculated for RYI and RSI for each region among the year of study.

This study is of the best type to evaluate the efficient cropping in any region. Veeraputhiran *et al.* (2000) has conducted similar study to evaluate the efficient cropping zone for groundnut in Tamil Nadu.

From the computed data (Table 2), it can be interpreted that out of 4 regions (Pondicherry, Karaikal, Mahe & Yanam) in the Union Territory of Pondicherry, Yanam is the most efficient cropping region and therefore introduction of any sort of technological improvement in rice cultivation will have a very good impact in the productivity. The other two regions namely Pondicherry & Karaikal were under efficient cropping region for rice. Since these regions have favourable climate and soil type, productivity was higher which inturn increased the spread of the crop. Among these regions, considering the CV, Pondicherry

Table 1. Area (ha), production (t) and productivity (t/ha) of rice in different regions at Pondicherry Union Territory

Year	Pondicherry			Karaikal			Mahe			Yanam		
	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
84-85	16740	35003340	2091	14325	22834050	1594	86	141986	1651	617	1583222	2566
85-86	17200	42036800	2444	10104	19258224	1906	54	148986	2759	566	1889874	3339
86-87	16278	37862628	2326	10081	18347420	1820	60	97980	1633	571	1474893	2583
87-88	14126	33337360	2360	9170	19238660	2098	55	97020	1764	691	2175959	3149
88-89	14800	38568800	2606	10099	22258196	2204	50	80000	1600	697	1957176	2808
89-90	14863	34556475	2325	9526	19252046	2021	41	54981	1341	687	1970316	2868
90-91	14949	36864234	2466	9226	24042956	2606	29	41992	1448	685	2672870	3902
91-92	14990	39738490	2651	9592	20929744	2182	28	40012	1429	587	2288126	3898
92-93	16089	40463835	2515	10149	24722964	2436	19	28994	1526	572	2233088	3904
93-94	16845	41287095	2451	9512	17264280	1815	10	26670	2667	572	1525524	2667
Mean	15688	37971906	2423.5	10178	20814854	2068.2	43	75862.1	1781.8	625	1977105	3168.4

Table 2. Efficient cropping zone for rice in Pondicherry UT

Name of the region	Relative yield index												
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	Mean	CV%	Category
Pondicherry	112	108	109	103	106	101	104	106	101	114	106	4.01	M
Karaikal	85	84	85	92	90	88	110	87	98	84	90	9.05	M
Mahe	88	122	76	77	65	58	61	57	61	124	9	31.88	M
Yanam	137	147	121	138	115	125	165	156	157	124	138	12.55	H

Name of the region	Relative spread index													
	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94	Mean	CV%	Category	Cropping zone
Pondicherry	95	140	98	95	97	105	103	102	107	106	104.8	12.47	H	ECZ
Karaikal	106	141	104	108	105	93	94	97	91	92	103.1	14.35	H	ECZ
Mahe	100	96	73	70	68	68	69	66	65	42	71.6	22.49	L	NECZ
Yanam	112	167	99	105	102	109	138	99	95	98	112.4	20.26	H	MECZ

H: High; L : Low; MECZ : Most Efficient Cropping Zone; NECZ : Not Efficient Cropping Zone; CV : Coefficient of Variation

region is better since the variation is very low. Though the Yanam region is the most efficient cropping zone, the CV is higher indicating the higher fluctuation.

By introducing recent technologies for rice including hybrid rice in these regions, there is a greater scope for further increasing the yield.

In Mahe though the RYI is medium, but the area under rice is very low and hence it is not an efficient zone for rice cultivation. The probable reason for such a situation might be due to unfavourable weather condition.

Thus it can be concluded that Yanam, Pondicherry and Karaikal region of the UT are potential areas for rice cultivation.

References

Kanwar, J. (1972). Cropping patterns, scope and concept. *In*: Symp. on cropping pattern in India, ICAR, New Delhi, p.11-39.

Veeraputhiran, R., Sudhakar, G., Sankaranarayan, K. and Balasubramanian, T.N. (2000). Identification of efficient groundnut cropping zone for Tamil Nadu. *Madras Agric. J.* 87: 337-339.

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Research Notes

Optimization of safflower production under resource constraints

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For increasing the production of crop, the use of different components such as application of fertilizers, thinning, plant protection measures and weed control are the major components. Farmers are neglecting the application of fertilizers, use of plant protection measure and weed control due to paucity of funds and lack of knowledge. No data are available on this aspect that how much is reduction in yield due to individual or in combination of these factors. The present investigation was therefore, undertaken on medium deep black soils under dry land conditions (Patil *et al.* 1981), to gather the information on these factors.

The field experiment was conducted at All India Co-ordinated Research Project on oilseeds (Safflower). Solapur, Maharashtra (India) during three years *viz.* 1996-97, 1998-99 and 1999-2000 in rabi season. The soil type was medium deep black having pH 7.8, organic carbon 0.2 per cent and available nitrogen, phosphorus and potassium 135.0, 7.5 and 635 kg ha^{-1}, respectively. The experiment was conducted using recommended doses of fertilizers (50:25:0 NPK, respectively). There are total eight treatment combinations and three replications. The details of treatment were 1) Full package, *i.e.* T_1, 2) $T_2 = (T_1$ - Fertilizers), 3) $T_3 = (T_1$ - Thinning), 4) $T_4 = (T_1$ - Plant Protection), 5) $T_5 = (T_1$ - Weed control), 6) $= T_6$ (T_1 - Fertilizer + Plant protection), 7) $T_7 = (T_1$ - Weed control + Thinning), 8) $T_8 = (T_1$ - (Fertilizer + Plant protection + Weed control + Thinning)).

The gross plot size was 3.60 x 5.00 m^2 and net plot size was 2.70 x 3.80 m^2. The experiment was laid out in randomized block design. The observations were recorded for seed yield, gross returns and net returns (Table 1).

Effect on Seed yield

The full package significantly influenced the seed yield in all the three years of experimentation and the same was reflected in the pooled analysis. The increase in seed yield with full package practice over the absolute