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On Critical Policy Issues in India's Agricultural Economy

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For kind attention of:

The Hon'ble Prime Minister's Office,
the Ministry of Agriculture and Farmers' Welfare,
and all others interested

Nutritional Food Security at Household Level calls for Distribution Efficiency of Seed Minikits of Pulses

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Introduction

- Pulses are normally grown in all ecological conditions in India but the contribution of pulses in overall production is more from Central India as compared to other part of the country. Government is implementing Seed Minikit programme under various schemes of the Ministry of Agriculture. Seed Minikits of different field and fodder crops are to be used to given farmers including those below poverty line in order to introduce new varieties/hybrids and to encourage farmers for seed multiplication of various crops at grass root level.

- Pulses provide high quality protein complementing cereal proteins for pre-dominantly substantial vegetarian population of the country. Although being one of the largest pulses cultivating State in the country, pulses area and production share to total food grain is only 23.38 & 9 and 44 & 24.25 percent in the Country and Madhya Pradesh, respectively. The cultivation of pulses builds up a mechanism to fix atmospheric nitrogen in their root nodules and thus meet their nitrogen requirements to a great extent.

- In India, pulses can be produced with minimum use of resources hence making it less costly than animal protein. In comparison to other vegetables, pulses are rich in protein which are less expensive and can be cultivated as an inter-crop and also as mixed crop. It is mostly cultivated under rain fed conditions and does not require intensive irrigation facility. This is the reason why pulses are grown in areas left after satisfying the demand for cereals/cash crops. Even in such conditions, pulses give better returns. Apart from this, pulses possess several other qualities such as it improves soil fertility and physical structure of the soil, fit in mixed/inter-cropping system, crop rotations.

- India, a country with high concentration of poor and malnourished people, has for long promoted a cereal-centric diet composed of subsidized staples such as rice and wheat. Today, however, dietary patterns are changing. Policy makers, researchers and health activists are looking for ways to fight malnutrition in the country and not just hunger. As attention is being shifted from calorie intake to nutrition, neglected foods such as pulses (the dried, edible seeds of legumes) are gaining popularity. It is right time to distribute the Seed Minikits across the pulse growing areas not only to increase the Seed and Varietal Replacement Rate but also to break the yield barriers by bridging the yield gap there by achieving nutritional security at household level which is only possible by developing new varieties. Its supply chain and access to farming community through proper and efficient distribution of seed Minikits of pulses. There are three kinds of hunger that need to be dealt with calorie inadequacy, protein deficiency and micronutrient deficiency.

- During 2017-18, pulses were cultivated over 29813.16 thousand hectares of area and recorded the highest ever production of 25416.62 thousand tones with a productivity level of 853 kg/ha. Ten states occupied major area under pulses and contributed more than 90 percent production of pulses in the country. The percentage share in area and production levels were Madhya Pradesh (25.09% & 31.91%), Rajasthan (17.88% & 13.40%), Maharashtra (14.12% & 13.17%), Karnataka (10.14% & 7.68%), Uttar Pradesh (7.59% & 8.66%), Andhra Pradesh (4.72% & 4.79%), Gujarat (3.05% & 3.63%), Tamil Nadu (2.77% & 3.29%), Jharkhand (2.66% & 2.19%) and Chhattisgarh (2.65% & 2.16%) respectively.

- Based on triennium ending 2017-18, out of total pulses area, area occupied under chickpea, black gram, pigeon pea, lentil and green gram was found to be 49.10, 19.79, 9.57, 8.35 and 6.07 percent respectively in Madhya Pradesh with overall productivity of pulses (1872 kg/ha) as shown in Table 1 below:

Table 1: Share of Area under Pulses in Madhya Pradesh (TE 2017-18)

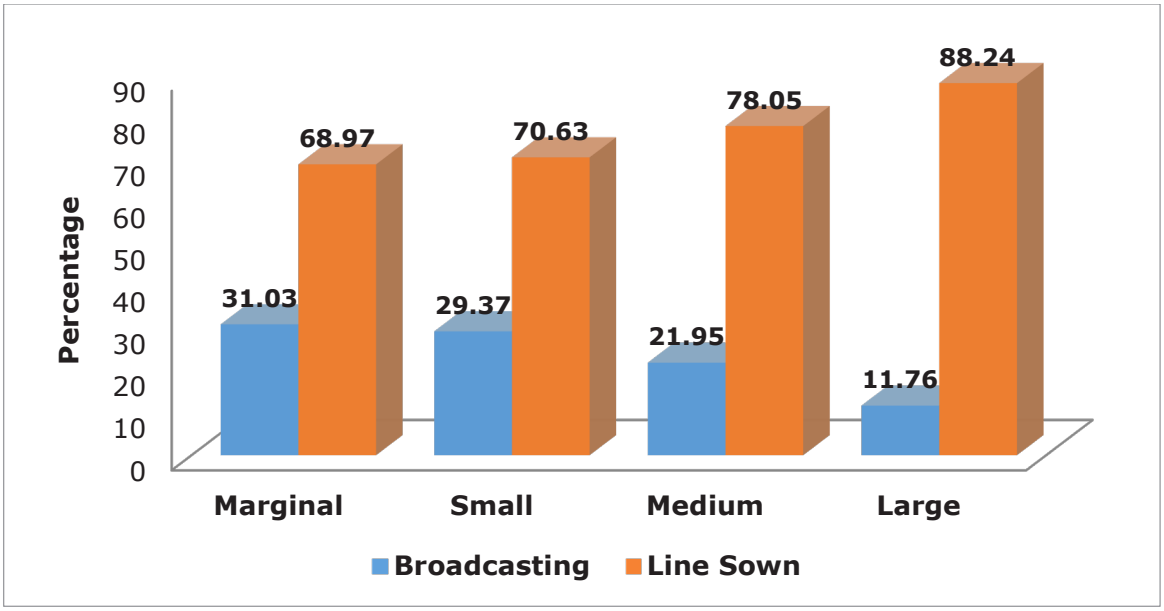
Particulars	Area (000 ha)	% share of Area	Production (000 ton)	% share of Production	Productivity (Kg/ha)
Gram	3276.33	49.10	3834.41	53.61	1170.00
Lentil	556.95	8.35	506.20	7.08	909.00
Urd	1320.67	19.79	893.89	12.50	677.00
Tur	638.67	9.57	715.52	10.00	1120.00
Moong	405.33	6.07	230.91	3.23	570.00
Others	475.12	7.12	970.92	13.58	2044.00
Total Pulses	**6673.07**	**100.00**	**7151.85**	**100.00**	**1072.00**

Source: *MPkrishi.org*

Findings

- Out of total Seed Minikit (200) distributed in the year 2018 (171) and 2017 (29), 86 percent were found to be distributed in 2018 among marginal (42.5%) and small (43.5%) respondents, while 14 percent among medium (9%) and large (5%) categories of respondents in 2017. Around 75 percent respondents were found following line sowing (Figure 1).

Figure 1: Methods of Sowing Pulses in the Study Area



Source: *Field survey*

- Ninety percent became aware about distribution of Seed Minikits which was found to be distributed only through agricultural officers of department of agriculture of the State. Number of Seed Minikit distributed among different size of farms are shown in Table 2.

Table 2: Number of Seed Minikit Distributed among Different Sizes of Farms

Method	Distribution			Awareness			Distribution Channel Agriculture Department
	2017	2018	% age Increase over 2018	Agriculture Officer	Farmer Facilitator	Fellow Farmer	
Marginal	14	71	80	90.22	5.43	4.34	42.5
Small	14	73	81	90.00	5	5	43.5
Medium	1	17	94	88.89	11.11	0	9
Large	0	10	100	84.62	15.38	0	5
Overall	29	171	83	89.66	6.47	3.87	100

Source: *Field survey*

- The majority of respondents opined that seed distributed was only of short duration varieties superior in quality (73%) and yield (74%) as compared to local varieties which fetches more prices (64%) in the market as compared to local variety. 65.50% of the respondents were found to identify the variety of crops and 54.50% were opined that yield is better than the local variety. The 33% respondents opined that there must be supervision of field by the experts in the period of cultivation of crop especially at the time of sowing. 61 percent respondents support quality seed distribution by the agriculture department. Respondents' opinion regarding quality of seed supplied and distribution of Seed Minikits in 2018 are shown in Table 3.

Table 3: Respondents' Opinion Regarding Quality of Seed Supplied and Distribution of Seed Minikits in the Reference Year 2018 (%)

Particulars	Marginal	Small	Medium	Large	Overall
Distribution of Seed Minikit					
a. Yield Difference	70.59	74.71	83.33	80.00	74.00
b. Quality difference	69.41	73.56	83.33	80.00	73.00
c. More profitable	62.35	63.22	72.22	70.00	64.00
d. Short duration of crop	100.00	100.00	100.00	100.00	100.00
Quality of Seed Supplied					
Identify variety of the crop	51.76	78.82	16.47	7.06	65.50
Yield is better	54.12	56.32	50.00	50.00	54.50
Supervision of the field by expert	15.29	43.68	61.11	40.00	33.00
Support to seed distribution	43.53	74.71	77.78	60.00	61.00

Source: *Field Survey*

- Poor quality of seed (27%) and non availability of Seed Minikits on time (73%) were found to be major problems as shown in Table 4.

Table 4: Major Problems Faced by Respondents in Availing the Seed Minikit (%)

Particulars	Marginal	Small	Medium	Large	Overall
Poor quality of Seed	23.53	29.89	33.33	20.00	27.00
Non-availability of seed minikit in time	76.47	70.11	66.67	80.00	73.00
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: *Field Survey*

- The Majority of respondents want short duration varieties of pulses (12.50%) and arrangement of field demonstration in the villages (39.50%) for effectiveness of Seed Minikit programme. Some of the respondents reported that more advertisement was needed (23.50%) for effectiveness of the programme. Some of the respondents also wanted that seed germination test should be made compulsory (24.50%) in the respondent's fields for better plant population in the field (Table 5).

Table 5: Measures to Improve the Effectiveness of the Scheme (%)

Particulars	Marginal	Small	Medium	Large	Overall
Short duration variety	11.76	14.94	11.11	0.00	12.50
More Advertisement	18.82	22.99	50.00	20.00	23.50
Field demonstration with full packages of practices of pulses production	40.00	42.53	16.67	50.00	39.50
Seed Germination test should be compulsory	29.41	19.54	22.22	30.00	24.50
Total	100.00	100.00	100.00	100.00	100.00

Source: *Field Survey*

- Out of the total respondents, the majority of them suggested that the Seed Minikits should be supplied at minimum rate (25.78%), they wanted to be informed about latest available varieties of pulses and their sources of availability (21.68%), there should be proper monitoring and supervision after sowing (20.08%), enhanced advertisement (17.74%) and produce of the beneficiaries should be distributed among farming community (14.72%). The respondent's suggestion to improve the reach of the scheme across size of farms are sown in Table 6.

Table 6: Respondents Suggestions to Improve the Reach of the Scheme (%)

Particulars	Marginal	Small	Medium	Large	Overall
Disseminate the Knowledge about latest available varieties of pulses and their sources of availability	14.34	19.91	25.95	26.53	21.68
Minikits should be supply at Minimum rate	33.28	31.02	20.07	18.76	25.78
Monitoring/Supervision after sowing	23.69	21.67	10.08	24.88	20.08
Enhanced advertisement	16.93	17.46	24.39	12.18	17.74
Produce of the Beneficiaries should be distributed among farming community	11.76	9.94	19.51	17.65	14.72
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: *Field Survey*

Conclusion and Recommendations

- Before distribution of Seed Minikits, result demonstrations should be conducted on field. Other major inputs could also be clubbed together and distributed among farming communities to generate real impact of technology.
- Farmers may be exposed to crop cafeterias grown by the KVKs where different popular/improved varieties are grown to help them recognize different varieties of a particular crop with its characteristics. They can then adopt the varietal diversification for enhancing the efficiency of resources being used on one hand and increase the productivity on the other, which could lead to doubling farm incomes.
- In order to meet the domestic demand for pulses, a sustainable production and productivity approach could be maintained by deploying multi-pronged short-term and long-term strategies. Imports can help tide over supply deficits in the short term. In the long run, measures would need to focus on sustainable production system with increased productivity envisaging public capital formation in irrigation, quality seeds of promising varieties and their availability to meet a minimum 33% Seed Replacement Rate (SRR), research and efficient use of water, plant nutrition and other necessary inputs including remunerative prices to the farmers.
- Policy initiatives may lead to efficient domestic production and help to maintain balance between domestic production and demand. If potential yield levels are achieved, then increasing demand in the country can be met in future.

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