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Household Level Assessment of Awareness of MSP and Source of Information Across States in India: Evidence from NSSO Data

Kashish Arora, Sunny Kumar*, Priya Brata Bhoi and Anil Sharma[1]

Department of Economics and Sociology, [1]Communication Centre,
Punjab Agricultural University, Ludhiana-141 004, India
[*]E-mail: sunnykumar@pau.edu

***Abstract*:** The present study was planned to evaluate awareness of minimum support price (MSP) and households' preferred source of agricultural extension services for major cereals and coarse-cereals across the different states of India. Unit-level data of the Situation Assessment Survey (SAS) of Agricultural Households in India for 2018-19 was used for the two visits, viz. *Visit 1* (June-December, 2018) and *Visit 2* (January-July, 2019). Major cereals and coarse cereals, namely Paddy, Jowar, Bajra, Wheat, Maize, Ragi and Barley, were selected as these contribute more than 70 per cent of the total food grains production of India. Sample of 44,770 agricultural households for both visits was chosen to interpret the results better. The detailed population estimates were examined using the sample and corresponding weights across different states and households. More than 80 per cent of the agricultural households access technical advice from progressive farmers, input dealers and Radio/TV. For input-wise source of information is concerned, for improved seed/variety, agricultural households rely upon progressive farmers and agricultural universities, for fertilizer application input dealers and KVKs are the major sources of information, for plant protection measures the source of information was private commercial agents and Kisan Call Centres (KCC) while for harvesting and marketing, FPOs and Private processors are the major sources of information. The findings of the study would be helpful for both the public and private extension services to know the preferences of the agricultural households for information access for strengthening extension services in India.

***Keywords*:** NSSO, MSP, Technical advice, Awareness, Sources of information

It is well recognized that agricultural extension contributes to a great deal in achieving food and nutritional security in India and improving farmers' profitability. The Indian agricultural extension system has recently undergone many changes, leading to amplified demand for agricultural extension systems (Ferroni and Zhou 2012). Although the share of agricultural extension as a share of agricultural gross domestic product (GDP) at the national level has improved since 1970, this slowed until 2004. Concurrently, only 0.54% of AgGross Domestic Product (AgGDP) was spent on research and extension during 2014-15 (Gulati et al., 2018), causing agrarian extension services have stagnated (Sajesh and Suresh, 2016). The T& V system of agricultural extension resulted in higher level of extension activity with faster knowledge diffusion in the 1980's. Currently, the extension services of India have been skewed towards the private extension system. The reason involves discouragement of the role and efficacy of the extension system in improving farm productivity and anticipation of the large-scale substitution of the public extension system coupled with the private extension system. On average, the available extension services reach only 6.8percent of the farmers in the public extension system (Suresh et al., 2022). In Ethiopia fellow farmers were the most frequently used as source of agricultural information, with 36% of respondents relying on them (Brhne et al., 2017). Sajesh and Suresh (2016) examined state-wise the number of operational holdings per extension personnel, which was the highest in Andhra Pradesh (3162), followed by Karnataka (2428) and found wide variation across the states. Gulati et al. (2018) observed that the hilly areas had one extension expert per 400 operational holdings; however, in irrigated areas, one extension expert served about 750 operational holdings.

In India, the majority (≈80%) of the farmers are small and marginal, and generally rely on local sources of information, i.e., progressive farmers and input dealers (Birthal et al., 2015). Usually, these sources of information have been questioned for their reliability, timings, and relevancy. These sources are consistently unable to give technical and suitable advice, as the country's agricultural system has diverse problems (Shah et al., 2021). There is dearth of extension personnel and poor linkages between these personnel and farmers, which exacerbates the challenges in disseminating agricultural information effectively. In the present scenario, farmers require a wide range of information to support their farm enterprises and access to timely, reliable and relevant information that can support the complexity within which their farm enterprises operate (Gupta and Shinde 2013). These arguments highlighted the demand for extension services to sustain farm productivity (Ferroni and Zhou 2012). Although

very few studies analyzed MSP awareness as a whole (Birthal et al., 2015 and Das 2020) and source-wise technical advice of the country, none focused on region-specific MSP awareness and source and types of information about the application of different inputs. The study would help to reorient public extension services with existing funds, as every region has their issues in agriculture in India. In this context, the present study was taken up to estimate the current status of awareness of MSP along with the source of information for technical advice across different states of India.

MATERIAL AND METHODS

The unit-level data of the Situation Assessment Survey (SAS) of Agricultural Households in India conducted by the National Sample Survey Office (NSSO) for 2018-19 was used. The NSS survey has been conducted over two seasons, *Kharif* (Visit 1: June-December, 2018) and *Rabi* (Visit 2: January-July, 2019). For the present study, all the major cereals and coarse cereals, namely paddy, jowar, bajra, wheat, maize, ragi and barley, selected to observed farmers' awareness about MSP as well as the different sources of information about the input use. Furthermore, the states of Andhra Pradesh, Haryana, Madhya Pradesh, Maharashtra, Punjab, Uttar Pradesh, and West Bengal were selected as these states contribute more than 70 per cent of the total food grain production of India.

The weighted estimates of NSSO for every parameter were used after careful validation with published data of the NSSO report (SAS, 2018-19). The study included the common agricultural households during the visits (visit 1 and 2) of the survey, with the total number of agricultural households for India at 44,770. Detailed sample size and population estimate across all states can be referred from Table 1.

The summation of weights can estimate the general weighted count for categorical parameters,

$$\sum_{i=1}^{n} w_i \qquad (1)$$

Similarly, the weighted sum for variables was estimated by,

$$\sum_{i=1}^{n} x_i w_i \qquad (2)$$

And weighted mean was estimated as,

$$\frac{\sum_{i=1}^{n} x_i w_i}{\sum_{i=1}^{n} w_i} \qquad (3)$$

Where,

x = variable of interest

w = weight assigned to each agricultural household in the study

i = agricultural households

RESULTS AND DISCUSSION

Crop-wise and State-wise awareness of agricultural households about MSP: Awareness of MSP of paddy stands at less than 50 percent during *Kharif* in all the selected states except Punjab and Madhya Pradesh. About 56 percent of the farmers in Madhya Pradesh and 52 percent in Punjab were aware of the paddy MSP. Undeniably, Government of India announced the MSP to the whole nation, but very few percent of the farmers from all the states were aware of the price policy. State-wise percentage of farmers' awareness of MSP of crops supports present argument. The states like Madhya Pradesh, Punjab, Haryana, and Rajasthan, where the major share of procurement is done by the procurement agencies, the awareness about the MSP is relatively higher than in the rest of the states. (Table 2). Similarly, more than 50 percent of bajra growers were aware of MSP in Punjab and Madhya Pradesh. The knowledge of MSP about maize crop about 57 per cent of farmers from Punjab and 37 per cent from Uttar Pradesh were aware of MSP for maize crop as the major proportion of maize procurement in the market yard is done by the private players and the traders.

Wheat is the principal crop, which has been grown across all the states except for South Indian states and knowledge about MSP of the wheat crop is more in regions like Punjab, Haryana and Madhya Pradesh. Only 17 percent of wheat farmers in West Bengal and 25 percent in Bihar were aware of the MSP. The farmers' awareness about MSP of wheat is more pronounced in Uttar Pradesh (37 per cent) and Rajasthan (35 percent). South Indian states like Tamil Nadu and Andhra Pradesh, paddy crop is also grown during *Rabi* season; about 62 and 49 percent of the farmers were aware of the MSP of paddy during *Rabi* season, respectively. Likewise, 53 per cent of farmers from West Bengal were aware of the MSP of paddy during rabi season.

State-wise source of agricultural extension services: The major states, namely Tamil Nadu, Andhra Pradesh, and Haryana, are the topmost states which were able to provide technical advice regarding agricultural production during *Kharif* and *rabi* season (Fig. 1). However, in Punjab, about 39 percent of farmers in *Kharif* and 45 percent of farmers in *Rabi* are getting advice for agricultural production from different sources. Input dealers (range of 11.3 to 32.2 %) followed by Radio/TV/Newspaper (range of 2.6 to 26.5 %) are the most utilized sources of information for agricultural households across the state of Punjab. While almost all the states, progressive farmers were also an essential source of technical advice.

The veterinary department has emerged as the third most important information source for agricultural households in

Table 1. Crop and state wise sample of the agricultural households

States	Sample agricultural households							Estimated agricultural households							Estimated agricultura
	Paddy	Jowar	Bajra	Maize	Ragi	Wheat	Barley	Paddy	Jowar	Bajra	Maize	Ragi	Wheat	Barley	
Kharif															
Andhra Pradesh	551	25	1	43	8	-	2	1032967	36493	3277	94663	8036	-	-	3130993
Bihar	2546	4	13	179	-	6	-	4203371	3179	39827	221187	-	7174	827	7011314
Haryana	287	48	118	8	-	-	-	620365	69875	269957	612	-	-	-	1885059
Karnataka	269	190	53	255	203	15	7	536082	525104	181431	784893	352812	20980	23406	-
Madhya Pradesh	332	26	74	308	-	17	-	946539	106118	245164	833174	-	66040	-	7127133
Punjab	657	7	2	27	-	-	-	823251	288	851	37055	-	-	-	1404923
Rajasthan	25	67	511	157	-	-	2	37751	267535	1393932	399719	-	-	4419	7041525
Tamil Nadu	463	56	1	98	16	-	1	483923	116979	1996	130276	17767	-	170	-
Uttar Pradesh	1871	32	378	245	-	-	1	4101544	73818	1123058	750629	-	-	651	17588288
West Bengal	1730	1	1	48	-	-	-	3107966	7530	711	40831	-	-		6526557
Rabi															
Andhra Pradesh	337	20	-	23	8	-	-	608439	45394	-	41957	6212	-	2246	3130993
Bihar	48	-	-	687	9	2407	1	71022	-	-	-	-	-	32526	7011314
Haryana	2	-	1	1		486	-	545	-	-	-	-	-	19713	1885059
Karnataka	112	161	29	127	83	15	-	-	-	-	-	-	-	-	-
Madhya Pradesh	-	-	2	18	-	1105	4	-	-	-	46728	-	3497116	7141	7127133
Punjab	4	-		5	1	625	-	6542	-		-	-	-	-	1404923
Rajasthan	8	2	6	5	36	658	31	549	894	2246	21428	126951	1769218	69173	7041525
Tamil Nadu	455	39	6	43	8	1	-	539866	38903	32526	31655	7629	270	-	-
Uttar Pradesh	10	7	-	53	1	2507	9	25382	25304	19713	193280	286	5764480	17927	17588288
West Bengal	1125	2	-	149	1	84	-	2055288	644		283183	218	227261	-	6526557

Andhra Pradesh, Punjab, Haryana and Tamil Nadu (Fig. 2). Similar findings were observed in the *Rabi* season. Progressive farmers and input dealers are the most common platform to get technical advice from the farmers' point of view. most of farmers depend heavily upon local advice, i.e., input dealers and progressive farmers. The public extension services by State Agricultural Universities and *Krishi Vigyan Kendras* are benefiting farmers. However, a low percentage of farmers (varied among states) have been served by public extension services. The government sources are not as effective in their outreach to farmers. Farmers meet most of their information needs from other sources, of which farmer-to-farmer exchange is the most prominent, with more or less one-fourth of total agricultural households relying on progressive farmers.

Input wise source of information: Another critical issue is

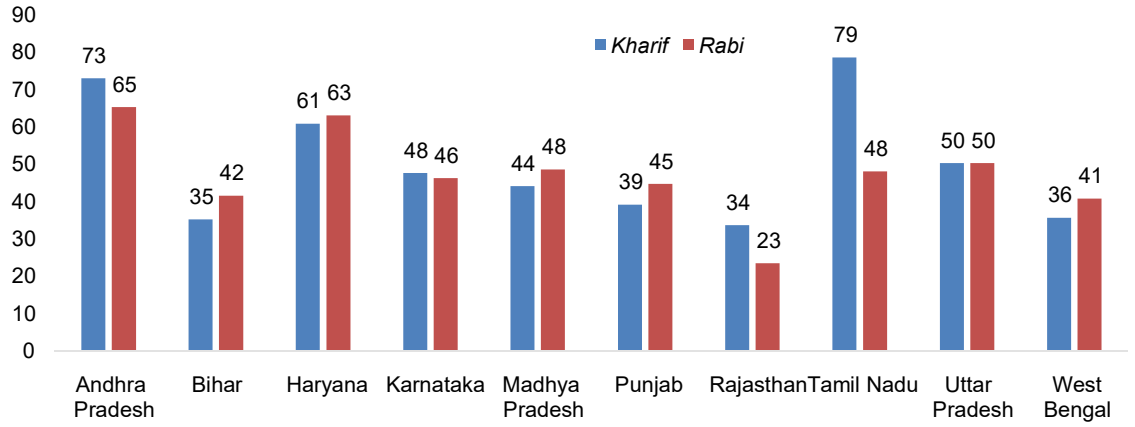
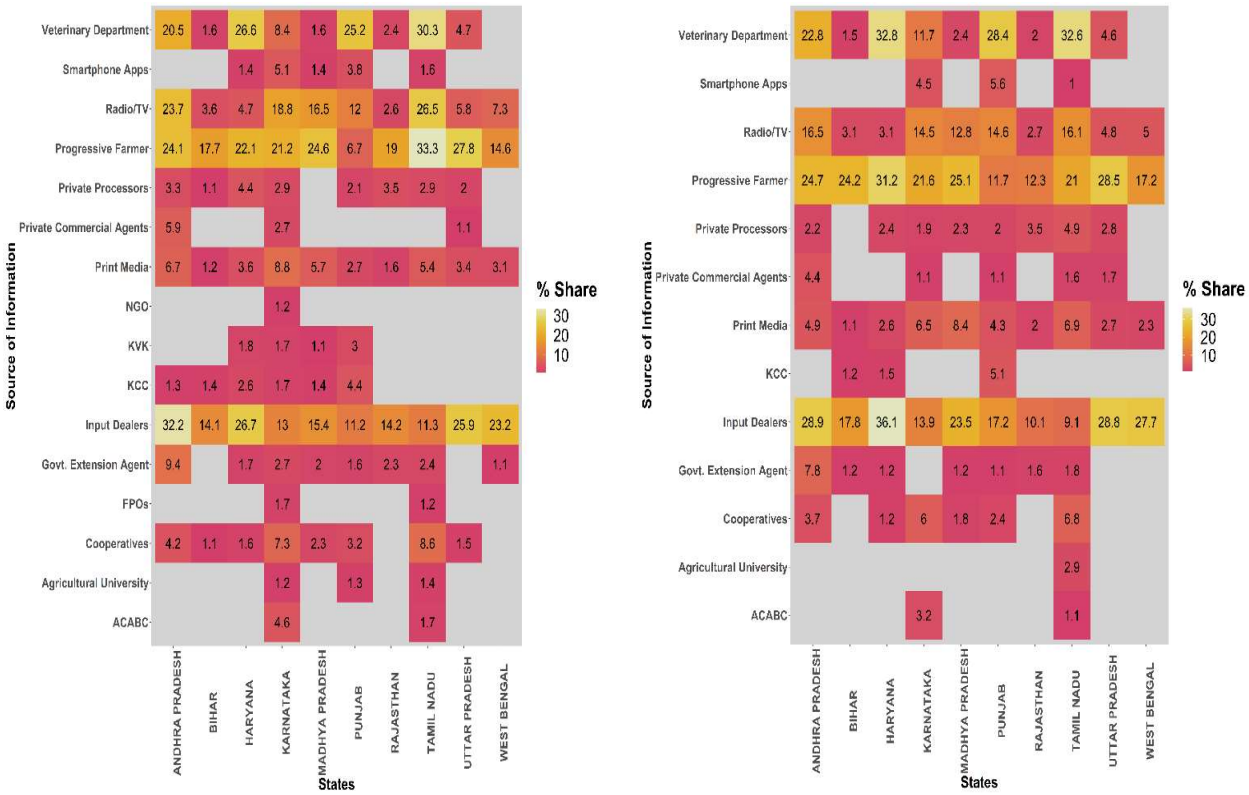


Fig. 1. Proportion (%) of the agricultural households who took technical advice regarding agricultural production



NGO: Non-Government Organization; KVK: *KrishiVigyanKendras*; KCC: Kisan Call Centre FPOs: Farmers Producers organizations; ACABC: Agri. Clinic and Agri. Business Centre

Fig. 2. Sources of information accessed by the agricultural households (multiple response %)

the choice of information that primarily led to determining the proximity, assured quality, and timely availability (Babu et al., 2013). Figure 3a and 3b provides information about the input-wise source of knowledge accessed by farmers across the states. For study, selected four major inputs, i.e., seed variety, plant protection, fertilizer application and harvesting for extension services.

Information on seed Variety: The results were expected, as progressive farmers dominated in providing information on available new seed varieties in markets. This source of information played a pioneering role among all the selected states of India. Information on seed varieties across states (Fig. 3a.) In Karnataka, Farmers Producer Organizations and Agricultural Clinic, and Agricultural Business Centres are important sources of information, with a share of 54.6 and 53.0 % of agricultural households on seed varieties, respectively. While during the *rabi* season (Fig. 3b), the primary source of information about the seed variety was gathered from Agricultural Clinic and Agricultural Business Centres (88%) and Progressive Farmers (76%). The public extension services like Government Extension Agents are also actively participating in providing information to farmers of Andhra Pradesh (34.7%), Bihar (43.4%), Haryana (57.1%), Rajasthan (87.2%) and Madhya Pradesh (76 %), respectively during the *kharif* season. In contrast, in the case of *rabi* season, the proportion of the farmers was 26.8, 49.2, 91.1, 0.20, 40.8 and 85.7 %, respectively, for the above-said states of India.

Information on plant protection: The information on plant protection plays a significant role due to the sensitivity of the crop. Farmers from Madhya Pradesh, Punjab and Andhra Pradesh rely on the input dealers for information on plant protection. However, Agricultural Clinic and Agricultural Business Centres, and Kisan Call Centres are the preferable sources of information on plant protection in Haryana, Karnataka and Tamil Nadu (Fig 3a). Around 58 percent of agricultural households in Punjab and Tamil Nadu and about 46 percent in Uttar Pradesh preferred agricultural universities for information on plant protection during the *kharif* season. In *rabi* season, the pronounced source of information was FPOs in case of Punjab, Private commercial agents in Tamil Nadu. Most farmers also rely on the information given by the

Table 2. Crop and state-wise awareness of Minimum Support Price (MSP) (%)

State	Paddy	Jowar	Bajra	Maize	Ragi	Wheat	Barley
Kharif (July to December 2018)							
Andhra Pradesh	45.71	40.71	-	18.48	-	-	-
Bihar	31.62	0.41	11.95	23.63	-	-	-
Haryana	32.79	10.14	49.64	-	-	-	-
Karnataka	9.33	23.13	24.54	21.7	1.92	-	-
Madhya Pradesh	55.94	45.13	61.77	15.7	-	-	-
Punjab	52.13	-	89.42	57.32	-	-	-
Rajasthan	44.16	30.17	19.73	18.98	-	-	-
Tamil Nadu	32.39	0.22	-	8.4	22.52	-	-
Uttar Pradesh	31.59	29.63	37.39	38.19	-	-	-
West Bengal	47.10	100.00	-	9.75	-	-	-
Rabi (January to June 2019)							
Andhra Pradesh	48.6	42.86	-	35.37	3.8	-	-
Bihar	81.51	-	-	20.5	87	24.86	-
Haryana	44.06	-	100.00	100	-	63.12	-
Karnataka	13.3	9.86	18.63	16.78	9.15	43.76	-
Punjab	99.79	-	-	41.28	-	65.48	-
Rajasthan	-	-	-	-	-	35.18	33.10
Tamil Nadu	61.79	0.08	-	20.19	50.37	-	-
Uttar Pradesh	95.48	39.42	26.7	53.6	100.00	36.70	81.82
West Bengal	53.21	62.33	-	11.03	-	16.85	-
Madhya Pradesh	-	-	-	33.35	-	45.03	14.12

Note: Authors' calculation from NSSO 77th round

Krishi Vigyan Kendras, with a share of 66 per cent (Fig. 3b). But these sources of information are lesser effective in the remaining states.

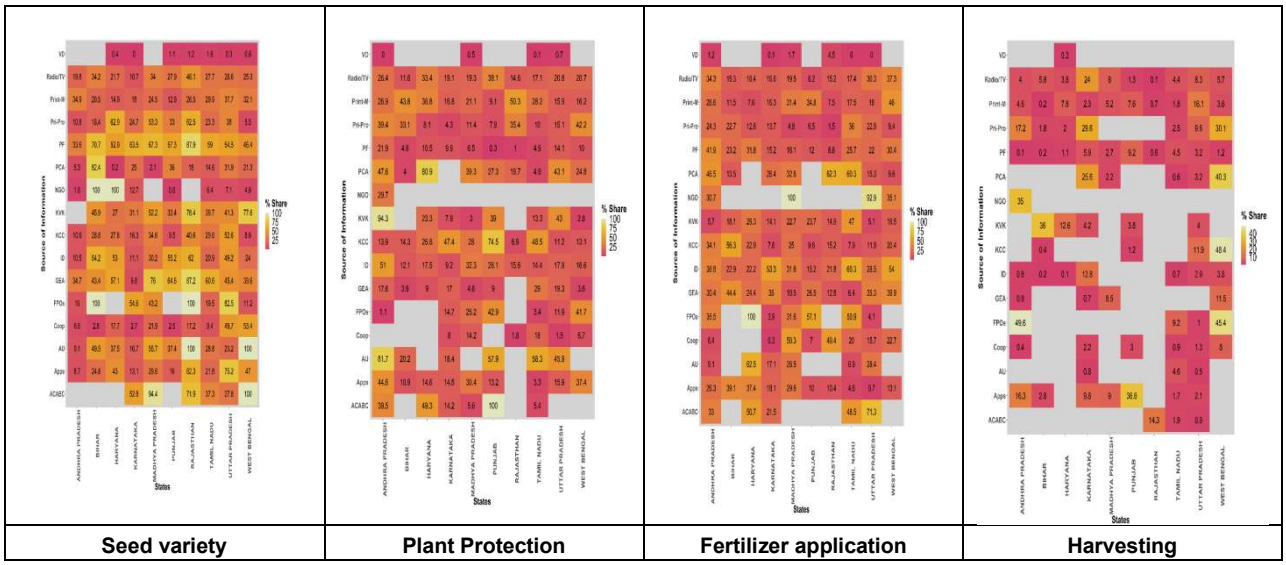
Fertilizer applications: Input dealers, followed by progressive farmers, are the most reliable sources of information with variations across the regions. The proportion of farmers who rely on input dealers and progressive farmers for the fertilizer application was 36.8 and 41.9 per cent in Andhra Pradesh, about 22 per cent for each in case of Bihar and 22 and 32 per cent in case of Haryana during the *kharif* season. In *rabi* season, about one-half of the farmers belonging to Andhra Pradesh rely upon Agri clinics, about one-third of farmers from Bihar, about 56 per cent of farmers from Madhya Pradesh, and 61 per cent of the farmers from Rajasthan rely upon Agricultural universities to get the information about fertilizer application in different crops. However, agricultural households from Tamil Nadu, West Bengal, Karnataka and Madhya Pradesh rely on input dealers with 60.3 percent, 53.6 percent, 53.3 percent and 30.8 percent, respectively. But in the *rabi* season, only one-third of the farmers assessed this source of information. Further, the results revealed that public extension sources such as Government Extension Agents (26.5%) and *Krishi Vigyan Kendras* (23.7%) are working well in providing information on fertilizer application in Punjab kharif season and rabi season, the share was 3.69 and 7.8 per cent, respectively.

Harvesting and marketing: For this category of input, almost all the farmers across the states were unaware of the information on harvesting and marketing as the percent share of the farmers was relatively less across the states, which signifies that the experts from the public along with private sectors are still weak in providing information on marketing and harvesting which could help the farmers to decide, '*where and when to sell*' the agricultural commodities. The extension services of agricultural households from Andhra Pradesh, West Bengal and Tamil Nadu were primarily met by Farmers Producers Organizations, with a share of 49.6, 45.4 and 9.2 percent of total agricultural households, respectively, and about a similar proportion was observed in case of *rabi* season (Fig. 3a , Fig. 3b). Smartphone applications in Punjab (35.2%) and print media (16.2%) in Uttar Pradesh are significant sources of information about harvesting and marketing. In Karnataka, about 39 per cent of the farmers got information from private processors and Radio/TV during the *rabi* season. Still, none of the government extension agencies approached the farmers to give relevant information about the harvesting and sale patterns of different crops across the states.

In a nutshell, the region and input-specific extension services are varied across states. The private players such as input dealers and progressive farmers actively provide information on seed varieties, plant protection and fertilizer applications. However, agricultural households are acquiring relevant knowledge of harvesting and marketing to a reasonable extent from public extension services. Smartphone Applications and *Kisan Call Centres* are emerging sources of information across the states.

Reforming agricultural extension based on region-specific needs: A way forward: With recent advancements in the agriculture sector, the role of extension activities is more pronounced. The farmers are associated with multiple activities related to the value chain and supply chains for further entrepreneurship development. Providing extension services to agricultural households may be a new challenge for the public sector. Unfortunately, the public sector has quite a limited role in agricultural extension services. Simultaneously, private extension services have been acknowledged recently, as they can provide need-based extension services to farmers. In addition, the private sector has the potential for context-based extension services. These reasons switched the agricultural households to private sectors. Apart from this, the share of research and extension from GVA has reduced over time. Only 0.54% of Agricultural Gross Domestic Product (AgGDP) was spent on research and extension during 2014-15 (Gulati et al. 2018). The study conducted by Fan et al., 2007 found the potential for increasing the investment in agricultural research and development. Demand-based extension systems considering different regions of India needs complete reorientation for utilizing the existing funds. The present study will help in this direction, as the paper has examined region-wise and source-wise awareness of MSP and their information sources of agricultural households in India.

As expected, government extension agency officials' outreach is relatively weaker than private service providers. The study's findings revealed that agricultural households across the states in India relied on different sources for extension services. Private players such as input dealers and progressive farmers are actively participating in providing information on seed varieties, plant protection and fertilizer applications. However, farmers are acquiring relevant knowledge of harvesting and marketing to a reasonable extent from public extension services. Other sources such as FPOs, Cooperatives, Private Processors, Smartphone Applications, and *Kisan Call Centres* also emerged in recent times due to more involvement of the farmers with these networks. These findings are highly crucial for policy decisions. For the development of any extension policy, the farmers across every part of the country should be



VD: Veterinary Department; **Pri-Pro:** Private Processors; **PF:** Progressive Farmers; **PCA:** Private commercial Agents: **NGO:** Non-Government Organization; **KVK:** KrishiVigyanKendras; **KCC:** KisanCall Centres; **ID:** Input Dealers; **GEA:** Government Extension Agents**; FPOs:** Farmers Producers organizations**; Coop:** Cooperative societies; **AU:** Agricultural Universities; **Apps:** Smart Phone Applications; **ACABC:** Agrii. Clinic and Agri. Business Centre

Fig. 3a. Source wise and type of information accessed by the agricultural households during the *Kharif* season

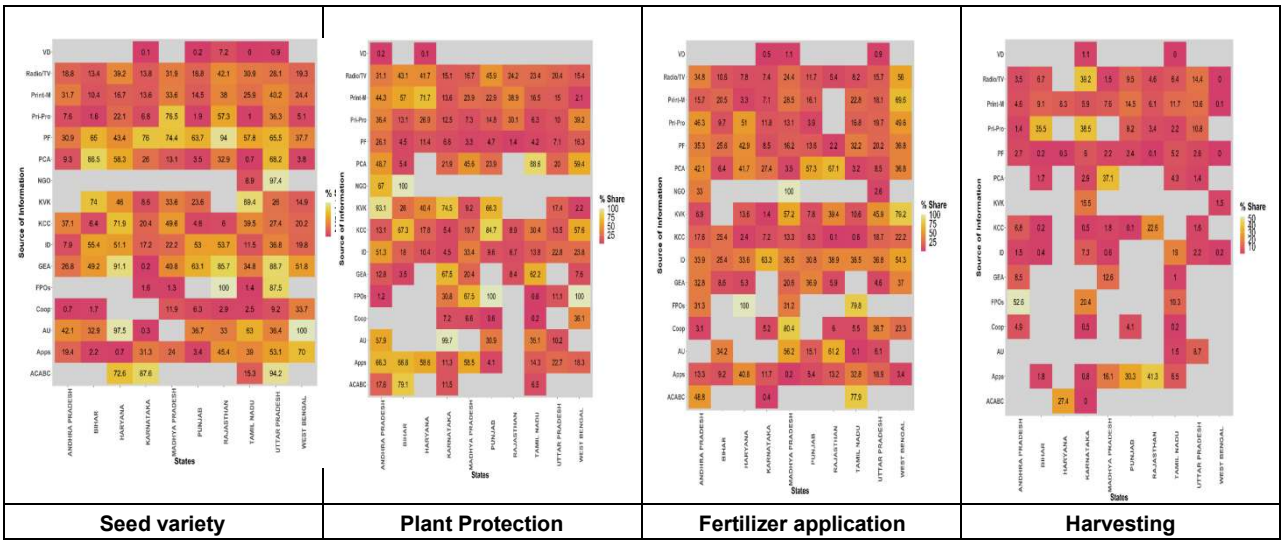


Fig. 3b. Source wise and type of information accessed by the agricultural households during the *Rabi* season

considered, as agricultural problems vary according to the geographical areas. This may help to utilize the funds as per the actual need of the agricultural households across the states. The extension system must be futuristic and evolve strategies to suit recent emerging issues. In this context, different institutional mechanisms must promote the public and private sectors to achieve inclusiveness and geographical coverage.

CONCLUSIONS

The agricultural households across the states in India relied on different sources for extension services. Private players such as input dealers and progressive farmers are actively participating in providing information on seed varieties, plant protection and fertilizer applications. However, farmers are acquiring relevant knowledge of harvesting and marketing to a reasonable extent from public extension services. Other sources such as FPOs, cooperatives, private processors, smartphone applications, and *Kisan Call Centres* also emerged in recent times due to more involvement of the farmers with these networks. The extension system must be futuristic and evolve strategies to suit recent emerging issues. There is need to enhance public sector extension services through increased funding,

capacity building, and region-specific strategies to ensure inclusive and need-based support for agricultural households.

AUTHOR's CONTRIBUTION:

All authors (KA, SK, PBB, AS) contributed to conceptualized the study. KA, SK PBB assisted for data analysis. All authors contributed to writing and reviewing the manuscript.

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