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Weather based agro met advisories to enhancing the crop production and income of the farmers in Amravati district

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Abstract

Agricultural crop production depends upon various factors, of which weather parameters is the major component. The weather variations occur with change in space and time, hence, its weather forecast were helpful to reduce the risk of farm losses through management practices for agricultural operations. Farm losses are not totally controlled as well as weather factor is not possible but it can be reduced to some level by making adjustments through timely warning and accurate information of weather forecast. Weather forecast and weather based agromet bulletins to help enhancing the economic profit for the farmers by advise them the proper management practices according to the weather conditions. To analysis and study was, therefore, undertaken on adaptation of agromet advisory bulletin and economic resultant of agromet advisory services for Soybean during *kharif* 2022 and for Chickpea during *Rabi* 2021. For assessing the impacts of agromet advisory services, users of agromet advisory services (AAS) and non-users of agromet advisory services (non AAS) were selected the farmers from 6 villages, name *i.e.* Pala, Takli Bk, Hartala, Khirghawan, Anjangaon Bari and Shirajgaon Kasba. Results revealed that the farmers, who followed the agromet advisories bulletins, to depletion the input cost and to increase in the net benefit was to estimate the non AAS farmers in Soybean and Chickpea. This profit was due to the proper crop management done by the farmers according to agromet advisory bulletins. To applying the agromet advisory bulletin, based on current and forecast weather is a useful tool for enhancing the production and income.

Keywords: Indian mustard, path coefficient analysis

1. Introduction

The farming community needs to be advised in time by providing the custom tailored weather forecast to initiate reliable measure to enhancing the production and to reducing the impact of unfavorable weather on agriculture. Weather is one of the necessary factors determining success or failure of agricultural production. It effects on growth stages and development of plant.

Weather variations during the crop season, such as delay in the monsoon, high rainfall, flood, droughts, extreme temperature or lowest temperatures would affect the crop growth, development hence resulted the quality and quantity of the yield. The losses in crop can be decrease by doing proper crop management and accurate weather forecasts. Weather forecast needs for selection of crops and also decision making for cropping pattern. The objective of the weather forecasting is to advice the farmers on the current and expected weather for planning daily farming operations *i.e.* sowing, weeding, time of pesticides spraying, irrigation scheduling, fertilizer application harvesting and threshing etc. and overall crop management. Weather forecast helps to increase agriculture production, reduce losses, risks, reduce costs of inputs, incidence of pest and diseases where improve quantity and quality of yield, increase efficiency of water use, manpower and energy and minimize use of agricultural chemicals for sustainable agriculture. The major objective of AAS was help to the farmers in capitalizing prevailing weather condition in order to aberrant weather situation Venkataraman, (2004) ^[12] discussed the weather forecasting scheme operational at National Centre for Medium Range Weather Forecast for issuing location specific weather forecast five days in advance Venkataraman (2004) ^[12] AAS to provide valuable information and vital role in about the all agricultural operation from land preparation to sowing to harvesting on based on weather forecast and warning. Singh *et al.*, (2004) ^[11] reported that the statistical interpretation methods are used to increase the reliability of the precipitation forecast.

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The emerging ability to sending the timely warning and skill based weather forecast to reduce the vulnerability to weather vagaries Hansen (2002) [3]. The benefit by the farmers using agromet advisory bulletin and weather forecast for making farm- level decisions by farmers from different village have been discussed in this paper. The main role of agromet advisory services to saving the natural resources effectively and call for reducing the weather hazards. It was the fact that AAS can be modified or may be the agricultural operation was more suitable in accurate and given timely forecast of based on weather parameters.

2. Research Methodology

The Integrated Agromet Advisory Services located in the District Agro meteorological field units (DAMU) at Krishi Vigyan Kendra, Durgapur (Badnera), Amravati. Progressive farmers have been taking aculeate interest in the agro-advisories bulletins and the importance of beneficiaries. The major element of this programme is to advise timely and need-based crop management practices. Weather forecast on rainfall, maximum and minimum temperature, wind speed, wind direction, cloud cover, morning and afternoon relative humidity are being received on every Tuesday and Friday from RMC, Nagpur. Once the forecast was received, the experts' opinion from different disciplines was obtained. Based on the recommendation, on the agro advisories bulletins are being prepared on every Tuesday and Friday in Marathi as well as in English languages. These bulletins were sent to IMD Agrimet for preparation of national bulletins and it was uploaded on the IMD website (www.imdagrimet.gov.in) in both Marathi and English. Bulletins were regularly communicated to the farmers on real

time basis through WhatsApp groups, telephone/E-mail/SMS, Local newspaper and Radio. Agro-met advisory bulletins are also sent by E-mail to local Marathi newspapers for publication and as well as uploaded at the KVK website. The agromet advisory bulletins are also sent to district collector office, RDC, SDAO, KVK Ghatkhed, Amravati -I, Working of farmers NGO, ATMA, Sadhana Radio Station, KVK, Amravati-II and All India Radio through E-mail messages. The weather forecast based agro-advisory bulletin contains a summary of previous weeks' weather, deviation of weather from the normal value, weather forecast information for the next five days, crop management, which is based on weather forecast and giving warning to the farmers well in advance, regarding rainfall variation, its amount and other weather variables including pest/disease problems. Thus, farmers can decide on crop management options, application of nutrients and strategies to overcome other problems.

2.1 Impact analysis of weather forecasting and agro advisory

The main impact analysis indicators mostly used are (a) ability of the weather forecast to influence decision of farmers and adopt appropriate measures to reduce weather-induced losses, and (b) economic and other benefits due to farmers due to change in their farm management decisions due to timely weather forecast and the benefits are in the form of farming cost minimization and with reduction in yield loss. The difference in input use, cost management and yield are analyzed for statistical significance. All the parameters over which these comparison studies are done are given in the Table 1.

Table 1: List of farm level impact analysis parameters

Serial No	Impact area	Parameters
1.	Awareness about agro advisory services	Percentage of AAS user and non-user farmers
2.	Usefulness of weather forecast	Percentage of farmers found AAS bulletin useful or not, either forecasted weather matches the original weather condition
3.	Information disseminated	Percentage of farmers using forecasted weather information
4.	Impact on farmer's decision taking about farm input use management	Field preparation, irrigation, spraying of plant protection chemicals, labour charges between AAS user and non-user farmers
5.	Cost of cultivation	Difference in total paid out cost, Benefit: cost ratio of user and non-user group of farmers
6.	Profit generated	Net profit generation due to improved farm management decisions and due to gaining higher yield

Weather forecast based agromet advisories to significance of increasing the economic benefit of the farmers by suggesting them the reliable management practices according to the weather conditions. A study was, therefore, undertaken on adaptation of agromet advisory bulletin and economic impact of agromet advisory services for Soybean *kharif* 2022 and for Chickpea during *Rabi* 2021. For assessing the impacts of agromet advisory services, users of agromet advisory services (AAS) and non-users of agromet advisory services (non AAS) were selected for Soybean and Chickpea crop. Amravati district has 14 blocks and 1986 villages. Five blocks namely Nandgaon Khandeshwar, Amravati, Daryapur, Bhatkuli and Chandur Bazar were selected on the basis of having maximum number of farmers being covered under (DAMU). The random sample of 150 farmers from agromet registered in 6 villages, name *i.e.*, Pala, Takli, Bk, Hartala, Khirghawan, Anjangaon Bari and Shirajgaon Kasba in Amravati district were selected farmers divided in 75 farmers to following

agromet advisory bulletins and 75 farmers were doesn't following the agromet advisory. The tabular analysis based sample collection data and perception of agromet advisory bulletins.

3. Results

Results showed that the farmers who followed the agromet advisories are able to reduce the input cost upto 7 % in Chick pea and 10 % in Soybean and increases the net profit by and 11% in Chick pea (Table 1), 11% Soybean (Table 2) respectively as compared to the non AAS farmers, who did not follow the weather based information. AAS farmers were able to reduce the input cost up to Rs. 1150/ acre in chick pea and Rs. 1850/acre in Soybean. Increases in the net profit were Rs 6150 / acre in Chick pea and Rs. 7850 /acre compared to the non AAS farmers. In case of AAS farmers found more B: C ratio 3.27 and 3.59 in Chickpea and Soybean as compared to non AAS farmers *i.e.* 2.68 and 2.84 in Chickpea and

Soybean similarly, Ravindrababau *et al.*, (2007), reported that the forecast to the AAS Farmers compared to non AAS farmers sampled it was observed that farmers who follows DAMUs AAS have overall saving during the crop growing season is showed in Table 1 and Table 2 that the AAS farmers are realized more benefit than the non-AAS farmers. This may be due to the agromet advisory issued for the AAS units containing the advice for crop production strategies, relevance of weather based management practices and timely planning of sloughing, sowing, intercultural operations, irrigation scheduling, pests and diseases management, harvesting, threshing and post-harvest management to get maximum benefit of the favorable weather condition and to mitigate the impact of adverse weather for enhanced the productivity of

crops. The bi- weekly forecast given to the AAS farmers helped to elude the adverse of weather event and hazards like heavy rain, cold waves, heat views, dry spell, foggy weather and high wind speed which influence the growth and development of the crops. Most of AAS farmers have realized higher additional benefit of 11 % in both the crops respectively, similar observation were reported by (Jagadeesha *et al.*, (2010) ^[4], Singh *et al.*, (2004) ^[11] and Venkataraman, (2004) ^[12]. This profit was due to the crop management done by the farmers such as timely land preparation and sowing, adoption of recommended seed rate and suitable varieties, timely weeding, harvesting and irrigation and pesticide applications, according to agromet advisory bulletins.

Table 1: Economic impact of AAS on Chick pea (Rs. acre) during *Rabi* 2021.

Type	Land Preparation /Sowing	Seed	Fertilizers & Manure	Pesticides/ Insecticide /Herbicide	Irrigation	Intercultural operation	Harvesting / Threshing	Input Benefit	Yield (q/Acre)	Rs.	B:C Ratio	Net Benefit
AAS	2850	2000	2500	2200	1000	1500	1700	13750	9	45000	3.27	
Non- AAS	2900	2100	2700	3000	1500	1200	1500	14900	8	40000	2.68	
Benefit	-50	100	200	800	500	-300	-200	1150	-1	5000		6150

Table 2: Economic impact of AAS on Soybean (Rs acre) during *Kharif* 2022

Type	Land Preparation + Sowing	Seed	Fertilizers & Manure	Pesticides/Insecticide /Herbicide	Irrigation	Intercultural operation	Harvesting / Threshing	Input Benefit	Yield (q/Acre)	Rs.	B:C Ratio	Net Benefit
AAS	3050	4000	1500	3000	500	1000	2000	15050	9	54000	3.59	
Non- AAS	3300	4100	1700	3500	1000	1500	1800	16900	8	48000	2.84	
Benefit	-250	100	200	500	500	500	-200	1850	-1	6000		7850

4. Conclusion

The studies showed that the application of agromet advisory bulletin, based on current and forecasted weather is a useful tool for enhancing the production and income. The study has revealed that the information gathered through AAS has been boon to the farmers for more useful and helpful to end users of farmers. The AAS farmers received weather forecast based agro-advisories, including optimum use of inputs for different farm operations to assessing information for better crop management. Due to judicious and timely utilization of inputs, production cost for the AAS farmers reduced. The increased yield level and reduced cost of cultivation led to increased net returns. It was found to be benefited through the agromet – advisory services.

5. References

- Ananta Vashisth, Singh R, Das DK, Baloda R. Weather based agromet advisories for enhancing the production and income of the farmers under changing climate scenario. *Int. J Agri and Food Sci. Tech.* 2013;4(9):847-850.
- Damrath U, Doms G, Friihwald D, Heise E, Richter B, Steppeler J. Operational quantitative precipitation forecasting at the German Weather Service. *J Hydrology.* 2000 Dec 20;239(1-4):260-285.
- Hansen JW. Realizing the potential benefits of climate perdition to agriculture and challenges. *Agric. System.* 2002;74:329-330.
- Jagadeesha N, Ravindrababu BT, Pankaja HK, Rajegowda MB. Adoption of agromet advisory services (ASS) for improving livelihood of rural farmers. *Int. J Agri Sci.* 2010;6(2):584-586.
- Rajegowda MB, Janardhanagowda NA, Jagadeesha N, Ravindrababu BT. Influence of agromet advisory services on economic impact of crops. *J Agrometeorology.* 2008 Jan 10;10:215-218.
- Ram Singh, Willey Syiem, Feroze SM, Devarani L, Lala Ray IP, Singh AK. Impact assessment of mobile based agro-advisory: A Case study of tribal farmers of Ri-Bhoi district of Meghalaya. *Agricultural Economics Research Review.* 2015;28(347-2016-17210):183-187.
- Rathore LS, Maini P. Economic Impact Assessment of Agro-Meteorological Advisory Service of NCMRWF. Ministry of Earth Sciences, Government of India, Noida, Uttar Pradesh, India; c2008.
- Rathore LS, Chattopadhyay N, Singh KK. Reaching farming communities in India through Farmer Awareness Programmes. Climate Exchange, World Meteorological Organisation (WMO), Tudor Rose publication, United Kingdom; c2013. p. 20-23.
- Rathore LS, Gupta, Akhilesh, Singh KK. Medium range weather forecasting and agricultural production. *J Agric. Physics.* 2001;1(1):43.
- Ravindrababu BT, Janardhanagowda NA, Jagadeesha N, Rajashekhar KR, Rajegowda MB. Application of weather based agro advisories in eastern dry zone of Karnataka. *J Agrometeorol.* 2007 Dec 1;9(2):259-264.
- Singh, Surendra, Rao VUM, Singh Diwan. Scientific support in farm decision making through weather based advisory services in Harayana. *J Agrometeorol.* 2004;6:265-267.
- Venkataraman. Climatic characterization of crop productivity and input needs for agro meteorological advisory services. *J Agrometeorology.* 2004 Jun 1;6(11):98-105.