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Weather based agromet advisory bulletin to the farmers under Gramin Krishi Mausam Seva (GKMS) project during lockdown period (Covid-19) at Kanpur region of Uttar Pradesh

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Abstract

A study was undertaken under Gramin Krishi Mausam Seva (GKMS, project) running under the Department of Agronomy, C.S. Azad University of Agriculture & Technology, Kanpur. The aim of the study is to provide weather based agro advisory bulletin to the farmers based on the weather forecast issued by IMD New Delhi twice in a week on Tuesday and Friday based on medium range weather forecast (3-10 days). Farmers of 17 district namely Agra, Auraiya, Etah, Etawah, Firozabad, Farrukhabad, Hardoi, Hathras, Kannauj, Kanpur Dehat, Kanpur Nagar, Kasganj, Lakimpur Khiri, Lucknow, Mainpuri, Mathura, Sitapur, Unnao under Central Plain Zone & South-West Semi-arid Zone. Are being aware about extreme weather events by text messages in their Mobile phone and through Mkisan Portal, Maghdoot app. During this lockdown period, center has regularly disseminated agro advisory bulletin to the farmers via Mkisan Protal. Total 5.0 lakh registered farmers, got weather based agro advisory containing agricultural operation along with precautions to escape from corona virus menace. The farmers of above 17 districts downloaded Meghdoot app by our suggestion. They were made aware about weather based informations and safety measures. Extreme weather events and their solution were also disseminated to the farmers.

It is concluded from the study that weather information, agro advisories, extreme event alert disseminated through Mkisan portal, Meghdoot app and whats App message enhanced yield of different crops and escaped the farmer from corona pandemic due to following of precautionary measures suggested.

Keywords: weather, agro-met advisory services, feedback, source of information

Introduction

Weather is one of the most important factors determining success or failure of agricultural production. It effects on every phase of growth and development of plant. Any variability in the weather during the crop season, such as delay in the monsoon, excessive rains, flood, droughts, spells of too-high or too-low temperatures would affect the crop growth and finally the quality and quantity of the yield. The losses in crop can be reduced by doing proper crop management in time by timely and accurate weather forecasts. Weather forecast also provides guidelines for selection of crops best suited to the anticipated climatic conditions. The objective of the weather forecasting is to advice the farmers on the actual and expected weather and its impact on the various day-to-day farming operations i.e. sowing, weeding, time of pesticides spray, irrigation scheduling, fertilizer application etc. and overall crop management. Weather forecast helps to increase agriculture production, reduce losses, risks, reduce costs of inputs, improve quality of yield, increase efficiency in the use of water, labor and energy and reduce pollution with judicious use of agricultural chemicals. Rathore *et al.* (2001)^[2] discussed the weather forecasting scheme operational at National Centre for Medium Range Weather Forecast for issuing location specific weather forecast five days in advance. Damrath *et al.* (2001) reported that the statistical interpretation methods are used to increase the reliability of the precipitation forecast. The benefit by the farmers using agro met advisory bulletin and weather forecast for making farm level decisions by farmers from different village have been discussed in this paper.

Materials and Methods

The Integrated Agro met Advisory Services located in the Kanpur region, C.S. Azad Univ. of Agri. and Tech., Kanpur has been serving the farming community in and around NCR. Progressive farmers have been taking keen interest in the agro-advisories and are the foremost

beneficiaries. The major objective 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, maximum and minimum humidity are being received on every Tuesday and Friday from IMD, New Delhi. Once the forecast was received, the experts' opinion from different disciplines was obtained. Based on the advice, the agro advisories are being prepared on every Tuesday and Friday in Hindi as well as in English. These advisories are sent to IMD for preparation of national bulletins and are uploaded on the IMD website (www.imdagrimet.gov.in) in both Hindi and English. Bulletins are regularly communicated to the farmers on real time basis through telephone/ E-mail/SMS. Agro-met advisory bulletins are also sent by E-mail to local Hindi newspapers for publication. The bulletins are also sent to 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.

Weather forecast and weather based agromet advisories help in increasing the economic benefit to the farmers by

suggesting them the suitable 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 wheat and carrot during *Rabi* 2019-20 and for rice during *Kharif* 2019. 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 wheat, carrot and rice crop.

Results

Results showed that the farmers who followed the agromet advisories are able to reduce the input cost upto 6% in wheat, 9.6% in carrot, 7% in rice and increases the net profit by 0.9, 3 and 4% in wheat (Table 1) and rice (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. 836/acre in wheat, and 1071/acre in rice. Increases in the net profit were Rs. 1041/acre in wheat and Rs 2213/ acre in rice compared to the non AAS farmers. More net returns of AAS farmers over non-AAS farmers can be due to low input cost, following weather based management practices and timely management of pests and diseases. 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 wheat (Rs./acre) during Rabi 2019-20

| Type | Land/ nursery preparation & Sowing | Seed | Fertilizer & Manure | Pesticides/ Insecticide/ Herbicide | Irrigation | Harvesting & Threshing | Input benefit | Yield (q/acre) | (Rs) | Net profit |
|----------|------------------------------------|--------|---------------------|------------------------------------|------------|------------------------|---------------|----------------|---------|------------|
| AAS | 2187.9 | 1367.4 | 2670.1 | 788.3 | 1984.8 | 4034.8 | 13033.3 | 17.2 | 23660.0 | |
| Non- AAS | 2322.4 | 1432.7 | 2714.5 | 644.7 | 2970.1 | 3784.8 | 13869.5 | 17.4 | 23865.1 | |
| Benefit | 134.5 | 65.3 | 44.4 | 143.6 | 185.3 | -250.0 | 836.2 | 0.2 | 205.0 | 1041.2 |

Table 2: Economic impact of AAS on Rice (Rs./acre) during Kharif 2019

| Type | Land/ nursery preparation & Sowing | Seed | Fertilizer & Manure | Pesticides/ Insecticide/ Herbicide | Irrigation | Harvesting & Threshing | Input benefit | Yield (q/acre) | (Rs) | Net profit |
|---------|------------------------------------|-------|---------------------|------------------------------------|------------|------------------------|---------------|----------------|---------|------------|
| AAS | 5152 | 454.4 | 1688 | 1300 | 2816 | 2808 | 14218.4 | 23.1 | 26663.6 | |
| Non-AAS | 5160 | 463.4 | 1701.6 | 1674 | 3456 | 2834 | 15289 | 22.98 | 25521.0 | |
| Benefit | 8.0 | 9.0 | 13.6 | 374 | 640 | 26 | 1070.6 | 0.12 | 1142.6 | 2213.2 |

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. AAS farmers received weather forecast based agro-advisories, including optimum use of inputs for different farm operations. 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.

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