

## ECONOMIC ASSESSMENT OF WEATHER BASED AGROMET ADVISORIES ISSUED BY KVK EAST CHAMPARAN DISTRICT OF BIHAR

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### ABSTRACT

Among the various factors affecting the agricultural production, weather is the most important one. Farm operation decisions starting from land preparation and crop selection to timing of planting, fertilizer application, pest management, irrigation to harvesting, and produce transport, could be guided by weather forecasts that are highly reliable, site-specific, to optimize benefits from a good weather, or manage weather-related risks. A study was, conducted on adaptation and economic impact of agromet advisory bulletin for maize and rice during Kharif 2019 and 2020 in East Champaran district. Users of agromet advisory services (AAS) and non-users of agromet advisory services (non AAS) were selected from Piprakothi and Chakia block. AAS farmers synchronized all the farm operations based on these agromet advisory bulletins and get high net return and reduced cost of cultivation compare to non-AAS farmers. Agromet advisory bulletins proved a very valuable tool to enhance the crop production and net profit from a farm.

**Key Words:** Agro advisory services, Agromet advisory bulletins, economic impact, weather forecast

### INTRODUCTION

Weather refers to the temperature, humidity, atmospheric pressure, wind speed, direction, and precipitation in a region at instant (Ram *et al.*, 2015). Weather/Climate is the primary determinant of agricultural production and productivity (Rathore *et al.*, 2001). Climate change is taking place globally and it is known to influence crop and livestock production, hydrologic balances, input supplies and other components of agricultural systems (Bal and Minhas 2017). The Indian Council of agricultural Research (ICAR) and India Meteorological Department (IMD) are jointly issuing Agromet Advisory Services (AAS) under Gramin Krishi Mausam Seva (GKMS) project in local language across the country for the farming community in

different Agro-climatic zones to improve productivity and reduce risk (Chattopadhyay and Chandras 2018). GKMS project is operational in the country based on medium range weather forecasting at district level (Ramachandrappa *et al.*, 2013). These describe the weather during the preceding week and the weather forecast valid for the next five days. Under Gramin Krishi Mausam Sewa (GKMS), IMD jointly with ICAR has started to expand the network to cover all the blocks of a district by establishing District Agro-Met Units (DAMUs) in the premise of Krishi Vigyan Kendras (Manjappa and Yeledalli 2013).

These DAMUs receive value added weather forecast from regional meteorological centers for

upcoming five days in terms of temperature, humidity, cloud cover, wind speed, direction, and precipitation on every Tuesday and Friday and generates weather based agro advisory bulletins for agriculture and allied sectors. The district/block level advisories disseminated by social media (Whatsapp, Facebook) radio, television, newspaper, m-kisanportal, different

## **MATERIALS AND METHODOLOGY**

The District Agro-meteorological unit (DAMU) established in Krishi Vigyan Kendra, Piprakothi has been serving the farming community in the East Champaran district. 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 meteorological center, Patna. An agromet advisory board is constituted, including the scientists of different discipline of agriculture and allied sectors like agronomy, plant pathology, soil science, Agrometeorology, horticulture, forestry, and animal husbandry. The value added weather forecast is discussed by the scientists of agromet advisory board and on the basis of recommendations of the experts the weather based agro advisory bulletins are generated. These bulletins are disseminated among the farmers by different social media, TV, radio, newspaper etc. Thousands of farmers got benefited by these agromet advisories. To assess the economic benefit of the farmers due to adoption of agromet advisory services, users of agromet advisory services (AAS) and non-users of agromet advisory services (non AAS) of 20 number each were selected for rice and maize growers. A total 80 numbers of beneficiary farmers i.e., users of agromet advisory services (AAS) were selected from two blocks (Piprakothi and Chakia). The same number of non-beneficiary farmers i.e., non-users of agromet advisory services (non AAS) were selected randomly from the respective blocks. The sample

agriculture related magazines and by other mass media means. These agromet bulletins not only provide the weather forecast but also suggest the appropriate farm operations for upcoming days. If weather is favorable, farmer can save resources, time and money if not favorable then he has to take some precautionary measures to minimize losses due to adverse weather conditions.

size selected for the study was 160 comprising 80 numbers from both the categories.

## **RESULTS AND DISCUSSION**

The data were collected by personal interview either at home or at farm. The data so collected were classified, tabulated and analyzed in order to make the findings meaningful.

Results showed that the farmers who followed the agromet advisories are able to reduce the input cost up to 5.4%, 5.7% (in maize) in 2019 & 2020 respectively and 5.08%, 6.11% (rice) in 2019 & 2020 respectively. Increases the net profit by, 20.25 %, 21.17% in 2019 & 2020 respectively (maize, Table 1) and 23.59%, 26.15% (rice) in 2019 & 2020 respectively (Table 2) as compared to the non AAS farmers, who did not follow the weather based agro advisory information.

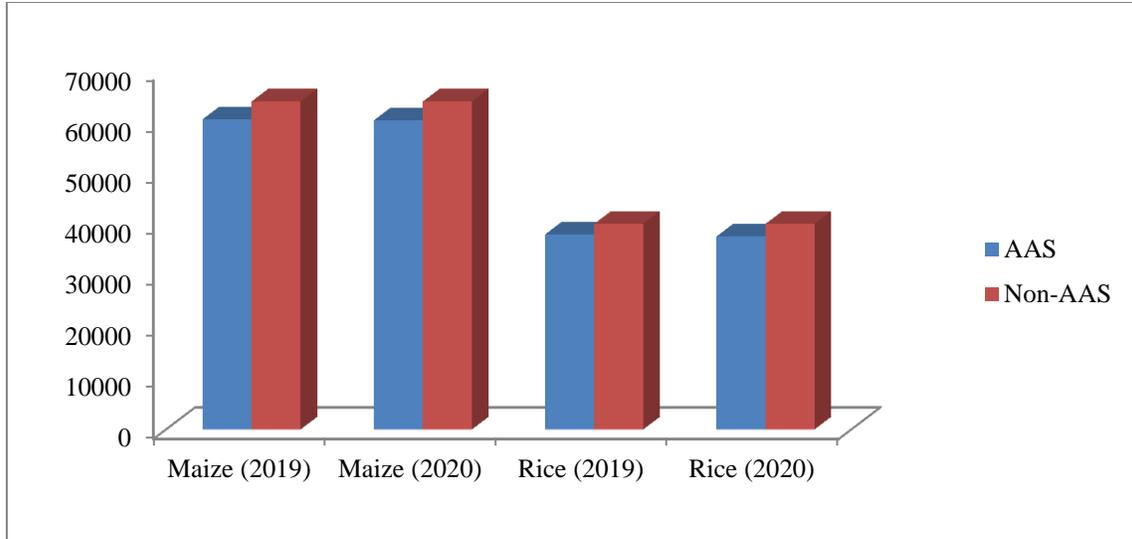
AAS farmers were able to reduce the input cost up to Rs. 3470/ha and 3672/ha in 2019 & 2020 respectively in maize, Rs. 2042/ha 2456/ha (rice) in 2019 & 2020 respectively. Increases in the net profit were Rs. 13365/ha, 13967/ha (maize) in 2019 & 2020 respectively, Rs. 7042/ ha, 7806/ha (rice) compared to the non AAS farmers. AAS farmers got more net return due to decreased input cost, practicing agromet advisories and timely management of insect, pest and diseases. AAS farmers followed the package of practices mentioned in the agromet advisory bulletins and managed their crops according to this like on time land preparation, sowing, apply recommended seed rate and varieties, timely weeding, harvesting and irrigation and pesticide applications

**Table.1 Economics (Rs ha<sup>1</sup>) of Maize as influenced by AAS during Kharif season 2019 and 2020**

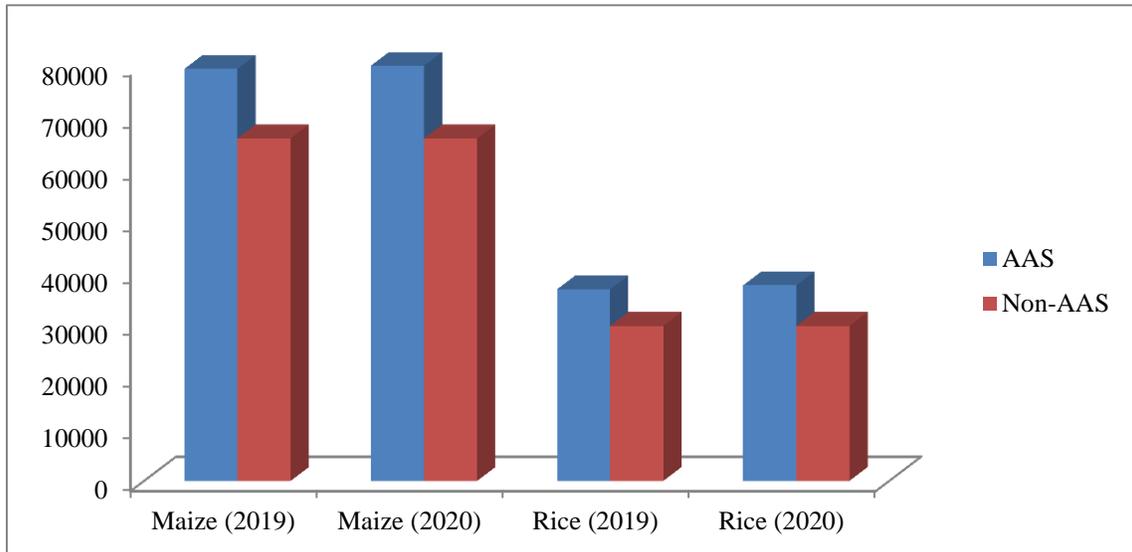
Particulars	AAS Farmers		Non AAS Farmers
	2019	2020	
Seed	7595	7590	7985
Fertilizers	9495	9489	9986
Micronutrients	1493	1395	1785
Field Preparation (earthing up)	10000	10000	10000
Pesticides	1493	1400	1695
Human labour	1000	1000	1295
Machine labour	7000	7000	7500
Irrigation	10500	10500	12000
Harvesting(threshing)	8000	8000	7800
Miscellaneous	4000	4000	4000
<b>Total cost of cultivation</b>	<b>60576</b>	<b>60374</b>	<b>64046</b>
<b>Grain Yield (q/ha)</b>	<b>139910</b>	<b>140310</b>	<b>130015</b>
<b>Net profit</b>	<b>79334</b>	<b>79936</b>	<b>65969</b>
<b>B:C ratio</b>	<b>1.31</b>	<b>1.32</b>	<b>1.03</b>

**Table 2 Economics (Rs ha<sup>1</sup>) of Rice as influenced by AAS during Kharif season 2019& 2020**

Particulars	AAS Farmers		Non AAS Farmers
	2019	2020	2019
Seed	1010	983	1300
Fertilizers (DAP, Urea, Potash)	6998	6985	7500
Micronutrients (Zn, B)	748	745	850
Pesticides	627	620	800
Weedicide	2210	2173	2500
Human labour	7500	7300	8000
Machine labour (Field Preparation)	7500	7492	7000
Irrigation	5015	4984	6000
Harvesting	4500	4434	4200
Miscellaneous	2000	1978	2000
<b>Total cost of cultivation</b>	<b>38108</b>	<b>37694</b>	<b>40150</b>
<b>Grain Yield (q/ha)</b>	<b>75000</b>	<b>75350</b>	<b>70000</b>
<b>Net Profit</b>	<b>36892</b>	<b>37656</b>	<b>29850</b>
<b>B:C ratio</b>	<b>0.96</b>	<b>0.99</b>	<b>0.74</b>



**Figure-1 Total cost of cultivation (Rs/ha) of Maize & Rice in the year 2019 & 2020**



**Figure-2 Net Return (Rs/ha) from Maize & Rice in the year 2019 & 2020**

**CONCLUSION**

The studies revealed that if farm practices are done according to AAS-bulletins then losses can be minimized and get more income due to increase in production and productivity. AAS farmers synchronized all the farm operations based on

these agromet advisory bulletins and get high net return compare to non-AAS farmers. Therefore agromet advisory bulletin is a very valuable tool to enhancing the crop production and net profit from a farm.

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