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## Perceived impact of agro meteorological advisory services in Rewa district of Madhya Pradesh

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### Abstract

A case study was conducted to study the economic benefits of the farmers using the Agro-met Advisory Services (AAS) under the “District Agro-met Unit, Gramin Krishi Mausam Seva” (DAMU-GKMS) project JNKVV Jabalpur for the selected villages in Rewa district during the year 2020-21 in kharif season. The two villages were selected for this study and two groups of farmers were selected for the present study. The first group of farmers was consisted of the fifty farmers adopting the recommendations of Agromet Advisories (AAS) regularly in their farm operation (AAS Farmers) and another group of farmers who were not aware of Agromet Advisories (Non AAS Farmers). Thus, finally the sample of the present study was total 100 farmers. The crop situation of these farmers was compared with nearby fields of the same crops of non AAS farmers’ field. The data was recorded from both the farmers group particularly on crops expenditure incurred by the farmers from land preparation to harvest at every stage, The crop growth and yields were also observed regularly. The result revealed that the farmers, who followed the agromet advisories, are able to reduce the input cost with increase in the net profit as compared to the non AAS farmers regarding wheat crop this can profit might be due to the crop management practices adopted by the AAS farmers according to agromet advisory services Thus, the application of agromet advisory services based on current and forecast weather have been realized as a useful tool for enhancing the production and net income of the farmers. It was also observed that cost of cultivation was reduced by 7.29 per cent in case of AAS farmers. Net cost benefit ratio of AAS and non AAS farmers was found 1:1.31 and 1:1.19 respectively.

**Keywords:** Weather forecasting, AAS bulletin, usefulness, wheat economics, benefits, net return

### Introduction

Weather is very crucial factor affecting the agriculture production and crop productivity. The success or failure of sustainable agriculture production is determined to a great extent by the weather parameters. Agriculture in India is monsoon dependent and under such circumstances the farmers are unaware of the trends of monsoon for taking decisions on routine agricultural operations. Realizing this fact Government of India is investing considerable budget for making weather forecast most efficient and best suitable for farmers, Under these circumstances farming community needs to be updated with appropriate weather forecasts to initiate suitable coping mechanism in relation to climate changes and uncertainty of weather conditions with a view to enhance the agricultural productivity. It may be obviously helpful to minimize the adverse impact of unfavorable weather on agriculture.

A reliable and efficient system of medium range weather forecasting for various farm level decisions was established under the National Centre for Medium Range Weather Forecasting (NCMRWF) at Delhi by Government of India for the application and popularization of weather forecasts in agriculture and allied sectors through Agro meteorological Advisory Services (AAS). The major objective of AAS was to facilitate the farmers in capitalizing prevailing weather conditions in order to optimize the resource use and to minimize the loss due to harsh/aberrant weather conditions. The emerging ability to provide timely, skillful weather forecasts offers the potential to reduce human vulnerability to weather vagaries (Hansen, 2002) [1]. Therefore, agro advisory Services (AAS). Would have tremendous benefits in terms of optimum management of the adverse impacts of vagaries of weather. Keeping the role of agro advisory Services (AAS) in view it was established in the year 2019 by IMD and ICAR in selected KVKs of M.P. Under this service the need based and timely agro advisory are disseminated to the farmers through different modes viz. Whats App, SMS, Print media, KMA etc. In the context of Rewa district of M.P.

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AAS is being operate since 2019 in all the blocks of Rewa district in order to link the farmers with the weather forecast information and need based technological recommendations. Keeping this in view, the present study was an attempt to evaluate the impact of agro advisory Services (AAS). In Rewa district of M.P.

### Materials and Methods

The present study was conducted in Rewa district of M.P. was conducted during the year 2020- 21. The study was entirely concern with “District Agromet Unit, Gramin Krishi Mausam Seva” (DAMU-GKMS) project run by KVK- Rewa JNKVV during the year 2020- 21 The two villages of Rewa district were selected for this study and two groups of farmers were selected for the present study. The first group of farmers was consisted of the fifty farmers adopting the recommendations of Agromet Advisories (AAS) regularly in their farm operation (AAS Farmers) and another group of farmers who were not aware of Agromet Advisories (Non AAS Farmers). Thus, finally the sample of the present study was total 100 farmers. AAS information issued for only 50 farmers in two villages during 2020-21. 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 humidit. This information are being received on every Tuesday and Friday from MC, Bhopal. Once the forecast was received, the experts’ opinion from different scientists of KVK-Rewa was incorporated. The agro advisories are being prepared accordingly on every Tuesday and Friday in Hindi as well as in English language. Bulletins are regularly communicated to the farmers on real time basis through personal contact/telephone/ SMS etc. Agromet Advisory Bulletins are

also sent by E-mail to local newspapers for publication. The weather forecast based Agromet Advisory Bulletin contains a weather forecast information for the next five days like crop management practices, which is based on weather forecast and alarming situations to the farmers well in advance. Rainfall variation, its amount and other weather variables including pest/disease problems are also delivered to farmers. Thus, farmers can prepare to choose crop management options, management of nutrients and other strategies to overcome other problems. As Wheat is the major crop of the Rewa district and economy of the farmers greatly depends on wheat production this crop was selected for the comparative economic analysis of wheat between the AAS and non AAS farmers. The expenditure incurred to raise the crop in both the situations has been documented in each stage. Regular observations were made on the situation and constantly compared with nearby fields having the same crops where forecast is not adopted by non AAS farmers. Further, Economic impact was also assessed based on the input incurred during all cultural operations from sowing to harvesting It was critically evaluated, including the yield differences and comparing prices in both AAS and non AAS farmers based on Agromet Advisory Services. 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 crop during 2020-2021. Gross expenditure, gross income, net income and BC ratio were worked out separately for AAS and non AAS farmers.

### Results and Discussion

#### A. Categorization of the house holds on the basis of land holdings

**Table 1:** Number of house holds under different categories of selected villages

S. No	Size Group	AAS Farmers		Total	Non-AAS farmers		Total	Grand Total
		Number of Farmers			Numbers of Farmers			
		R	P		R	P		
1	Marginal	2	3	5	3	2	5	10
2	Small	5	10	15	6	5	11	26
3	Medium	11	6	17	10	11	21	38
4	Large	7	6	13	6	7	13	26
	Total	25	25	50	25	25	50	100

R=Village Rithi, P= Village- Padiya

#### Economic impact of AAS in relation to wheat crop

**Table 2:** Average cost of cultivation between AAS farmers and non AAS farmers (Rs./ha)

S. No	Particulars	AAS Farmers	Non AAS Farmers	Average Saving With AAS	Percentage
<b>(A) Variable cost</b>					
1	Field preparation	4,120	4,120	0	0
2	Manure & fertilizer	5,310	5,945	635	10.68
3	Seed	4,050	4,050	0	0
4	Sowing	2,470	2,470	0	0
5	Weeding	1,740	2,180	440	20.18
6	Plant protection	1,420	1,935	515	26.62
7	Irrigation	5,235	7,270	2,035	27.99
8	Harvesting	5,460	5,460	0	0
9	Threshing, winnowing & transportation	8,280	8,280	0	0
	Sub Total	38,085	41,710	3,625	8.69
<b>(B) Fixed cost</b>					
1	Land rent	8,500	8,500	0	0
2	Interest on working capital	7,20	8,15	95	11.65
	Total fixed cost	9,220	9,315		

(C) A+B					
1	Total cost (A+B)	47,305	51,025	3,720	7.29

\*Percentage was calculated from with AAS data

**Table 3:** Average net return between AAS farmers and non AAS farmers (Rs./ha)

S. No.	Particulars	AAS farmers	Non-AAS farmers	Gross benefits With AAS
1	Production(Qt./ha)			
	a. Main-product	46.20	35.28	30.95
	b. By-product (Straw)	57.80	48.26	19.77
2	Price (Rs)			
	a. Main-product	2015/qt	2015/qt	0
	b. By-product	350/qt	350/qt	0
3	Return (Rs./ha)			
	a. Main-product	93,093	71,089.2	22003.8
	b. By-product	20,230	16,891	3,339
4	Gross return (Rs./ha)	1,13,323	87,980.2	25,342.8
5	Net Return	66,018	36,955	78.64
6	Net cost benefit ratio	1:2.39	1:1.72	38.95

The economic benefit obtained by farmers following the Agro met advisory has been evaluated for *rabi* season for the period 2020-21. Total cost of cultivation, crop yield and net returns for wheat crop grown by the AAS and non AAS farmers during *rabi* season are presented in Table 1 and 2. The total cost of cultivation was found to be low in the case of AAS farmers who have effectively adopted the agro-advisory as compared to non AAS farmers. From the Table 1 it is observed that the AAS farmers realized good benefit than non-AAS farmers. Similarly the yield and other returns were also lower in case of non-AAS farmers as compared to the AAS farmers. Similar observations were also reported by Singh *et al.*, (2004) and Venkataraman (2004)<sup>18, 31</sup>. According to them the need for Agromet advisories and input requirements for Agromet advice on field operations, crop prospects and avoidance of pest and disease under adverse environment condition is essential. The economic benefit of the advisories for fifty farmers who are aware of the agro advisory bulletins are utilizing AAS in operational farm management and all farm activities It was observed that farmers who were following DAMU- AAS were found to be able to reduce cost of irrigation up to 28% followed by plant protection, weeding and manure & fertilizer 26.62%, 20.18% and 10.68% respectively. However harvesting, threshing, winnowing and transportation costs were found to be almost same under both the farmers (AAS and non AAS). Major cost of production in wheat crop was found during initial stages.

Gross returns have been analyzed which proved promising impact of agro advisory exhibiting and significant increase in production and net return of the AAS farmers as compared to non AAS farmers. Net cost: benefit ratio of AAS and non AAS farmers was found 1:2.39 and 1:1.72 respectively. The study has revealed that the information gathered through agro-advisory service have been very useful and helpful to the farmers. Hence in order to disseminate the agro-advisory in a sustainable manner with convergence of such types of programmes of state department for Gramin Krishi Mausam Seva – District Agro Metunit - Krishi Vigyan Kendra Rewa is recommended for upliftment of livelihoods of the farmers.

#### B. Usefulness of agro advisory services as perceived by the AAS farmers

With a view to assess the utility of AAS a scale has been developed in consultation with the experts of related disciplines. The indicators of usefulness selected for the present study were Input saving, input management, timeliness, crop management practices, insect and disease management, irrigation and water management, market access, post-harvest management, livestock management and adaptation measures. The usefulness of each indicator was ascertained in a 3-point scale consisting the responses of the farmers' i.e. excellent, moderate and less with the scores 3, 2 and 1. Total scores of each indicator was worked out. and its utility index was also calculated and presented in the Table 4.

**Table 4:** Usefulness of agro advisory services as perceived by the AAS farmers

S.N.	Indicator	Excellent	Moderate	Less	Total score	Utility index	Rank
1	Input Saving	23	15	12	111	74.0	V
2	Input Management	24	15	11	113	75.3	IV
3	Timeliness	14	18	18	96	64.0	VII
4	Crop Management Practices	26	15	09	117	78.0	III
5	Insect and Disease Management	15	18	17	98	65.3	VI
6	Irrigation and Water Management	28	14	08	120	80.0	II
7	Market Access	05	10	35	70	46.6	IX
8	Post-harvest Management	04	04	42	62	41.3	X
9	Livestock Management	07	12	31	76	50.6	VIII
10	Adaptation Measures	32	13	05	127	84.6	I

The present investigation has also evaluated the impact of agro advisory services in terms of its usefulness as perceived by the farmers using agro advisory services in performing various agricultural activities. The data revealed that the agro advisory services received by them and the recommendations

applied by them regarding adaptation measures, irrigation and water management and crop management practices proved its worth to a great extent. Agro advisory services have been found to be moderate useful in successful application of input management and its saving, insect & disease management and

timeliness in the farm operational work. However as far as livestock management, market access and post-harvest management were concerned the utility of agro advisory services was observed as comparatively low. Ravindrababu *et al.*, 2007<sup>[9]</sup>, also reported that the forecasts were found to be encouraging and useful for the AAS farmers.

### 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 Agromet advisories, including optimum use of inputs for different farm operations. Due to judicious and timely utilization of inputs, production cost of the AAS farmers was reduced significantly. The utility of AAS as perceived by the farmers in of the present study highlights the need of its popularization among the farmers. The increased yield level and reduced cost of cultivation led to increased net returns.

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