Utility and Impact of Agromet Advisory Services among farmers in Mandya District, Karnataka

ABSTRACT

Weather is one of the foremost factors affecting the agriculture production and crop productivity. The effective weather information and advisory services to the farmers aid in decision-making of day-to-day agricultural operations right from the selection of crops to post harvest in order to avoid crop losses. Total 105 AAS bulletins were prepared and disseminated to the farmers in 2021 by District Agromet Unit (DAMU) established at Krishi Vigyan Kendra, V C farm, Mandya. A random sample survey was conducted for 175 farmers (25 per block) in 2021 to assess the effectiveness, impact and usefulness of Agromet Advisory Services from each block in Mandya District, Karnataka and analyzed the data using the Dynamic Feedback System of IMD. The study revealed that 48 percent of farmers preferred weather forecast before going for fertilizer application, 65 percent for spraying operations and 75 percent for harvesting operations. A total of 69 percent farmers were satisfied, 18 percent were partially satisfied and 13 percent were not satisfied with the advisory. The study indicated that the farmers focused more on the weather forecast for spraying & harvesting operations compared to other activities of farming.

***Keywords*:** Weather forecast, Agromet Advisory Services (AAS), District Agromet Unit (DAMU), Dynamic Feedback System, Spraying operation.

1. INTRODUCTION

Agriculture is one of the vulnerable areas which is generally stricken by the climate and weather. Weather is one of the foremost factors affecting agricultural production and productivity. When farmers are well versed in real-time weather factors such as Rainfall, Temperature, Relative Humidity, Wind speed and wind direction. It will be effective to minimise crop failure losses and achieving higher yields with better economic returns. India Meteorological Department (IMD) has started weather services for farmers during the year 1945 [5] and later Agromet Advisory Services (AAS) started service in 1976 [8], to avoid crop failure

due to aberrant weather conditions. Central and State Government is concentrating more on weather-based agro advisory schemes to enhance the farmers livelihood. However, Agro-meteorological information viz., weather forecast, soil status information along with agro-advisory acts as real input for efficient farm management. If an accurate weather forecast is available, the farmer could plan in advance on crop cultivars, time of fertilizer application, weed management, pest and disease management [6] and make necessary arrangement accordingly to reduce the risk of failure. The emerging capacity to provide timely, skillful weather forecasts offers the potential to reduce vulnerability to vagaries of weather [3].

Gramin Krishi Mausam Sewa (GKMS) is the flagship programme of Govt. of India for weather related services to the farmers aiding in decision making on a day-to-day agricultural operations. The scheme is extended to block level to address weather needs of farmers at the micro-level and it is named as DAMU (District Agromet Unit). This is a joint effort of IMD and ICAR with multi organizational collaboration to implement various components. District Agro-Met Units (DAMU) were implemented in 12 districts of Karnataka in Krishi Vigyan Kendras. DAMU for Mandya District is established during June, 2019 at Krishi Vigyan Kendra, V C Farm, Mandya. The unit has been serving the farmers of the District through issuing the Agromet Advisory Bulletin separately for individual taluks based on ground level information from the concerned taluk and IMD forecast at the taluk level to meet the changing needs of Agriculture in general, Horticulture and Rainfed agriculture in particular and creating awareness by conducting various training programmes on the importance of weather forecasts and weather based farm practices. Every Tuesday and Friday advisory bulletins are being prepared by Krishi Vigyan Kendra for block level utilizing DSS software by Subject

Matter Specialist in consultation with scientists of Krishi Vigyan Kendra and officials of Department of Agriculture for major crops in the district. The bulletin is released in English and regional language and disseminated through WhatsApp, M-Kissan, Newspaper, Short Message Services (SMS), Non-Governmental organizations(NGOs), E-mail through the Department of Agriculture and Research Stations. In this study the usefulness and level of impact of weather based agro advisory services among the farmers is analyzed.

2. MATERIALS AND METHODS

Mandya district belongs to the Southern Dry Zone (Zone-VI) of Karnataka. The geographical position is Latitude-North From $12^0$45" to $13^0$57"and Longitude-East From 76^0 45" to $78^0$24" and with an altitude of 706m. The overall mean annual rainfall in Mandya district accounts to 692 mm and distribution of 7.0 mm, 155.8 mm, 309 mm and 220.2 mm in Winter, Pre-monsoon, Monsoon and Post monsoon respectively. Mandya district comprises of 07 blocks namely K.R Pete, Maddur, Malavalli, Mandya, Nagamangala, Pandavapura & Srirangapattana (Fig. 1). Every Tuesday and Friday advisory bulletins are being prepared by DAMU at block level. Total 105 AAS bulletins were prepared and disseminated to the farmers during 2021. Total 34 Farmers awareness programmes were conducted on Importance of Weather forecasting: Weather based farm practices, Meghdoot, Damini and Mausam app popularization from past two years.

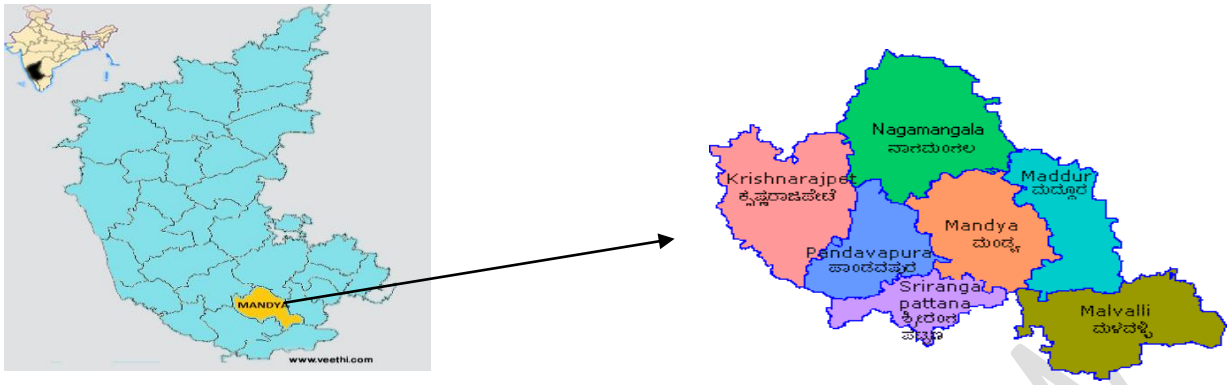

Fig. 1 Block map

The Survey was split into two phases wherein Phase I survey for assessing the level of satisfaction and usefulness of AAS in different agricultural operations,175 farmers using AAS were selected from respective blocks of Mandya district. A simple random Sampling technique was followed to select respondents. A questionnaire in optional type including source and frequency of weather forecast received by the farmers, farm operations for which weather forecast/advisories are used, features and qualities of Agro Advisory Bulletins and usefulness, satisfaction level of AAS was prepared and used for data collection and it is analyzed using Dynamic Feedback System or Real Time Feedback System of IMD.

Phase II survey has been conducted to study the economic impact of AAS. A total 20 numbers of beneficiary farmers i.e., users of Agromet Advisory Services (AAS) were selected from all blocks. The same number of non-beneficiary farmers i.e., non-users of Agromet Advisory Services (non AAS) for paddy crop were selected randomly from all the blocks of Mandya District. This study helps to assess the economic benefit of the farmers occurred on the adoption of agromet advisory services for paddy crops. The data was collected by personal interview either at home or at the farm and it was classified, tabulated and analyzed in order to make the findings meaningful.

3. RESULTS AND DISCUSSION

3.1 Usefulness and Satisfaction level of AAS:

Most of the farmer opined that weather plays a major role in their daily farm operations. The timing and accuracy of weather forecast help in the effective planning of agricultural activities like sowing, irrigation, fertilizer and pesticide application. With reference to the analysis of the accuracy of forecast it was revealed that 48 percent of farmers utilize the weather forecast before going for fertilizer application, 65 percent for spraying operations, 75 percent for harvesting operations (Table 1), similar results were also reported by [2]. Total 69 percent farmers were satisfied, 18 percent partially satisfied and 13 percent not satisfied with our advisories (Fig.2).

Table 1: Usefulness of weather forecast in different farm activities

Farming operations	Farmer followed (percent)
Scheduling of irrigation	**40 percent**
Spraying operations	**65 percent**
Fertilizer application	**48 percent**
Harvesting operation	**75 percent**

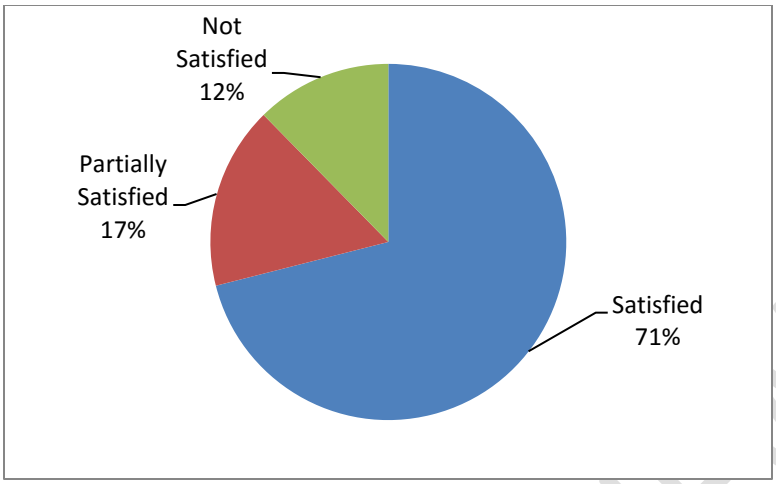

Fig.2: Level of satisfaction of AAS

The economic benefit obtained by farmers following the advisories has been evaluated for paddy crops during Kharif, 2021. Total cost of cultivation, grain yield and net returns for paddy grown by the AAS and non AAS farmers during Kharif (Table 2). indicates that the total cost of cultivation was found to be lower in the case of AAS farmers, who have effectively adopted the agromet advisory compared to non AAS farmers. Further, the net income and B:C ratio for paddy crop was more in case of AAS farmers i.e 43650 Rs/ha and 2.4 respectively whereas it was 41070 Rs/ha and 2.2 in case of non AAS farmers due to the adoption of Agromet Advisory Services. This is mainly due to timely management of irrigation, pest and diseases, spraying and harvesting operation at the right time. Similar results were also reported by [4] and [1]. Bi-weekly forecast given to the AAS farmers helped to avoid the adverse effects of weather events like heavy rain, dry spell, high wind speed which influence the growth of the crops. Most of the AAS farmers have realized higher additional benefit of 55.5 percent and 50.3 percent in soybean and cotton + black gram crops respectively. Similarly, [7] reported that the forecasts were found to be encouraging and beneficial to the AAS farmers compared to that non AAS farmers. The above points concluded that high benefit depends on efficient management

practices based on the AAS bulletin, which contains the information mainly on weather parameters and does not depend on high input application. This helped the day-to-day agricultural operations, hence AAS farmers got higher benefit than non AAS farmers. This clearly indicates enhanced livelihood of rural farmers, who adopted agro advisory services than the ones not aware of Agromet Advisory Services.

Table 2: Economics of Paddy crop as influenced by AAS during *Kharif, 2021*

Particulars	AAS Farmers	Non AAS Farmers
Land preparation/sowing+labour	10000	10000
Seed	750	750
FYM	3000	3000
Fertilizers and Micronutrients	3100	4000
Pesticides+ labour cost	1800	2800
Weedicides+ labour cost	2100	2100
Irrigation	0 (Cauvery command area)	0 (Cauvery command area)
Harvesting+Threshing + Labour Cost	10200	10200
Total cost of cultivation	30950	32850
Grain yield (q/ha)	38	37.6
Gross return (Rs)	64600+ 10000 (for Straw)	63920+ 10000 (for Straw)
Net income	**43650**	**41070**
BC ratio	**2.4**	**2.2**

4. CONCLUSION

Awareness of weather based agro advisories will support farmers in decision making and reduce crop risk. Presently DAMU Project operates at KVK, Mandya is providing weather based agro advisory services twice in a week to farmers for major agriculture crops, horticulture crops and livestock on real-time basis. Weather forecast and weather-based Agromet Advisories help in increasing the economic benefit to the farmers by suggesting them suitable management practices according to the weather conditions. This study revealed that the farmers focus more on

weather forecasts for spraying and harvesting operations, further awareness is need to be created to realize that they should also need to fallow weather forecast from the selection of crop to post-harvest in order to avoid crop losses. It also revealed that AAS farmers got higher net returns than Non AAS farmers and the farmers are expecting to extend the dissemination of Agromet Advisory Services up to the village level in future days.

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