



REVIEW ARTICLE

IMPACT ASSESSMENT OF AGRO METEOROLOGICAL ADVISORY SERVICES TO FARMERS IN PALGHAR DISTRICT

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ABSTRACT

A study was undertaken under Gramin Krishi Mausam Seva (GKMS)-District Agromet Unit (DAMU) scheme running under the guidance of India Meteorological Department (IMD) and Indian Council Agricultural Research, New Delhi. The aim of this study was to provide weather based agro advisory bulletin to the farmers based on the weather forecast. A feedback survey of 150 farmers of Palghar district was conducted during 2021 and results had showed that the farmers who followed the agromet advisories are able to reduce the input cost and increases in the net profit. 64% of the farmers were followed weather-based agro advisory bulletin in all practices of crop cultivation. 65% of the farmers were highly satisfied with these Agromet Advisory Services (AAS). 35.3 % (53) farmers saved 6000-10000 rs. by following agro advisory regularly, followed by 32% (48) of farmers saved Rs.0-5000 of their production cost because of timely getting weather forecast and Agromet Advisory Bulletins (AAB) by DAMU. The study concluded that the application of agromet advisory services, based on current and forecasted weather is helpful for enhancing the crop production and income too.

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, pesticides spray, irrigation scheduling, fertilizer application harvesting time etc. and overall crop management. Weather forecast also 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) discussed the weather forecasting scheme operational at National Centre for Medium Range Weather Forecast (NCMRF) for issuing location specific weather forecast five days in advance. Weather services to the farmers was started by India Meteorological Department (IMD) in 1945 and later Agromet Advisory Services (AAS) started in 1976 (Manjusha *et al.*, 2019), to avoid crop failure due to aberrant weather condition.

Central and State government is concentrating more on weather based agro-advisory schemes to enhance the farmers livelihood. Agrometeorological information viz., weather forecast, soil status information along with agro-advisory (Prasad *et al.*, 2020) is real input for efficient farm management. Therefore, India Meteorological Department (IMD) initially implements the Gramin Krishi Mausam Seva (GKMS) program at 130 centers at all states at the district level, those are Agro-met Field Units (AMFUs). AMFU established by the State Agricultural/Animal Husbandry Universities, Krishi Vigyan Kendra (KVKs), Colleges or Research stations (Venkatasubramanian *et al.*, 2014).

Each AMFU is led by the university scientist as technical officer to prepare weather based agro advisory at district level. To provide block level advisory to farmers, India Meteorological Department (IMD) and Indian Council of Agricultural Research (ICAR) jointly started District Agromet Unit (DAMU) under Gramin Krishi Mausam Seva (GKMS) project at Krishi Vigyan Kendras (KVKs). Every Tuesday and Friday advisory bulletins are being prepared by Krishi Vigyan Kendra for block level in DSS software by Subject Matter Specialist (SMS) with the help of KVK scientists for major crops of the district. The bulletins are in English and Regional language and disseminated through various Information Communication Tools (ICT) like What's app, Facebook, Twitter, Newspapers, AIR Channel, Television.

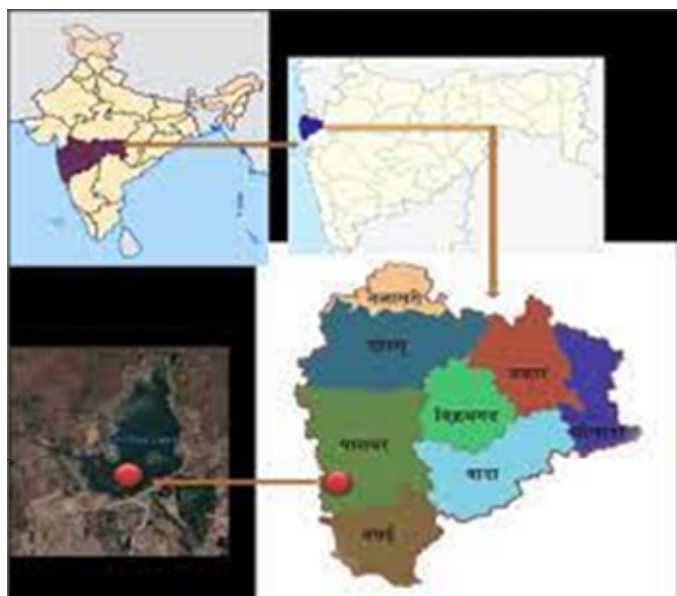


Fig. 1. Location map of study area

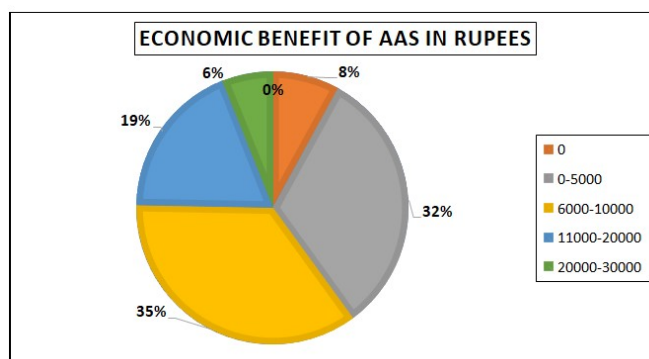


Fig. 4. Economic benefit of Agro-Advisory Services to farmers of Palghar district

MATERIALS AND METHOD

Palghar lies between 72° 45' & 73° 48' East Longitude and 18° 42' and 20° 20' North Latitude. The Eastern part of the district has Sahyadri ranges, which comprises of mainly forest area. Arabian sea toward west while, Gujarat State towards north. Thane & Mumbai district are towards South side of the district. The total geographical area of the district is 517634 ha. Palghar districts comprises of eight blocks namely Vasai, Jawhar, Vikramgad, Wada, Talasari, Palghar, Mokhada and Dahanu (Fig.1) six blocks of the district are tribal. Topographically it has much diverse condition. i.e. hilly, saline, plateau zone and characterized by high iritic rainfall. The district is characterized by warm & humid climate. The district receives assured rainfall of about 2305.4-millimeter form south west Monsoon during the month of June to September. Generally, the highest rainfall is recorded in the month of July and later on there is gradual decline in the rainfall. On an average temperature range from 16° c to 32.3° c The humidity of district ranges from 61 to 86 percent throughout the year. Paddy is major crop grown in the district. While, Nagali & Warai are the other cereals grown in the district. The Major pulses grown are Green gram, Black gram Red Gram & Bengal Gram. Area under Oil seeds very low in compare to other districts. The climate of Palghar district is suitable for fruit & vegetable crops too. The Mango, Sapota, Banana etc. and Chilly, Turmeric etc. coconut, cashew nut etc. Plantation crops are grown in the district. Land fragmentation, traditional farming, poor knowledge level about agri business and marketing are weakness of agriculture. May be rainfed farming & low productivity, are the hurdles in the progress of farmers of this district. District AgroMet Units (DAMU) has been established at KVK, Kosbad Hill, in Dahanu block.

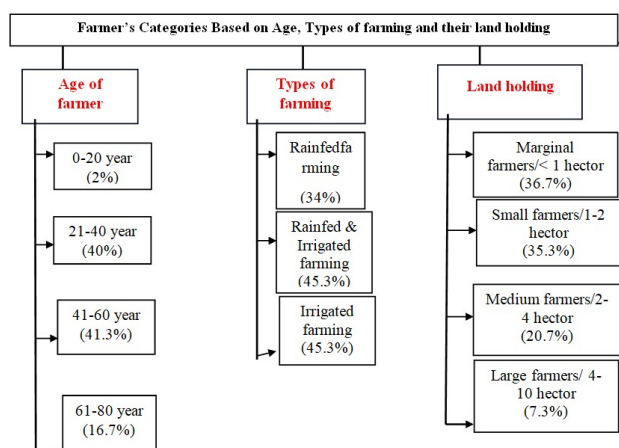


Fig. 2. Farmer's Categories Based on Age, Types of farming and their land holding

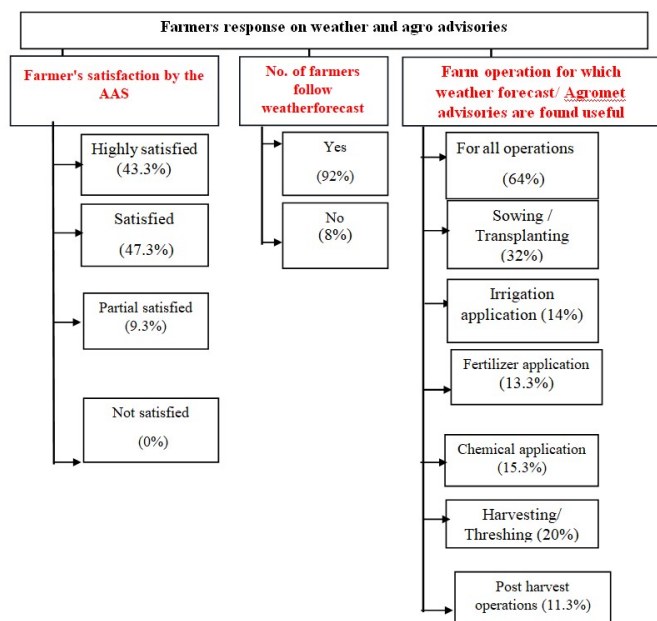


Fig. 3. Farmers response on weather and agro advisories

RESULTS AND DISCUSSION

Distribution of Farmer's Categories Based on Age, Types of farming and their land holding: The survey revealed that 41.3 % of the farmers belong to the middle age group (41-60) year followed by young age group 40% (21-40) year and old age group 16.7 % (61-80). It was found that age had a remarkable relationship in acquiring knowledge on weather based agricultural activities and age of farmers also played a vital role in this survey. Among 150 farmers 68 (45.3%) farmers have both rainfed & irrigated farming system followed by 51 (34%) farmers have rainfed farming system and 31 (20.7%) have only irrigated farming. As per the survey it has found that, Farmers of Palghar district have very less area under farming, among all farmers 36.7%, 35.3%, 20.7%, 7.3% farmers have < 1 hector (marginal farmers), 1-2 hector (small farmers), 2-4 hector (medium farmers) and 4-10 hector (large farmers) respectively (Fig 2).

Farmers response on weather forecast and agro advisories: Awareness of weather based agro advisories will support farmers in decision making to reduce the crop risk. Most of the farmer respondents that the accuracy of weather forecast helps in effective planning of agricultural activities. This may facilitate the farmers to determine the farming operations like sowing, irrigation, fertilizer and

pesticide application weather it will be performed or postponed. With reference to the analysis on accuracy of forecast it was studied that 92% (138) of farmers continuously carried out timely farm management according to given forecast and Agromet Advisory Bulletins (AAB) through what's app, only 8 % (12) of farmers did not. 43.3% (65) of the farmers said that they were highly satisfied with these Agromet Advisory Services (AAS), followed by 47.3% (71) of farmers satisfied and 9.3% (14) farmers partial satisfied with AAS. About 64% (96) of the farmers said that these weather-based agro advisories were useful in all practices of crop cultivation, followed by 32% (48) of the farmers said that the advisories were play major role while taking decision at sowing and transplanting stage, 20% (30) of the farmers used forecast and advisory during harvesting stage of crop and reduce the loss of matured crop due to natural calamities. Specially 15.3% (23) of farmers expressed their opinion that AAS became useful while spraying chemicals and 14% farmers used advisory for application of irrigation.

It concludes that weather forecast news has reduced investment, time and labors in farming operations (fig 3).

Economic impact of Agro-Advisory Services: By the study of impact of Agro-Advisory Services (AAS), The following farmers feedback of economic gain or loss formulated. Specific instances of benefit/losses due to AAS for farm operations by the farmers of Palghar district given in the fig 4. 35.3 % (53) farmers saved 6000-10000 by following agro advisory regularly followed by 32% (48) of farmers saved Rs.0-5000 of their production cost because of timely receiving weather forecast and agro advisories. 19 % (28) farmers saved 10000-20000 by following agro advisory regularly. 6% (9) farmers saved 20000-30000 rs. Only 8 % (12) farmers from total 8 blocks of Palghar district responded that they were not got benefit of this AAS of DAMU and it is opportunity to enhance accuracy of weather forecast and the quality of agro advisory bulletins.

CONCLUSION

The studies showed that the application of agromet advisory bulletin, based on realized and forecasted weather is a useful tool for enhancing the production and income. 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 of farmers reduced. The increased yield level and reduced cost of cultivation led to increased net returns. Hence, it can be concluded that the weather forecast and related advisories issued from the Agromet Advisory Service Unit benefitted the farming community.

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