

Impact of Agromet advisory Services (AAS) and Success Stories of Farmers in Khammam District of Telangana

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Introduction:

The management of weather and climate risks in agriculture has become an important issue due to climatic variability and radical changes in weather patterns. The increase in climatic variability and associated extreme weather events such as heavy rainfall and dry spells leads to floods and drought which is directly effects the crop growth and damage. In addition, abrupt change in day and night temperatures associated with relative humidity during crop season leads sudden outbreaks in pest disease population etc., are throwing challenges to sustaining production levels of different crops (Karan *et al.*, 2021). In this context, Agromet advisory services (AAS) have given immense importance to minimize the impact of biotic and abiotic factors on crops and to make use of crop-weather relationships to boost agricultural production. Further, Intergovernmental Panel on Climate Change (IPCC) has also highlighted multiple climate risks for agriculture and food security as well as the potential of improved weather and climate early warning systems to assist farmers. The wise use of weather and climate forecast information for short range and long range can help to make better-informed policy, institutional and community decisions that reduce related risks and enhance opportunities, improve the efficient use of limited resources and increase crop, livestock and fisheries production (Rathore and Chattopadhyay, 2016).

AAS helps the farmers to take appropriate decision about farm planning and better crop management thereby efficient utilization of existing farm resources (Ravi *et al.*, 2020). AAS provides timely and accurate weather forecast, miscellaneous agricultural operations to be carried out for better crop growth, managing climate risks effectively for sustainable and profitable agricultural production (Nagaraju *et al.*, 2022).

Establishment of DAMU:



As agriculture is one of the most important sectors for India, the proper planning for this sector requires relevant and reliable information in timely manner. Day to day weather forecast information throughout the crop season especially at critical stages is essential for proper management of cultural operations to protect the crop from weather aberrations. Thus, farm operations planned in conjunction with weather forecast are very likely to curtail the costs of inputs and various field operations. Farmers are not well aware about weather forecast and utilization forecast information to carry weather smart agricultural operations at block/agro sub divisional level. Currently, IMD providing with high accuracy weather forecast information after advancement of observational network by establishing automatic weather stations and forecasting technology like numeric weather prediction (NWP) models, Doppler weather radars, meteorological satellites. AAS network is being extended to ASD/block level by establishing District Agro-Met Units (DAMUs) in the premises of Krishi Vigyan Kendra (KVKs) of ICAR through ATARI's as per MOU signed between ICAR and IMD, New Delhi.

Problems were identified at farmer level to adopt AAS in Khammam dist:

1. Farmers were not aware of weather based agro advisories at agro sub divisional/ block level.
2. Farmers were bombarded with number of forecast information some times which is actually not applicable to their locality.
3. Not aware of location specific apps like Meghdoot, Mausam, Damini which are providing information on five days weather forecast, crop and livestock, specific advisories, and lighting alerts, etc.
4. Latency of weather forecast information was more to reach out the farmers at remote level, in some cases they are far away from the weather forecast information.
5. Now a day's most of the farmers have been using smart phones. Therefore, IMD concentrating to disseminate AAS through WhatsApp group, by this media few farmers who were acquainted with AAS are getting alerts but those farmers not acquainted with AAS and not having WhatsApp accessibility they were not getting the AAS.

In this context, DAMU, KVK, Wyra have been creating awareness on rainfall forecast and AAS information, and for dissemination created 78 WhatsApp groups covering 7542



farmers in Khammam district of Telangana to manage day to day cultural operations and protect the harvested produce from unexpected rainfall. However, here some of the farmers shared their experiences and usefulness of rainfall alerts and AAS information and how they managed their farm operations according to rainfall warnings.

Success stories of farmers who adopted the AAS:

- Juvvaji Nagaraju was a rainfed cotton cultivating farmer shared his experience as he managed sowing of cotton according to rainfall forecast and protected seedlings from submergence and rainfall wash out during the period of 14 to 16th June 2021, while non following AAS farmer's cotton fields were found poor germination due to rainfall water stagnation which leads them to resown the same crop. He managed spraying of herbicides and pesticides, fertilizer applications, management of inter cultural operations, and picking of cotton as per rainfall forecast information. Consequently, he saved input costs which is worth of Rs.18,520/- per hectare when compared to non AAS farmers.

- Juvvaji Nagaraju, (vil.) Thatipudi, Khammam dist.

- Dasari Veerababu was a direct seeded paddy cultivating farmer, followed AAS and rainfall forecast for broadcasting of rice in wet land and got good germination. As per suggestions of AAS bulletins, he followed seed rate, planning of herbicides and pesticides sprayings. One of his experiences was that he planned to harvest the paddy crop on 14 Nov 2021 but when he received rainfall warning from 14-16 Nov 2021 in his location, he postponed the harvest operations for three more days and suggested neighbor farmers to cover harvested produce with tarpaulin cover. After cessation rainfall he harvested and got quality of produce.

- Dasari Veerababu, (vil.) Pedda Munagala, Khammam dist.

- G. Krishna was a farmer residence of Konijerla, cultivating pigeonpea crop during *kharif* season of 2021. He followed agromet advisory services from sowing to harvesting for management of inter cultural and spraying operations to avoid interruption of rainfall events. He told that he planned for herbicidal application on 2nd July of 2021, but he postponed for three days after receiving of rainfall warning message for three days. After cessation of rainfall he sprayed the herbicide in good



soil moisture conditions and controlled weeds effectively. By his tactical decision he saved Rs. 2740/- including cost of herbicide and labours.

- G. Krishna, (vil.) Konijerla, Khammam dist.

- K. Nageshwarao was a rainfed cotton cultivated farmer from past eleven years and he bothered about cultural operations interrupted with incessant, untimely and heavy rainfall events. After acquainted with rainfall warnings and AAS, he managed farm operations according to rainfall warnings and protected the crop from stagnation of rainfall water, mortality of seedlings, wilting of plants, square/flower droppings by facilitating proper drainage. He shared his experience was that he planned to spray pesticide to control pink boll worm on the date of 16th Oct 2021, but after receiving heavy rainfall warning for two days he postponed. After, the cessation of rainfall he sprayed which controlled the pest effectively and saved cost of pesticide.

- K. Nageshwarao,(vil.) Colony Nacharam, Khammam dist.

- Potla Ranjith cultivated three crops viz., paddy, green gram, and cotton during the kharif season 2021. He said that while he was sun drying the harvested paddy produce, received rainfall warning for three days during 13th to 15th January 2022. Then, he covered the produce with tarpaulin cover and protected from rainfall and also informed to neighbor farmers to save their produce.
- Another his experience was that the farmer harvested the green gram crop one day before in the view of rainfall activity and kept harvested produce under the blowers for three days from fungal attack because of continuous rainfall. Eventually, he got good quality produce while the other non AAS farmers harvesting operations were interrupted with rainfall and their produce were sprouted got low price in the market. By following AAS he reduced cost of cultivation about Rs.5480/- as compared to non AAS farmers.

- Potla Ranjith, (vil.) Somavaram , Khammam dist.

- Yalamanda Venkateshwarlu cultivated maize in rabi season under irrigated conditions, after cotton in kharif. His experience was that he was informed about light to moderate rainfall with light breeze during 13-15th Jan 2022 in his locality. Before two days of that time period he was looking to irrigate the maize crop which is at well developed vegetative stage. After receiving of rainfall forecast he postponed the

irrigation application. Because the holding of excess soil moisture more time period with light breeze may leads to lodging of crop. This rainfall warning helped the farmer to save the energy, cost of irrigation application and lodging of crop.

- Yalamanda Venkateshwarlu, (vil.) Konijerla, Khammam dist.

- Yepuru Vasu have been cultivating rainfed groundnut from a long time during the kharif season. He mostly bothered about unnecessary cost of cultivation for carrying the same operation more than once due to interruption of rainfall events. After that, he was acquainted with rainfall alerts and joined WhatsApp group of DAMU for AAS and started management farm operations and labours according to weather forecast. He shared his experience was that he planned to spray pesticide to control tobacco caterpillar on 09th Aug 2021. But, when he received rainfall alerts on that day in their division, he postponed spraying for one day, while other non following AAS farmers' sprayings were interrupted with rainfall. For them this situation leads to spray second time to control the same pest. Likewise, he managed all other farm operations.

- Yepuru Vasu, (vil.) China munagala, Khammam dist.



Plate 1. **Creating awareness on Agromet advisory services in Khammam dist of Telangana**

Overall impact of AAS in Khammam district:

- Earlier, the farmers were not much aware of usefulness of weather forecast and agromet advisory services but currently most of the farmers have been following AAS for different farm operations after making awareness through different programmes and field visits.

- AAS were have been reached more than fifty thousand farmers in the district majorly through WhatsApp of DAMU, KVK, Wyra and other groups of department of agriculture.
- AAS following farmers increased their utilities of rainfall forecast information for planning of spraying of pesticides, herbicides and application of fertilizers to control the repetition of same operation for specific purpose that helps them to reduce cost of cultivation by avoiding interruption of rainfall events (Nagaraju *et al.*, 2022).
- Now cast or short range weather forecast rainfall alerts were found very effective to manage loss from harvest, post harvest operations and sun drying of rice, chilli, cotton and other crop produce.
- Currently, the farmers have been showing keen interest and importance in rainfall warnings and AAS to manage agricultural operations from ploughing to sowing, seedling to harvesting, harvesting to post harvesting operations according to rainfall warnings.
- Five days before rainfall forecast information also helps the farmers for the management of labour to carry day to day agricultural operations.
- AAS farmers were got better quality yield by practicing mitigation methods from extreme rainfall conditions. Farmers were taking care of crops from incessant and heavy rainfall by applying the booster dose of fertilizer application,
- Farmers are taking care about seasonal diseases of livestock and poultry by vaccinating, and by approaching protection methods from cold and heat wave conditions.
- More than 70 per cent farmers out of 230 farmers gave feedback highly satisfactorily level about agromet advisory services and rainfall warnings to carry different farm operations.

Conclusion:

India Meteorological Department (IMD), New Delhi have been providing high accuracy level of weather forecast, rainfall alerts as compared to earlier by approaching different advanced numeric weather prediction (NWP) models, high level performing superfast computers for computation of current weather conditions and advanced synoptic methods, etc. In addition, IMD also providing rainfall nowcast information, applicable up to

3-6 hours with help of Doppler weather radar and met-satellites technology which is highly useful to take care of short time measurements in agriculture. IMD have been extending its services by establishing AMFU and DAMU at district level to cater the weather forecast needs of farming community at village level. Hence, the farmers are requested to follow AAS by joining the WhatsApp groups of AMFU or DAMUs to get updated daily weather forecast information for the protection the crops from unexpected and extreme weather conditions which helpful to reduce cost of cultivation; make use of crop-weather relationships to boost agricultural production.

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