

Integrated Agro met advisory services (IAAS) and its economic impact on Farmers

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Introduction

Governments are investing huge budget for making weather forecast most reliable and best suitable for everyone and especially for farmers. Weather forecast system meant to operate to cope with adverse weather in particular relation with agriculture. Agriculture is one amongst the vulnerable area which is generally stricken by the climate and weather. Weather is one amongst the foremost factors affecting the agriculture production and crop productivity. Among the various weather parameter rainfall and its distribution determines failure or success of any crop in a season. The quality and quantity of the crop produce in a season is largely dependent on variability in the rainfall, delay/advancement in onset of monsoon, excessive rainfall and prolonged dry spells. Based on weather forecast, crop loss can be minimized by adopting the real time contingencies plan in crop management. Weather forecast is normally issued at three levels by Indian Meteorological Department (IMD), Ministry of Earth Sciences viz., short range (valid for 36 hours- 2 days), medium range (3-10 days) and long range (more than 10 days). IMD has started weather services for farmers in the year 1945. Selection of crops for a particular season is determined by Long range weather forecast while day to day farming practices/operations such as sowing, time of application of fertilizer and pesticides, irrigation scheduling, weed management etc. are determined by short and medium range weather and weather forecast helps to advice the farmers on the actual and expected weather to make decision on day to day crop management operations.

Based on the weather pattern and its relations with crop, farmers need integrated farm advice consist of advice on crop production and protection for improvement of crop productivity. The success of agricultural production depends on the degree of overcoming the ill-effects of crop production factors. Predicting the weather and rainfall pattern can help farmers to take suitable measures to reduce the risk and improve the productivity of crop.

In India Integrated Agromet Advisory Services report are being prepared and disseminated at the same time to the farmers on a regular basis (two days in a week) based on medium range weather forecast by National Centre for Medium Range Weather Forecast (NCMRWF) IMD, Ministry of Earth Sciences.

Dissemination of agro met advisories and extension activities

Agro met advisories are being disseminated with the farmers through various multi-channel system such as All India Radio (AIR) and Doordarshan, private TV, newspaper, internet and SMS. Also under Public Private Partnership (PPP) mode, Reliance Foundation, Reuter Market Light, IFFCO Kisan Sanchar Limited (IKSL), NOKIA-HCL, Handygo, Mahindra Samriddhi, Kisan Sanchar, National Bank for Agricultural and Rural Development (NABARD) are disseminating agro met advisories in SMS format to the farming community. A portal (<http://farmer.gov.in/advs/login.aspx>) launched by the Ministry of Agriculture, Government of India for the same purpose. India Meteorological Department (IMD) in co-operation with Agro meteorological Field Units (AMFUs) and State Agriculture Universities (SAU) publishes weather forecast and communicate it with farming community at same time in both regional and English languages. To avail this service, farmers are required to register their name and mobile number along with the crops.

Impact of Agro met Advisory Services on Farmers

Various studies suggests that farmers not only getting benefit on output of the crop but they can also reduce the cost which were incurred between crop management practices. Judicious use of fertilizers, best suited time for sowing, irrigation scheduling according with rainfall pattern etc. helps farmers to increase their farm productivity and helps in enhancing their income also.

Case study 1:-A field study was conducted in Kerala and it shows that on an average Paddy yield was increased for those farmers which are using agro met advisory services by 7.6 % and 12.4% in *Kharif* and *Rabi* season respectively as compare to non- AAS farmers.

Table 1 Percentage increase in yield and economic gain due to AAS

Year	Yield (q ha ⁻¹)			Economic gain
	AAS farmers	Non-AAS farmers	% increase in yield	
Kharif- Paddy				
2004	28.0	26.0	7.1	2290.0
2005	27.0	25.3	6.3	1776.0
2006	27.8	25.3	9.0	2125.0
Average	27.6	25.3	7.6	2064.0
Rabi- Paddy				
2003-04	36.5	29.5	19.2	2932.0
2004-05	30.0	27.8	7.3	2987.0
2005-06	33.0	28.5	13.6	3581.0
2006-07	31.8	28.8	9.4	3363.0
Average	32.8	28.7	12.4	3216.0

(Source- A field study was conducted by Prasad Rao and Manikandan at Kerela)

Case study 2:- A similar study was conducted under the project National Innovations in Climate Resilient Agriculture (NICRA) at Bengaluru and finding suggest that more and more benefit was obtained by farmers those getting AAS services through SMS or by other platform.

Table 2: Performance of real time contingent crop varieties with AAS and non AAS users

		2011	2012	2013	2014	2015
Yield	AAS	2593	1720	1967	2238	2500
	Non AAS	2556	1555	1700	2100	2600
Net return (Rs/ha)	AAS	19634	21161	23510	32122	33072
	Non-AAS	19281	18096	17972	28684	35107
B:C ratio	AAS	2.48	2.30	2.24	2.35	2.31
	Non-AAS	2.45	2.11	1.95	2.20	2.39
Date of sowing	AAS	22 nd Jul	31 st Aug	10 th Jul	14 th Jul	24 th Jul
	Non-AAS	5 th Aug	15 th Aug	19 th Aug	2 nd Sep	23 rd Aug

(Source- Study conducted by Ramachandruppa *et al* at Bengaluru)

It is evident from the studies that Agromet Advisory services helps in determining best suitable sowing dates for crops and it also helps in better crop management practices which ultimately increases crop yield and enhances farmer's income. The IAAS of IMD is

envisioned to contribute to weather information based crop/livestock management approaches and operations dedicate to augment crop production and food security.

Personal View

AAS services are very helpful to improve weather based farming system and to enhance farmer's income. As of now AAS is mainly focused on major agriculture, horticulture crops and livestock. Now we need to focus on more area of farm operations such as fertilizer management, irrigation scheduling, timing of inter cultural operation to conserve soil moisture and information on pest and disease. Advisories on post-harvest methods or technique will definitely be beneficial for farmers as many farmers are not aware of it. By incorporating all these advisories in exiting advisory bulletin will enhance the farm income and reduces the ill effect of weather.

Conclusion

The application of agro met advisory bulletin, based on current and forecasted weather is a useful tool for enhancing the production and income. Farmers received weather forecast based agro-advisories, for major agriculture crops, horticulture crops including vegetable crops and livestock on real time basis. By incorporating advisories on the farm lead to increased yield and reduced ill-effects of crop and ultimately led to increased profit. IAAS being delivered for five days which incorporates 8 weather parameter i.e. maximum temperature, minimum temperature, rainfall, maximum RH, minimum RH, cloud cover, wind speed and wind direction. Agro met advisories are disseminated on every Tuesday and Friday by Agro meteorological Field Unit (AMFU). For the benefits of farmers of different district, district level agro met advisories bulletin are prepared and disseminated.

Reference:

- Manikandan Narayanan 2008 Economic impact of agro meteorological advisory services over central zone of Kerala Journal of agro meteorology 10 (Special Issue):230-234
- Ramachandrappa. B.K. 2018 Usefulness and impact of agro met advisory services in eastern dry zone of Karnataka Indian Journal of Dry land Agricultural Research and Development 33(1):32