

## Agro Advisory Services for Risk Management in Agriculture

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### Introduction

Indian agriculture pulled the country out of dire food deficit through the Green Revolution in the mid-1960s contributing immensely to the food security and well-being of its people. The situation however, started turning adverse for the sector around mid-nineties, with slowdown in growth rate of output, which then resulted in stagnation or even decline in farmer's income because of various risks. To overcome the risks and to enhance agricultural productivity the government of India, Ministry of agriculture and farmers welfare and ICAR has taken several steps to provide agro advisories to farmers based on current adverse conditions.

### Risk in agriculture

The uncertainties inherent in weather, yields, prices, government policies, global markets, and other factors that impact farming can cause wide swings in farm income.

### Types of risk in agriculture

- 1. Production risk:** Derives from the uncertain natural growth processes of crops and livestock. Like Weather, disease, pests, and other factors affect both the quantity and quality of commodities produced.
- 2. Price/ market risk:** It refers to uncertainty about the prices producers will receive for commodities or the prices they must pay for inputs.
- 3. Financial risk:** It results when the farm business borrows money and creates an obligation to repay debt. Rising interest rates and restricted credit availability are also aspects of financial risk
- 4. Institutional risk:** It results from uncertainties surrounding Government actions and Regulations. Like for chemical use, rules for animal waste disposal, and the level of

price or income support payments are examples of government decisions that can have a major impact on the farm business.

5. **Human risk:** Use of the heavy dose of chemicals causes health hazards and improper and unsafe handling of agricultural equipment's and machineries may become fatal in human beings .

### Risk management

- The practice of identifying potential risks in advance analysing them and taking precautionary steps to reduce the risk.
- It involves choosing among alternatives that reduce financial effects that can result from such uncertainties.



#### Process of risk management

1. Identify - Different types of risk in all husbandries
2. Analyze - Cause to mitigate
3. Evaluate - Alternative ways to solve
4. Treat - Apply appropriate methodology
5. Monitor - Observe the outcome

### Three broad categories of risk management in agriculture.

- **Prevention** - Eliminate or reduce the occurrence of disaster- causing hazards
- **Mitigation** - Reduce and manage the potential adverse impact of a disaster
- **Adaptation** - Measures of coping with and relieving post-disaster impacts.

### Agro advisory services for risk management

It refers to the entire set of organizations that support and facilitate people engaged in agricultural production to solve problems and obtain information, skills and technologies to improve their livelihoods. AAS are the farm decisions taken in response to past, current and future weather change. It includes agronomical, pest and disease, water and input management.

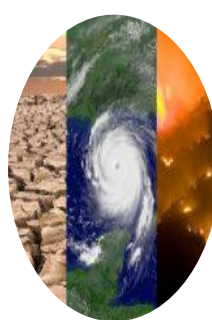
### Need of agro advisory services for farmers

- Guides in decision making of farmers
- Improves crop production quality

- Increases input efficiency (water, labour and energy)
- Develop sustainability in crop production
- Economize the quality crop production
- Meets real-time needs of farmers
- Enhance crop production and food security
- Bridges gap between farmers and researchers

### Importance of AAS

- It enhances crop yields and farm income and reducing cost of cultivation and farm expenditure with suggested management practices.
- Farmer can plan their farm operations well in advance and make their farming decision in shorter duration of time.
- Accurate forecast and timely dissemination of information are prerequisite for reducing the losses that arise due to weather adversities.
- The risk and uncertainty associated with farming can be minimised using the weather advisories.
- Weather forecast based information on soil moisture status and guidance for application of irrigation, fertilizer and herbicides etc.
- Advisories on sowing/planting dates and suitability of inter-cultural operations, to guide farmer in their day-to-day cultural operations.
- Weather forecast based forewarning system for major pests and diseases of major crops and advises on plant protection measures.
- Propagation of techniques for manipulation of crop's microclimate e.g. shading, mulching, etc. to protect crops under stressed conditions.
- Advisory for livestock on health, shelter, and nutrition.



### Organisations contributing to AAS

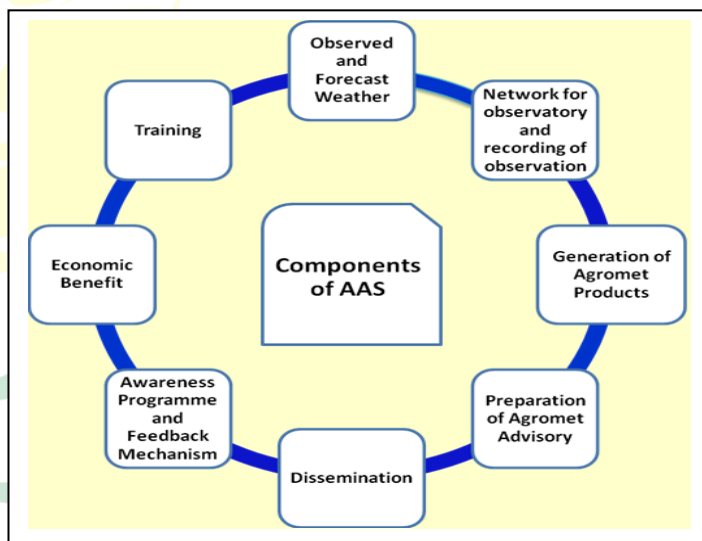
1. ICAR- Indian Council of Agricultural Research
2. IMD- Indian Meteorological Department
3. Micro-Level Weather based Advisory Services (NICRA)
4. Gramin Krishi Mausam Sewa

### ICAR- Indian Council of Agricultural Research

ICAR has prepared agro-advisories for all major kharif and Rabi crops, livestock in tune with the growing environments in different agro-ecologies spread across the country. It provides advisories on best management practices, efficient utilization of resources, seeds, nutrients and cost-effective solutions to mitigate crop losses due to weather, pests and diseases with technical inputs from research institutes and SAU's compiled the kharif and rabi advisories for timely dissemination to farmers and farmers groups in all states and UT's through KVKs along with line departments.

### IMD- Indian Meteorological Department

- IMD provides a very special kind of inputs to the farmer as advisories that can make a tremendous difference to the agriculture production by taking the advantage of benevolent weather and minimize the adverse impact of malevolent weather.
- Some of the components identified to provide Agricultural Advisories services through IMD are depicted as shown in the figure.



### Micro-Level Weather based Advisory Services

- Considering the variability of weather, climate and soil, CRIDA, Hyderabad pioneered in starting flagship research programme of the ICAR named NICRA. It is a network project of the ICAR launched in February, 2011
- Aims to enhance resilience of Indian agriculture to climate change and climate vulnerability through strategic research and technology demonstration

- Conduct research on adaptation and mitigation covers crops, livestock, fisheries and natural resource management
- As part of NICRA, the AICRPAM took up a pilot project during 2010 to develop and disseminate micro-level AAS through its 25 cooperating centres enabling capacity building of farmers for climate resilience. (Vijayakumar *et al.*, 2017)
- The pilot micro-level agromet advisory services started in Belagavi district of Karnataka under AICRPAM-NICRA project for which IMD provided block level weather forecasted information since 2014

#### **Gramin Krishi Mausam Sewa**

- IMD is rendering district level weather based AAS named as GKMS since 2015 in the country to cope up with weather and climatic risks and uncertainties.
- It issues crop and location-specific weather-based agricultural advisories for the benefit of the farming community.

#### **Conclusion**

Agro advisory services are boon to the farming community in enhancing their knowledge about innovative farming practices which includes latest technologies and good management practices in crop and animal husbandry. Farmers can receive weather forecast based agro-advisories, including selection of suitable crops and varieties on real time basis. Farmers adopting the recommendations of agro met advisories could able to take wise decision on day-to-day farm operations to reduce the input cost and reap the benefits.