



# Intelligent Agricultural Systems Advisory Tool (ISAT)

An ICT linked platform delivering context-specific, climate-informed agro-advisories at scale

## Background

Climate patterns are increasingly fluctuating, posing significant challenges for small-scale farmers, particularly in areas dependent on rainfall. In the absence of dependable weather forecasts, these farmers bear the consequences of recurrent crop failures and threats to their livelihoods. Effective risk management in agriculture hinges on making well-informed choices. Thus, it is imperative to build resilience and equip farmers with a means to make intelligent decisions to mitigate climate-related risks.

Recognizing the need for weather-based agro-advisory services, the **Indian Meteorological Department (IMD)** initiated district-level agro-advisories with the help of 130 Agro Met Field Units (AMFUs), located at State Agricultural Universities and Indian Council of Agricultural Research (ICAR) institutes.

These AMFUs offer tailored guidance for farmers that aids in optimizing crop management, mitigating risks and maximizing yields in ever-changing weather patterns. There is a substantial potential for enhancing existing systems by integrating improved forecasts and value-added content.

## Intelligent Agricultural Systems Advisory Tool (ISAT)

The **Intelligent Agricultural Systems Advisory Tool (ISAT)** is a collaborative effort involving ICRISAT, Microsoft and the India Meteorological Department. Initially developed as a Sowing app, it evolved into ISAT under the **Monsoon Mission project, a joint initiative with IMD and the Indian Institute of Tropical Meteorology (IITM)**.

ISAT's primary function is to provide farmers with timely and precise farming advisories, considering various factors such as:

- Local and global historical climate data
- Current and forecasted weather conditions
- Local cropping systems
- Soil information.

These advisories are customized to emulate the decision-making process of farmers and are delivered through SMS and other channels in local languages. The key strength of ISAT lies in its ability to offer science-based, data-driven, and context-specific guidance to farmers. This ensures that farmers receive accurate advice on the best times for sowing and other agricultural practices.

## The advisory framework

ISAT's system effectively integrates with weather APIs, utilizing forecast, current and historical data from sources such as IMD or various independent stations to cover a range of weather conditions. Decision tree algorithms analyze this data to produce agronomy advisory content.

This content undergoes a review by subject matter specialist/cluster officers in ICRISAT, AFMU and District Agro Met Units (DAMU). These officers further refine and customize the advice before sending it to local farmers.

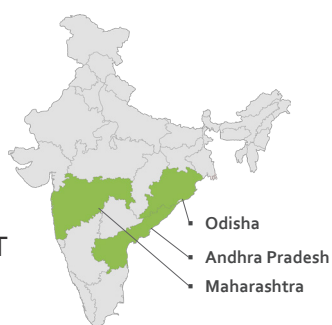
Consequently, this approach merges data-driven insights with the expertise and discernment of district-level trained officials, tailoring it more accurately to local contexts.

## Reaching the farmers

ICRISAT strongly emphasizes on capacity building among various stakeholders and farmers for a successful uptake. Our tailored programs focus on educating farmers on the significance of weather patterns and their impact on agricultural decisions. A key aspect of our initiative is to involve and **empower women in agricultural decision-making processes**, recognizing their pivotal role in this sector.

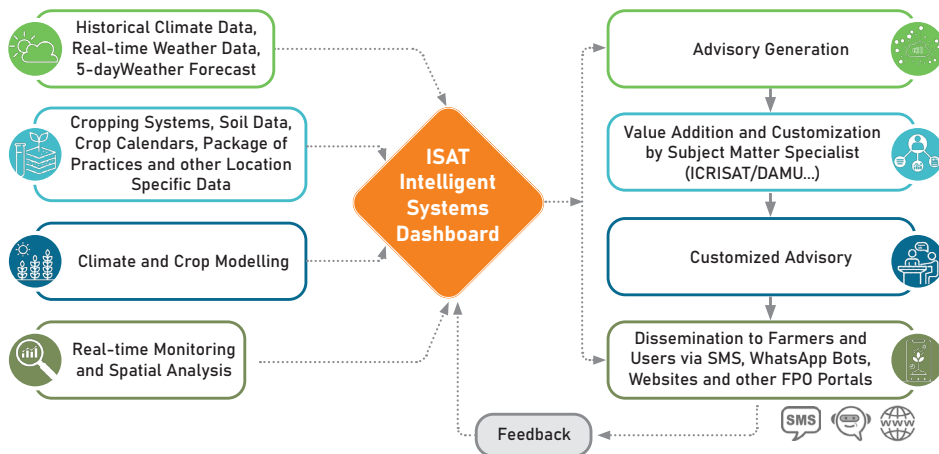
## Impact

Under the Monsoon Mission funded by the Ministry of Earth Sciences, the collaboration between ICRISAT, IITM and IMD led to the successful implementation of the ISAT project in **Ananthapur, Andhra Pradesh** and **Parbhani, Maharashtra**. This pilot project included conducting educational programs for farmers, focusing on the importance of climate services in agriculture and the benefits of using digital tools for making informed decisions.



## Publications

- <https://oar.icrisat.org/11074/>
- <https://www.sciencedirect.com/science/article/pii/S2405880723000651>



In **Odisha**, the ISAT was introduced in two districts, **Rayagada and Gajapathi**, as part of the **Odisha Livelihood Mission (OLM)**. The collaboration between ICRISAT, the Government of Odisha and the Odisha University of Agriculture and Technology further refined the system. This enhancement involved developing new decision algorithms specifically designed to complement the unique cropping systems of Odisha.

## Voice from the field

I have been sharing the advantages of receiving these messages with my neighbors in the village. These messages help me in planning my farm operations and guide my decisions about land leasing.

These messages give me confidence about my decisions.

**Nazeer Ahmed**

Farmer, Hussainapuram Village,  
Kurnool, Andhra Pradesh



## For partnerships & collaborations, contact

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