SUSTAINABLE FOOD SYSTEMS

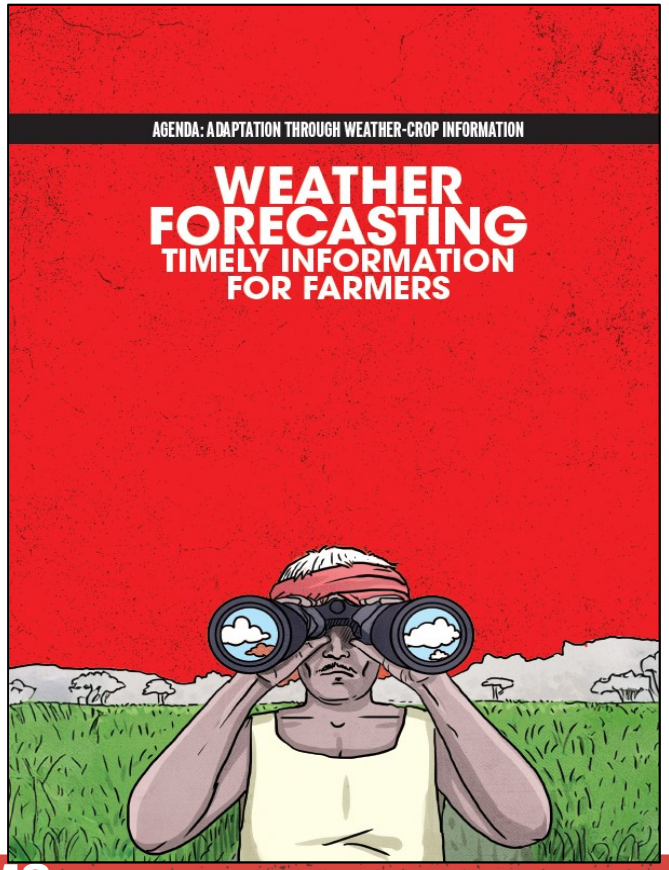
An Agenda for Climate-risked Times

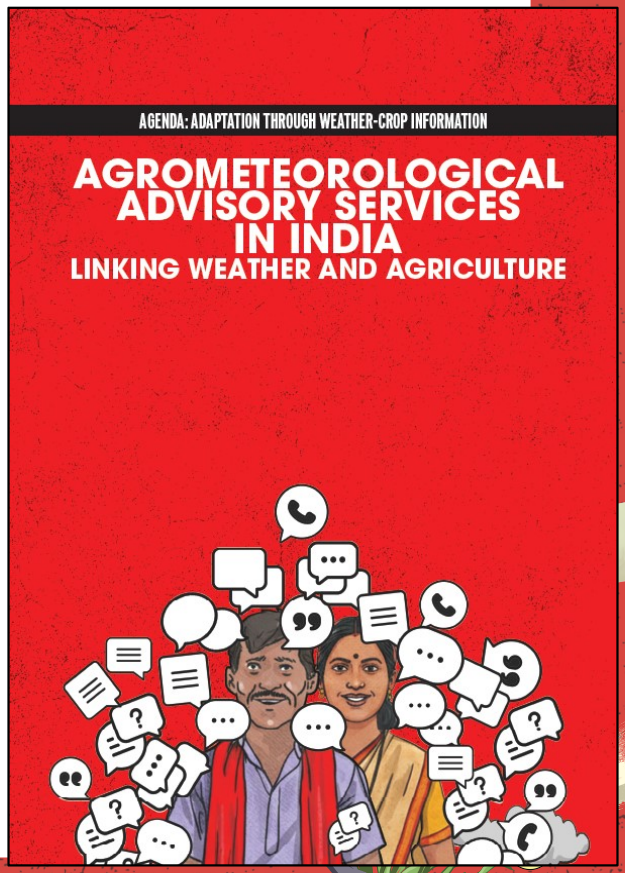
Agro-met advisories: Challenges and Initiatives

Gauri Arora, CSE

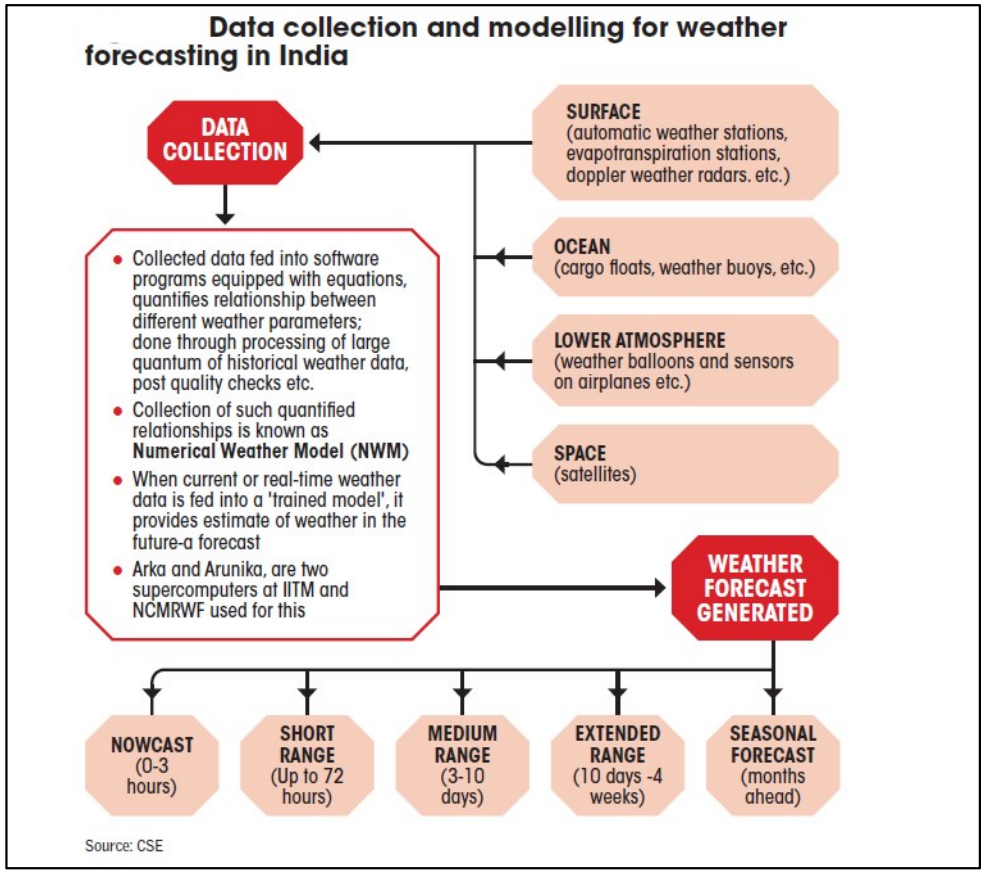
Presentation Overview

- Weather forecasting
- Agrometeorological advisory creation
- Gaps and challenges
- Opportunities and possibilities for improvement
- Examples of state initiatives





Weather forecasting and advisory creation: Indian government



Weather forecasting and advisory creation: Indian government

Agrometeorologists logs-into Agromet DSS portal wherein district level weather updated Tuesdays & Fridays

↓

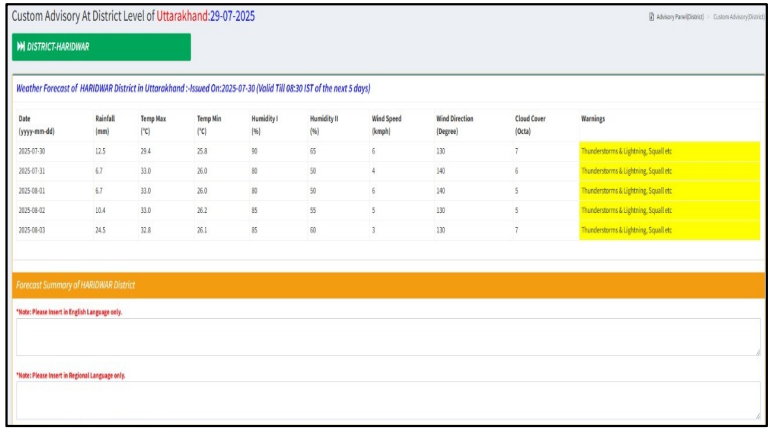
Based on a consultation with 'panel' of expert scientists---fills crop-wise data in drop-down options.; Additional box for impact-based forecast also filled

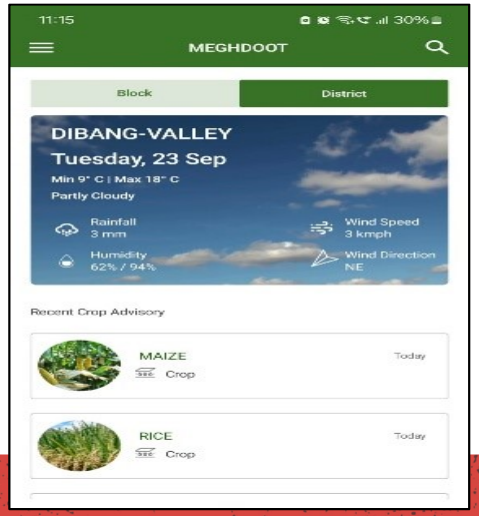
↓

Advisory in PDF generated, uploaded on the DSS portal in English & regional language

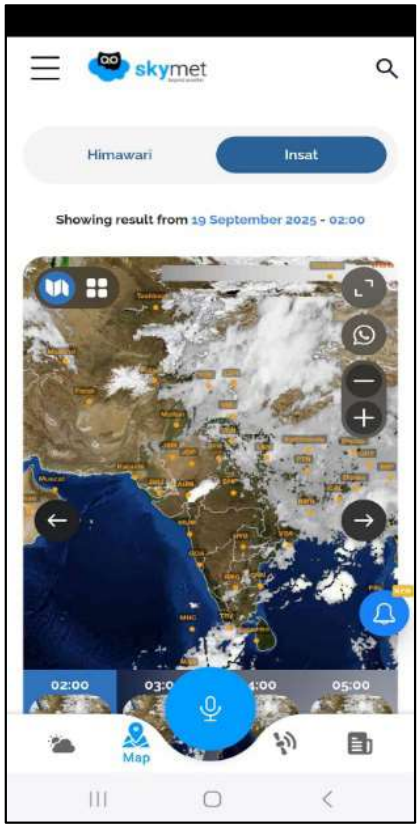
Advisory displayed on IMD's Agrimet website & shared with farmers via WhatsApp groups, etc

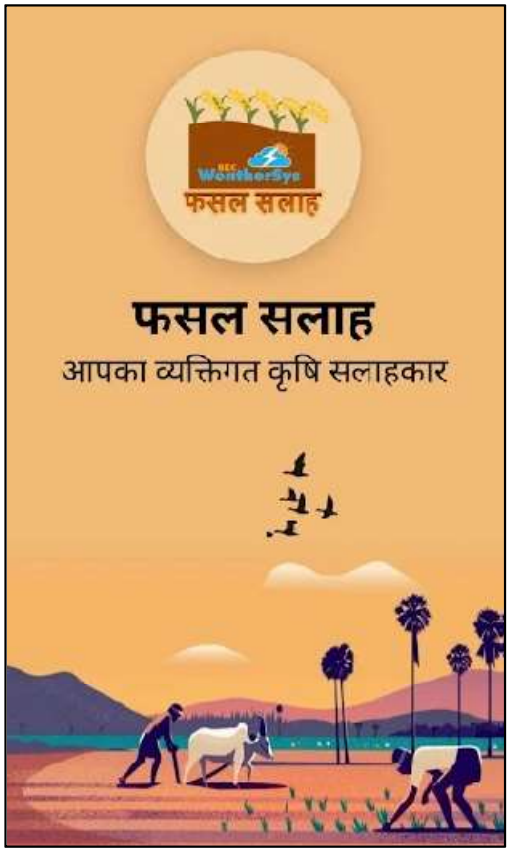
Nowcast details with erratic/extreme events communicated immediately on digital channels





Weather forecasting and advisory creation: Private players





Challenges
Weather forecasting & agrometeorological advisories

Limited infrastructure, capacity and maintenance deficiencies

A. Inadequate coverage and insufficient equipment density

- Block-level forecasts recognised necessary; quality forecasts at this level hard to generate due to reliance on current district-level infrastructure
- District-level advisories often **inadequate**, especially in regions with varied topography and diverse cropping patterns
- Government infrastructure operates about 1,008 Automatic Weather Stations (AWS); based on the required 5-km radius coverage, India needs approximately **40,000 AWS**
- India's network of Doppler Weather Radars (DWRs) stood at 39 in 2023, **significantly less** compared to countries like the US (160) and China (217)

Limited infrastructure, capacity and maintenance deficiencies

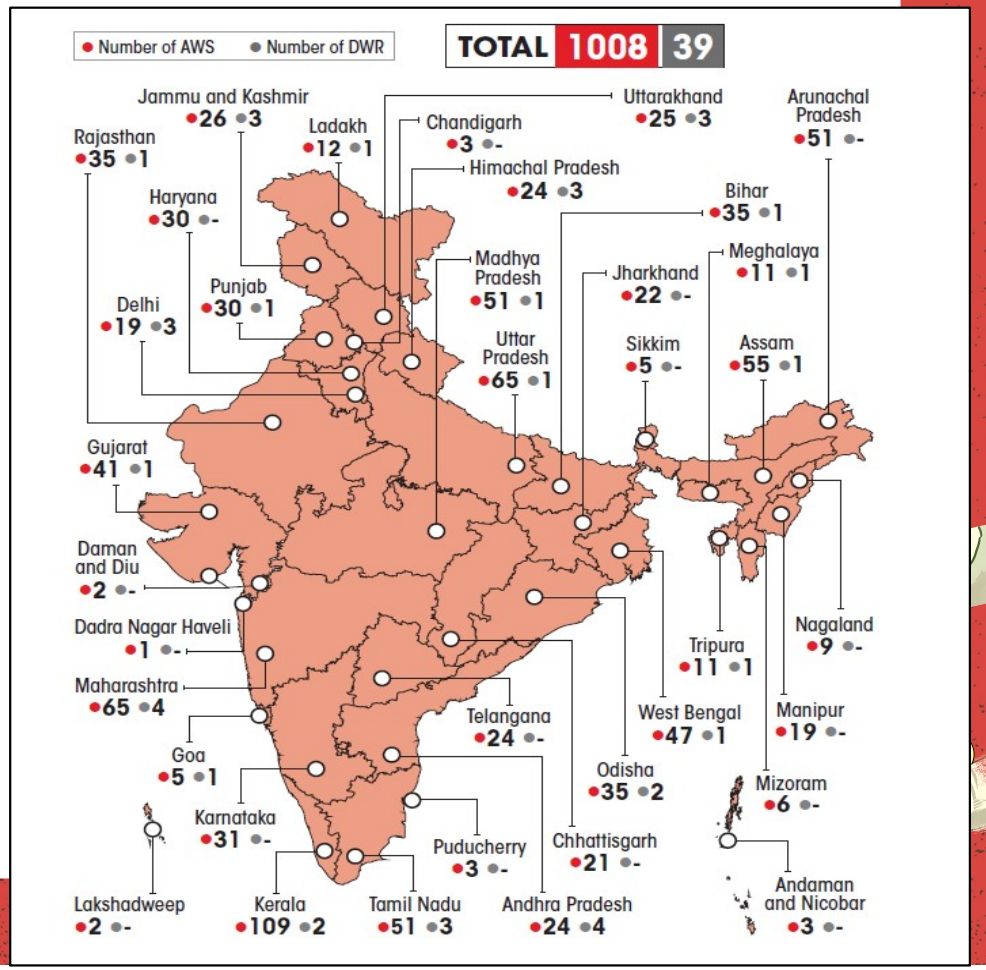
B. Sporadic placement

Concerns among stakeholders about **sporadic placement** of the infrastructure

C. Maintenance issues

Lack of appropriate maintenance & upkeep of observational machines

KVK scientists **cannot access** real-time data from AWS machines installed in own facilities; difficult to monitor irregularities & plan necessary replacements

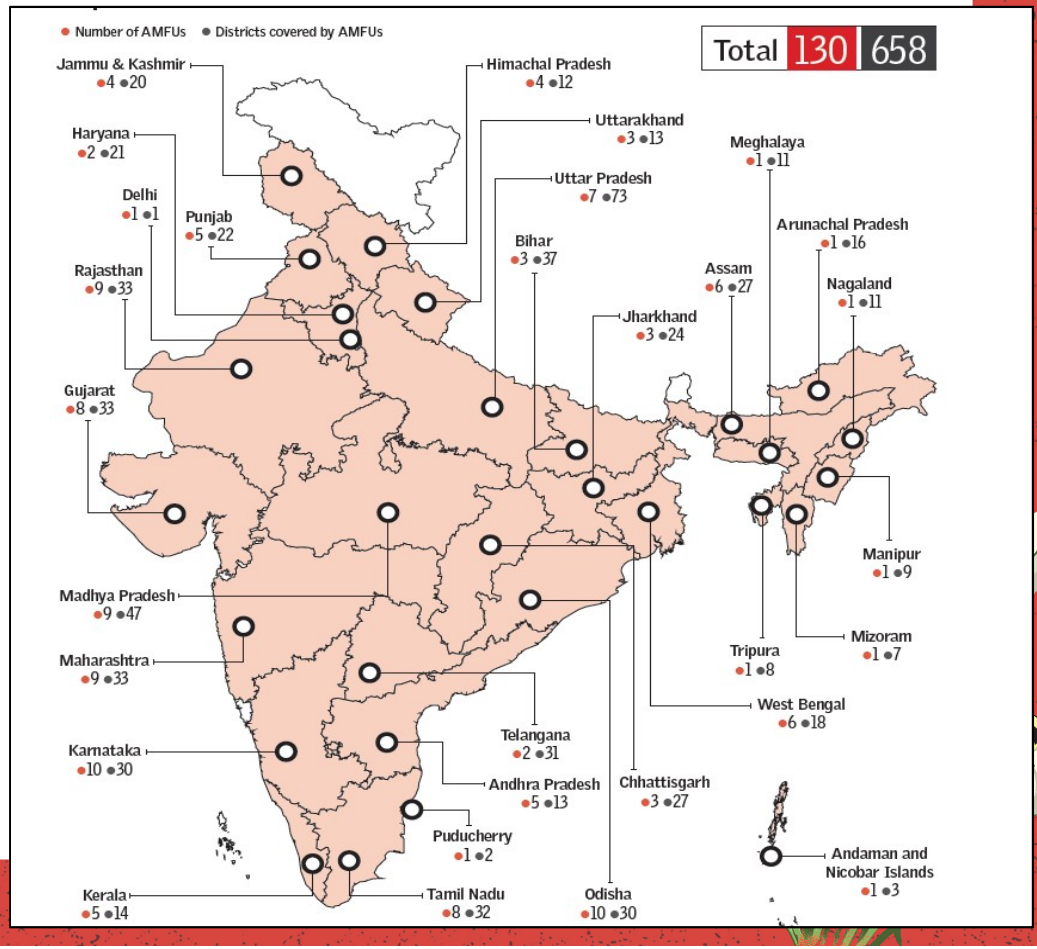


Limited infrastructure, capacity and maintenance deficiencies

D. High workload on AMFU personnel

- Typically, 1 agro-meteorologist makes bi-weekly advisories for an average of **4-5 districts**

- This can be far higher in some regions, such as in the case of Haryana or Bihar's Sabour AMFU



Limited infrastructure, capacity and maintenance deficiencies

D. High workload on AMFU personnel

- Capacity challenge **significantly worsened** by the discontinuation of District Agro-met Unit (DAMU) services in early 2024

- If existing AMFUs forced to cover all blocks,
  1 agro-meteorologist linked to four-five districts (each with six to eight blocks); required to generate 24 to 40 bi-weekly advisories, a task that is quite challenging

- **Outdated zoning.** Network of AMFUs based on agro-climatic zones classified in 1971; classification has not been updated

Accuracy and modelling limitations

A. Low block-level accuracy

Accuracy of block-level forecasts is particularly low, **ranging 40-50 per cent**

B. Monsoon variability

Accuracy **much lower in monsoons**, which negatively impacts kharif crops; However, the accuracy increases significantly in winter season

C. Tropical modelling difficulty

India's tropical nature and varied topography presents challenges; necessitates parameterisations, adding to the **uncertainty of forecasts**

Dissemination and accessibility failures

A. Lack of hyperlocal dissemination

Gram panchayat-level (hyperlocal) forecasts deemed significant ;farmers primarily receive district-level forecast; especially after **the closure of DAMUs**; has also led to loss of established, trusted farmer networks built through these WhatsApp groups

140 million farming households
In all likelihood, large section of this population not receiving the agrometeorological advisory service

B. Coordination issues

Limited coordination between officials of two core ministries—the **Union Ministry of Earth Sciences** and the **Union Ministry of Agriculture and Farmers' Welfare**

Dissemination and accessibility failures

C. Digital divide

- **Over reliance on ICT methods**--- applications (Meghdoot, Damini) & portals
- Timely access challenging due to **limited internet connectivity**; difficulties faced by **technology-challenged farmers**; obtaining information from websites harder than receiving it through WhatsApp or SMS
- Effective practice of **“warm-blooded dissemination”** no longer widely available
- ‘Gram Panchayat Level Weather Forecasting’ initiative, launched in October 2024, criticised because outputs are primarily accessible **only on digital platforms** like E-Gramswaraj & Mausamgram

Dissemination and accessibility failures

D. SMS issues

Farmers reportedly not been receiving alerts through the ‘M-kisan’ SMS service since 2021

SMS alerts sent by state disaster management departments often **not area-specific**, and their timing **varies greatly** (from half an hour to one day before the event)

Content limitations in advisories

A. Lack of local expertise

Preparing meaningful advisory requires **skilled, trained agro-meteorologists** who possesses-- deep local knowledge regarding region, different stages of local crops & specific issues faced by farmers; This level of specialised local experience is **sometimes lacking in AMFUs**

B. Non-differentiation

Advisories generally **fail to differentiate** between small-, medium- and large-scale farmers; Weather needs are similar, crucial aspects like financial capacity to purchase agricultural inputs & chemicals vary significantly

C. Technicality and length

Can be **too technical for small farmers**; Lengthy, contain generic information

Content limitations in advisories

Animals	• For milch animals regularly follow schedule of 1 kg feed + 50 g mineral mixture per 2 litres of milk yield. • Feed animals with a mixture of green grass + hay + minerals + dry feed like a khichri. • Proper ventilation should be maintained for free circulation of air in the sheds. • Maintain optimum moisture of 60 to 70 per cent in vermin compost pits and drain out the excess water from the vermipits. • Livestock owners are advised to vaccine the animals against the foot & mouth disease. • Apply 4-6 inch thick hay thatch as a roofing material. Water can be used for spraying the floor and roof of shelter periodically during peak hot hours which lowers the temperature and consequently reduces the heat load on animals. • It is advised to provide deworming medicine by consulting nearest veterinary hospital. • Provide pure drinking water regularly. • keep the animals under shade during 12 to 3 pm, as day temperature is increasing. • Use clean water for washing the animals as pond water may be contaminated.

Opportunities and possibilities for improvement

Targeted infrastructure scaling

Instead of general expansion, a targeted approach is recommended for increasing infrastructural capacity

A. Focus on high-risk areas

Investments can target **identified high-risk districts** (based on assessments like (NICRA's) "very highly vulnerable" & "highly vulnerable" classifications

B. Prioritize complex regions

States with higher topographical and micro-climatic variations, such as Himalayan states & mountainous regions– focused for infrastructure build-up

C. Targeted schemes

The Mission Mausam scheme, launched in 2025

Utilising indigenous technology

Prioritising and scaling up investment in Indian-made observation systems is recommended

A. Addressing maintenance issues

Intended to overcome difficulties related to the **replacement and maintenance** of imported equipment, as highlighted by KVK scientists

B. Cost-effective solutions

Companies in India developing and manufacturing their own AWS, which are claimed to be **cost-effective** compared to imported counterparts & tailor-made for India's climatic conditions

Collaboration and synergy

Exploring collaborative projects is seen as crucial to leveraging the strengths of various sectors for better and timely forecasts

A. Multi-stakeholder partnerships

- Collaboration explored between---government & private players, civil societies, and academic institutions

- Collaborating with NDMA to make existing SMS **alerts area-specific** for erratic events; including State Agricultural Officers in panel of experts

B. Quality monitoring

Such collaborations could also establish mechanisms for **monitoring quality of forecast** & advisory information shared by private players with farmers, which is currently lacking

Scaling up state initiatives

AMFUs across states have developed unique, context-specific approaches to enhance the quality, specificity and reach of their advisories, thereby demonstrating scalable solutions

HIMACHAL PRADESH

Initiatives and Impacts

- 2018-2024, AMFU Solan had been issuing **block-level advisories** Now exploring option of mentioning block-level forecasts in district-level advisories
- **'Press notes'** issued regularly; students of IGNOU roped in to disseminate advisories
- AMFU Palampur- blocks that had similar topography & **clubbed together**---limited block-level advisories issued
- Services of **'Pashu Sakhi' and 'Krishi Sakhi'** used to increase reach
- Chamba KVK--adopted **18 villages** (under NICRA)

AMFUs in Himachal Pradesh

AMFU	Districts under the AMFU	State agricultural universities with the AMFU
Kukumsheri	Kinnaur, Lahaul and Spiti	Ch Sarwan Kumar Himachal Pradesh Krishi Viswavidyalaya
Palampur	Una, Hamirpur, Kangra, Chamba	
Seobagh	Kullu, Mandi	Dr Yaswant Singh Parmar University of Horticulture and Forestry, Solan
Nauni (Solan)	Solan, Shimla, Bilaspur, Sirmaur	

MAHARASHTRA

Initiatives and Impacts

- AMFU Parbhani--**still issuing** block-level advisories in 25 blocks; Had earlier also collaborated with ISRO
- **Automating generation of advisories** since 2019; Advisories generated when biotic or abiotic stress in the region – instead of bi-weekly
- AMFU Rahuri--involves officers of state agricultural department & zila parishad, as well gram sevaks at panchayat level to maximize dissemination
- To monitor impact, AMFU Parbhani **issuing projects to university students** pursuing Masters or PhD in agrometeorology
- AMFU Parbhani-- **has active YouTube channel** & streams short 3-minute videos; Advisory is an easy-to-read single page document

MAHARASHTRA

Kailas Dakhore, Agrometeorologist of AMFU Parbhani creating awareness

MAHARASHTRA

Gramin Krishi Mausam Seva (GKMS)
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Jalna District Level AAB No. : 20/2025-2026 **Day & Date : Friday 06.06.2025**

Observed weather during last week (Dated 31st May to 06th June 2025)							Weather Parameters		Weather Forecast (Valid for 07th to 11th June 2025)				
31/05	01/06	02/06	03/06	04/06	05/06	06/06	Date		07/06	08/06	09/06	10/06	11/06
							Rainfall (mm)		2.0	15.0	7.0	3.0	1.0
							T_{max} (°C)		36.0	35.0	35.0	34.0	34.0
							T_{min} (°C)		24.0	25.0	25.0	25.0	25.0
							AM / PM	Cloud cover	Clear	Cloudy	Cloudy	Partially Cloudy	Clear
							RH-I (%)		73	78	77	70	69
							RH-II (%)		56	54	58	58	52
							Wind Speed (km/hr)		13	14	18	19	22
							AM / PM	Wind direction	NW	NW	NW	WNW	WNW

Weather Summary / Advisory:
As per forecast of RMC, Mumbai, Thunderstorm accompanied with, Lightening, Light to moderate rainfall and gusty wind (30-40 Kmph) may occur at isolated places in Jalna District on dated 07th June. Thunderstorm accompanied with, Lightening, Light to moderate rainfall and gusty wind (40-50 Kmph) may occur at isolated places in Jalna District on dated 08th June. Light to moderate rainfall may occur at isolated places on dated 09th, 10th & 11th June and scattered places on dated 07th & 08th June in Jalna District. No large change in Maximum temperature during next 24 hours and gradual rise by 2 to 3 °C thereafter. No large change in Minimum temperature during next five days in Jalna District.

General Advisory:
As per ERF3 products Rainfall may be normal, maximum temperature may be below normal & Minimum Temperature may be below normal during 06th to 12th 2025 and Rainfall may be above normal, maximum temperature may be normal & Minimum Temperature may be normal during 13th to 19th June 2025 in Marathwada region.
The District wise & Block wise PET (Potential Evapotranspiration) products given by SAC, ISRO, Ahmedabad shows decrease in PET in Marathwada region.

SMS Advisory: Farmers are advised not to rush into crop sowing. Preparatory tillage operations should be carried out during dry condition.

Name of Crop	Stage	Agro Advisory
Soybean	Intercropping	For rainfed cultivation use intercropping of soybean + Tur/pigeon pea 2:1 or 4:2 and for irrigated condition use Soybean + cotton 1:1 or 2:1 intercropping should be use in soybean crop. Preparatory tillage operations should be done as early as possible for sowing of soybean crop.
Kharif sorghum	Intercropping	*Kharif* sorghum + Soybean 2:4 or 3:6 intercropping system should be use in *Kharif* sorghum crop keep 45 cm distance between two rows. *Kharif* sorghum + Pigeonpea 3:3 or 4:2 intercropping is beneficial. If soybean, green gram, black gram such types of short duration crops are selected for intercropping use 2:4 intercropping system. Preparatory tillage operations should be done as early as possible for sowing of *Kharif* Sorghum.
Pearl millet	Intercropping	Intercropping of pearl millet + pigeonpea 2:1, 3:3 or 4:2 should be used in pearl millet crop. Preparatory tillage operations should be done as early as possible for sowing of Pearl millet.
Sugarcane	Vegetative Growth	If whitefly infestation is observed on the sugarcane crop, remove and destroy the infested leaves, use yellow sticky traps in the crop and take a spray of chlorpyrifos 20% @ 30 ml or imidacloprid 17.8% @ 8 ml or acephate 75% @ 20 g per 10 liters of water during clear weather condition. For management of stem borer in Sugarcane crop take a spray of Chlorpyrighos 20% @ 25 ml or chlorantraniliprole 18.5 % @ 4 ml per 10 liters of water during clear weather condition.
Turmeric	Intercropping	As per availability of water sowing of turmeric crop should be done. While selecting inter crop in turmeric, precaution should be taken that the crop must be short duration and will be harvested within three to three and half months, e.g. leafy vegetables.
Mandarin / Sweet Orange	Selection of varieties/ Growth	For new plantation of citrus orchard prepare the pits of size 1 x 1 x 1 m and fill the pits with mixture of half kg Super phosphate + FYM + soil. For plantation of Mandarin select varieties like Nagpur Orange, Kinnow and for sweet oranges Mosambi, Phule Sweet Orange etc. For plantation of orchard plants should be purchase only from government registered nurseries. Take a spray fungicide in citrus orchard during clear weather condition.
Pomegranate	Selection of varieties/ Growth	For new plantation of pomegranate orchard fill the pits with the help of well fertile soil + well decomposed FYM + 1 to 1.5 kg SSP + Compost. For plantation of Pomegranate select varieties like Bhagwa, Phule Bhagwa Super, Ganesh, Phule arakta etc. For plantation of orchard plants should be purchase only from government registered nurseries.
Sapota	Selection of varieties/ Growth	For new plantation of sapota orchard prepare the pits of size 1 x 1 x 1 m and fill the pits with mixture of half kg Super phosphate + 1:3 FYM + soil. For plantation of Sapota select varieties like Kalipatti, Cricket Ball etc. For plantation of orchard plants should be purchase only from government registered nurseries.
Vegetable	Seedling preparation / Harvesting	As per availability of water sowing of seeds (Brinjal, Tomato, Chilli etc.) on raised bed should be done for preparation of seedlings of vegetable crops. Harvesting of mature vegetable crops should be done.
Floriculture	Seedling preparation / Harvesting	As per availability of water sowing of seeds on raised bed should be done for preparation of seedlings of floriculture crops. Harvesting of mature flowers should be done.
Mulberry sericulture	–	For one acre mulberry plantation requires 2 R area nursery and 3 beds of 50X3X1.5 feet size are required. 6 to 8 months old mulberry pencil size cuttings with 3 to 4 active eye buds are required for cutting preparation. Made slanting cut above eye and flat cut below the bud With the sharp secateur. Ensure that rind should not break. Avoid diseased plant for preparation of cuttings. For paired rows system of planting at 5X3X2 or 6X3X2 feet required to prepare 6000 cuttings per acre. Plant cutting at 15 cm row to row and 10 cm plant to plant distance on raised bed. Prepare beds by mixing two parts FYM and one part soil.
Animal husbandry	–	With the onset of monsoon many diseases occur in livestock. Unity of which in livestock, three-way formula has to be implemented. 1) Physical facilities like good shed which will protect from rains & insect bites. 2) Biological facilities like vaccination and deworming. 3) Chemical facilities involving immediate treatment of any disease, infection occur. Immediate deworming with onset of monsoon in sheep and goat and on seventh day age in cow and buffalo calves are of immense importance.

This Agro Advisory Bulletin (AAB) is prepared and published with the consultation and recommendation of SMS committee of "Gramin Krishi Mausam Seva (GKMS)", Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani-431 402 (MS).

Principal Nodal Officer

UTTARAKHAND

Initiatives and Impacts

- The AMFU in IIT Roorkee--**has KVK officials in advisory board**

AMFUs in Uttarakhand

AMFU	Districts under the AMFU	State agricultural universities with the AMFUs
Pantnagar	Udham Singh Nagar, Nainital	G B Pant University of Agriculture and Technology, Pantnagar
Ranichauri	Uttarkashi, Chamoli, Rudraprayag, Pithoragarh, Bageshwar, Champawat, Almora, Tehri-Garhwal	VCSG Uttarakhand University of Horticulture and Forestry, Bharsar
Roorkee	Dehradun, Pauri, Haridwar	IIT Roorkee

- AMFUs share district-level advisories at block level as well through WhatsApp groups
- Farmers can access block-level forecasts through **'green alerts',** an initiative of the IMD; link shared on WhatsApp groups
- Gives title of '**Mausam Mitra**' to vigilant villager--help disseminate advisories; Has 30 Mausam Mitras so far, (reach to 30,000 farmers)
- Scientists required to do at least 5 awareness and training programmes in villages and blocks

HARYANA

Initiatives and Impacts

- Out 13 established DAMUs--**11 still functional**. As a result; Districts which have DAMUs get block-level advisories
- In some cases, DAMUs making **district-level advisories for neighboring districts** as well
- AMFU Hissar--developed '**E-Mausam' application** (to send SMS to farmers); Website portal has high social media presence (Facebook and YouTube); also broadcasts on local news & newspapers
- Farmers say that the advisories are helpful

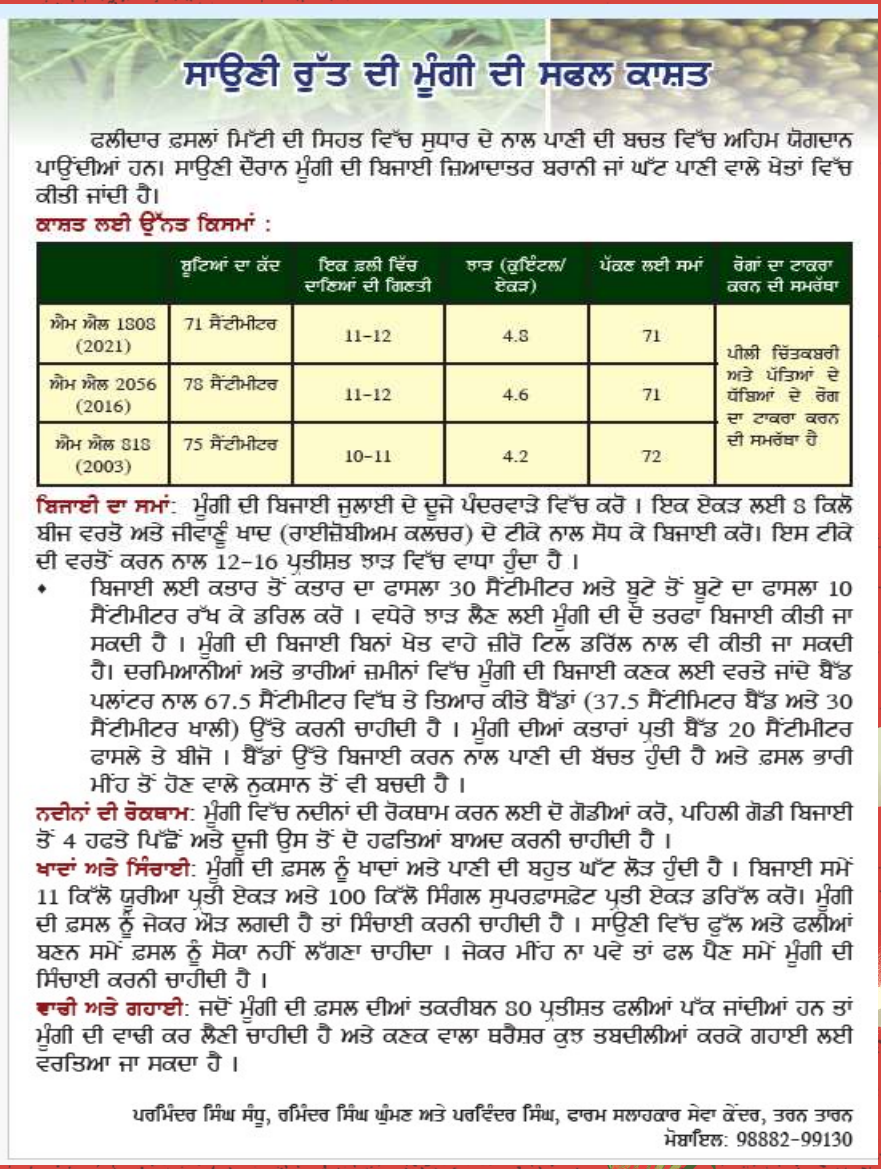
PUNJAB

Initiatives and Impacts

- AMFU Ludhiana--**sharing block-level forecasts** on existing WhatsApp groups (as many as 400 WhatsApp groups reaching about 10 lakh farmers); University website, portal, PAU Kisan app, e-mails etc some other options

- KVK Jalandhar---**started own SMS service** to farmers

- Since 2017--university newsletter called '**Kheti Sandesh'** helped gain the farmers' trust; Published in Punjabi language, shared weekly as a PDF on WhatsApp groups; made available on the university website



ਸਾਉਣੀ ਰੁੱਤ ਦੀ ਮੂੰਗੀ ਦੀ ਸਫਲ ਕਾਸ਼ਤ

ਫਲੀਦਾਰ ਫ਼ਸਲਾਂ ਮਿੱਟੀ ਦੀ ਸਿਹਤ ਵਿੱਚ ਸੁਧਾਰ ਦੇ ਨਾਲ ਪਾਣੀ ਦੀ ਬਚਤ ਵਿੱਚ ਅਹਿਮ ਯੋਗਦਾਨ ਪਾਉਂਦੀਆਂ ਹਨ। ਸਾਉਣੀ ਦੌਰਾਨ ਮੂੰਗੀ ਦੀ ਬਿਜਾਈ ਜ਼ਿਆਦਾਤਰ ਬਰਾਨੀ ਜਾਂ ਘੱਟ ਪਾਣੀ ਵਾਲੇ ਖੇਤਾਂ ਵਿੱਚ ਕੀਤੀ ਜਾਂਦੀ ਹੈ।

ਕਾਸ਼ਤ ਲਈ ਉੱਨਤ ਕਿਸਮਾਂ :

	ਬੂਟਿਆਂ ਦਾ ਕੱਦ	ਇਕ ਡਲੀ ਵਿੱਚ ਦਾਣਿਆਂ ਦੀ ਗਿਣਤੀ	ਝਾੜ (ਕੁਇੰਟਲ/ ਏਕੜ)	ਪੱਕਣ ਲਈ ਸਮਾਂ	ਰੋਗਾਂ ਦਾ ਟਾਕਰਾ ਕਰਨ ਦੀ ਸਮਰੱਥਾ
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ਐਮ ਐਲ 2056 (2016)	78 ਸੈਂਟੀਮੀਟਰ	11-12	4.6	71	
ਐਮ ਐਲ 818 (2003)	75 ਸੈਂਟੀਮੀਟਰ	10-11	4.2	72	

ਬਿਜਾਈ ਦਾ ਸਮਾਂ: ਮੂੰਗੀ ਦੀ ਬਿਜਾਈ ਜੁਲਾਈ ਦੇ ਦੂਜੇ ਪੰਦਰਵਾੜੇ ਵਿੱਚ ਕਰੋ । ਇਕ ਏਕੜ ਲਈ 8 ਕਿਲੋ ਬੀਜ ਵਰਤੋ ਅਤੇ ਜੀਵਾਣੂੰ ਖਾਦ (ਰਾਈਜ਼ੋਬੀਅਮ ਕਲਚਰ) ਦੇ ਟੀਕੇ ਨਾਲ ਸੋਧ ਕੇ ਬਿਜਾਈ ਕਰੋ। ਇਸ ਟੀਕੇ ਦੀ ਵਰਤੋਂ ਕਰਨ ਨਾਲ 12-16 ਪ੍ਰਤੀਸ਼ਤ ਝਾੜ ਵਿੱਚ ਵਾਧਾ ਹੁੰਦਾ ਹੈ ।

- ਬਿਜਾਈ ਲਈ ਕਤਾਰ ਤੋਂ ਕਤਾਰ ਦਾ ਫਾਸਲਾ 30 ਸੈਂਟੀਮੀਟਰ ਅਤੇ ਬੂਟੇ ਤੋਂ ਬੂਟੇ ਦਾ ਫਾਸਲਾ 10 ਸੈਂਟੀਮੀਟਰ ਰੱਖ ਕੇ ਡਰਿਲ ਕਰੋ । ਵਧੇਰੇ ਝਾੜ ਲੈਣ ਲਈ ਮੂੰਗੀ ਦੀ ਦੋ ਤਰਫਾ ਬਿਜਾਈ ਕੀਤੀ ਜਾ ਸਕਦੀ ਹੈ । ਮੂੰਗੀ ਦੀ ਬਿਜਾਈ ਬਿਨਾਂ ਖੇਤ ਵਾਹੇ ਜ਼ੀਰੋ ਟਿਲ ਡਰਿੱਲ ਨਾਲ ਵੀ ਕੀਤੀ ਜਾ ਸਕਦੀ ਹੈ। ਦਰਮਿਆਨੀਆਂ ਅਤੇ ਭਾਰੀਆਂ ਜ਼ਮੀਨਾਂ ਵਿੱਚ ਮੂੰਗੀ ਦੀ ਬਿਜਾਈ ਕਣਕ ਲਈ ਵਰਤੇ ਜਾਂਦੇ ਬੈੱਡ ਪਲਾਂਟਰ ਨਾਲ 67.5 ਸੈਂਟੀਮੀਟਰ ਵਿੱਥ ਤੇ ਤਿਆਰ ਕੀਤੇ ਬੈੱਡਾਂ (37.5 ਸੈਂਟੀਮਿਟਰ ਬੈੱਡ ਅਤੇ 30 ਸੈਂਟੀਮੀਟਰ ਖਾਲੀ) ਉੱਤੇ ਕਰਨੀ ਚਾਹੀਦੀ ਹੈ । ਮੂੰਗੀ ਦੀਆਂ ਕਤਾਰਾਂ ਪ੍ਰਤੀ ਬੈੱਡ 20 ਸੈਂਟੀਮੀਟਰ ਫਾਸਲੇ ਤੇ ਬੀਜੋ । ਬੈੱਡਾਂ ਉੱਤੇ ਬਿਜਾਈ ਕਰਨ ਨਾਲ ਪਾਣੀ ਦੀ ਬੱਚਤ ਹੁੰਦੀ ਹੈ ਅਤੇ ਫ਼ਸਲ ਭਾਰੀ ਮੀਂਹ ਤੋਂ ਹੋਣ ਵਾਲੇ ਨੁਕਸਾਨ ਤੋਂ ਵੀ ਬਚਦੀ ਹੈ ।

ਨਦੀਨਾਂ ਦੀ ਰੋਕਥਾਮ: ਮੂੰਗੀ ਵਿੱਚ ਨਦੀਨਾਂ ਦੀ ਰੋਕਥਾਮ ਕਰਨ ਲਈ ਦੋ ਗੋਡੀਆਂ ਕਰੋ, ਪਹਿਲੀ ਗੋਡੀ ਬਿਜਾਈ ਤੋਂ 4 ਹਫਤੇ ਪਿੱਛੋਂ ਅਤੇ ਦੂਜੀ ਉਸ ਤੋਂ ਦੋ ਹਫਤਿਆਂ ਬਾਅਦ ਕਰਨੀ ਚਾਹੀਦੀ ਹੈ ।

ਖਾਦਾਂ ਅਤੇ ਸਿੰਚਾਈ: ਮੂੰਗੀ ਦੀ ਫ਼ਸਲ ਨੂੰ ਖਾਦਾਂ ਅਤੇ ਪਾਣੀ ਦੀ ਬਹੁਤ ਘੱਟ ਲੋੜ ਹੁੰਦੀ ਹੈ । ਬਿਜਾਈ ਸਮੇਂ 11 ਕਿੱਲੋ ਯੂਰੀਆ ਪ੍ਰਤੀ ਏਕੜ ਅਤੇ 100 ਕਿੱਲੋ ਸਿੰਗਲ ਸੁਪਰਫ਼ਾਸਫ਼ੇਟ ਪ੍ਰਤੀ ਏਕੜ ਡਰਿੱਲ ਕਰੋ। ਮੂੰਗੀ ਦੀ ਫ਼ਸਲ ਨੂੰ ਜੇਕਰ ਔੜ ਲਗਦੀ ਹੈ ਤਾਂ ਸਿੰਚਾਈ ਕਰਨੀ ਚਾਹੀਦੀ ਹੈ । ਸਾਉਣੀ ਵਿੱਚ ਫੁੱਲ ਅਤੇ ਫਲੀਆਂ ਬਣਨ ਸਮੇਂ ਫ਼ਸਲ ਨੂੰ ਸੋਕਾ ਨਹੀਂ ਲੱਗਣਾ ਚਾਹੀਦਾ । ਜੇਕਰ ਮੀਂਹ ਨਾ ਪਵੇ ਤਾਂ ਫਲ ਪੈਣ ਸਮੇਂ ਮੂੰਗੀ ਦੀ ਸਿੰਚਾਈ ਕਰਨੀ ਚਾਹੀਦੀ ਹੈ ।

ਵਾਢੀ ਅਤੇ ਗਹਾਈ: ਜਦੋਂ ਮੂੰਗੀ ਦੀ ਫ਼ਸਲ ਦੀਆਂ ਤਕਰੀਬਨ 80 ਪ੍ਰਤੀਸ਼ਤ ਫਲੀਆਂ ਪੱਕ ਜਾਂਦੀਆਂ ਹਨ ਤਾਂ ਮੂੰਗੀ ਦੀ ਵਾਢੀ ਕਰ ਲੈਣੀ ਚਾਹੀਦੀ ਹੈ ਅਤੇ ਕਣਕ ਵਾਲਾ ਥਰੈਸਰ ਕੁਝ ਤਬਦੀਲੀਆਂ ਕਰਕੇ ਗਹਾਈ ਲਈ ਵਰਤਿਆ ਜਾ ਸਕਦਾ ਹੈ ।

ਪਰਮਿੰਦਰ ਸਿੰਘ ਸੰਧੂ, ਰਮਿੰਦਰ ਸਿੰਘ ਘੁੰਮਣ ਅਤੇ ਪਰਵਿੰਦਰ ਸਿੰਘ, ਫਾਰਮ ਸਲਾਹਕਾਰ ਸੇਵਾ ਕੇਂਦਰ, ਤਰਨ ਤਾਰਨ
ਮੋਬਾਇਲ: 98882-99130

KARNATAKA

Initiatives and Impacts

- AMFU Bengaluru---give advisories **at watershed level instead of as per area;** being conducted in collaboration with KSNDMC, Watershed Institute, and the State Agricultural Department

- Prioritizes **warm-blooded channels** like print media for regular and impact-based forecasts; involves gram panchayats to fax advisories to local people who print and disseminate the advisory in common places like dairies, schools etc.

- Uses **call centre services** (running 24x7) as part of its ongoing collaboration

THANK YOU