

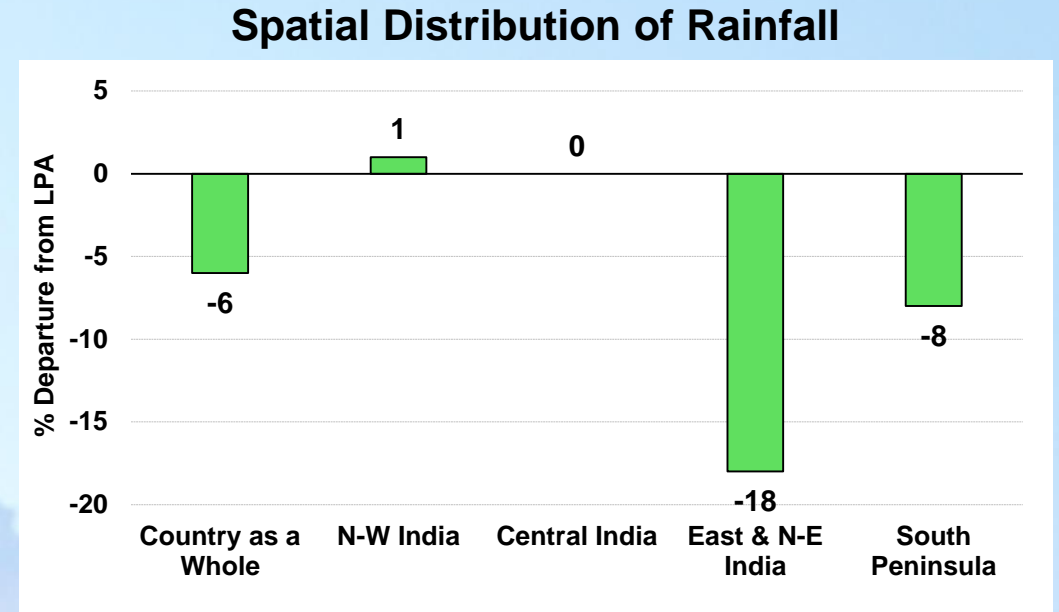
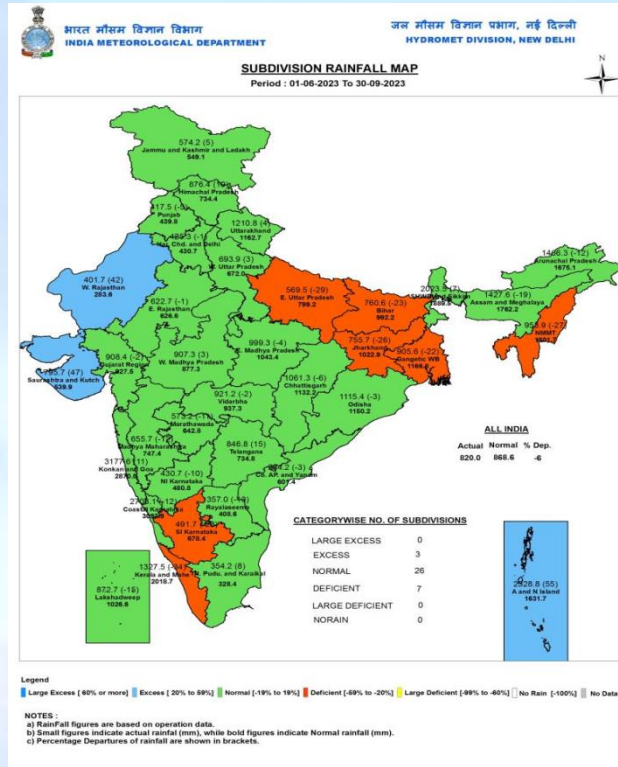
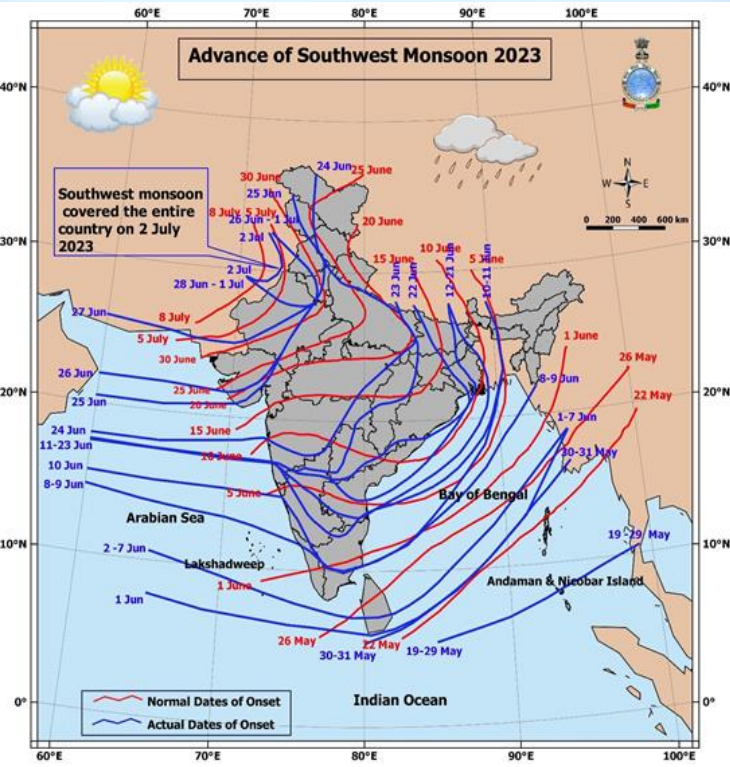
# Agricultural Services during Monsoon 2023

**Kripan Ghosh**

**Agricultural Meteorology Division,  
Climate Research & Services, IMD, Pune**



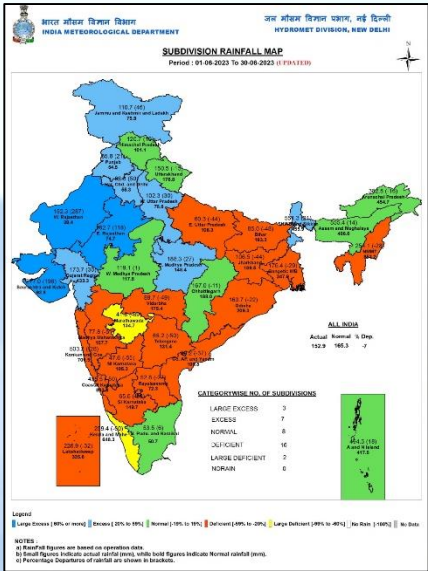
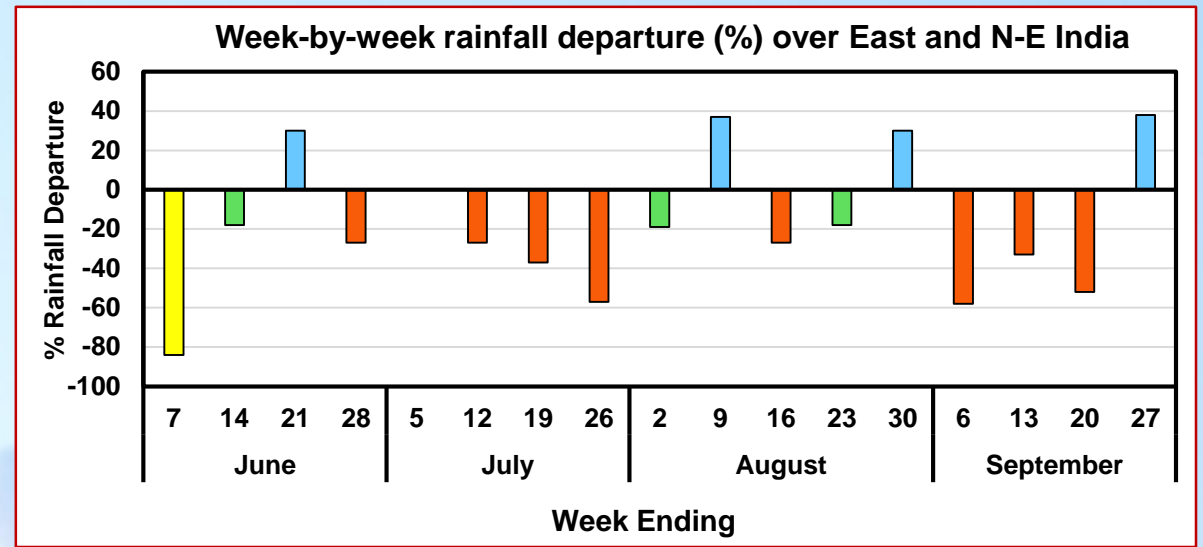
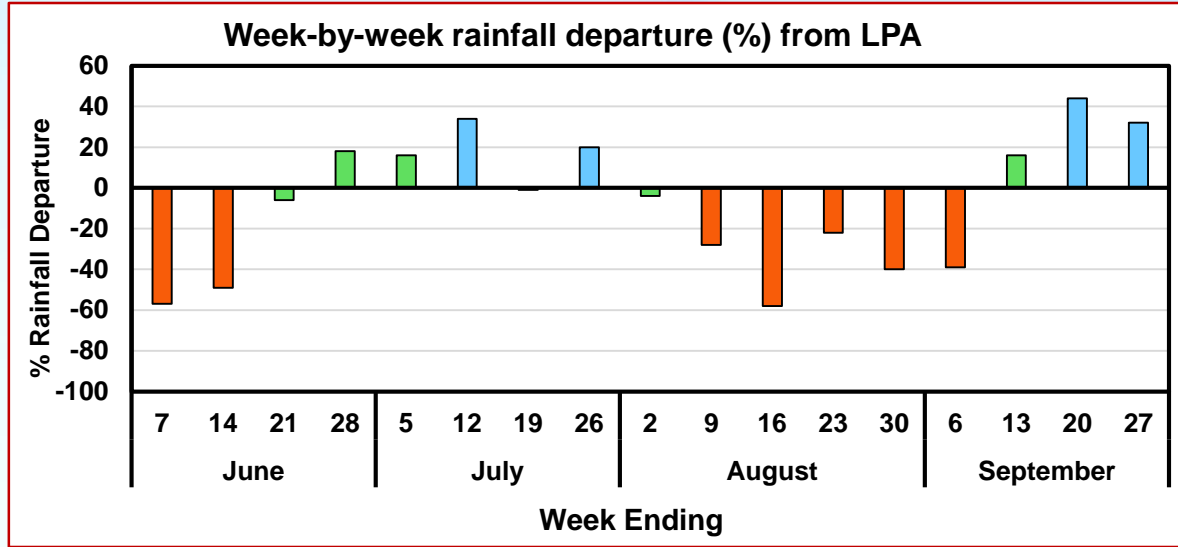
# Advance of Monsoon 2023



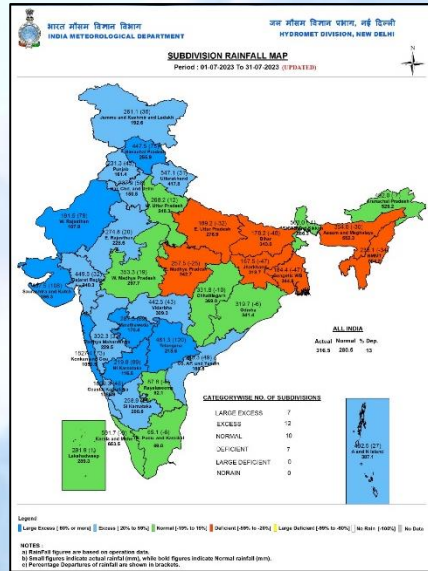
- ❖ The monsoon reached Kerala on 8th June (One week later than the normal date of onset).
- ❖ Sowing/ transplanting of *kharif* crops started in **Kerala** and in the **north-eastern states** of the country as per the normal sowing window.



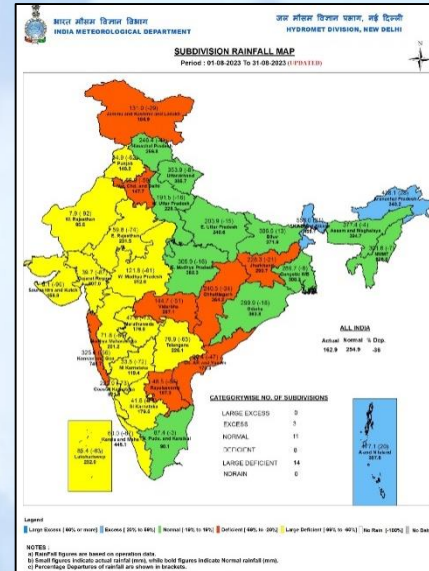
# Realised Rainfall maps during different months JJAS 2023



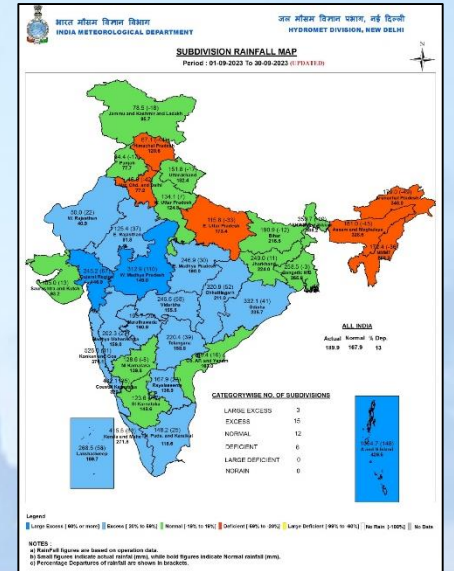
93%



113%



64%



113%



# DEFICIT RAINFALL AND ITS IMPACT ON AGRICULTURE

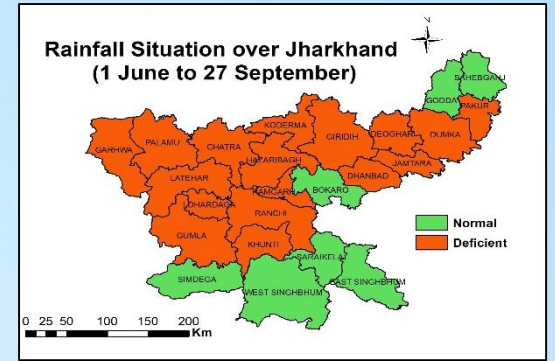
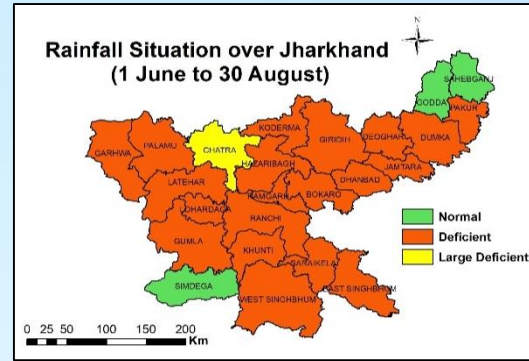
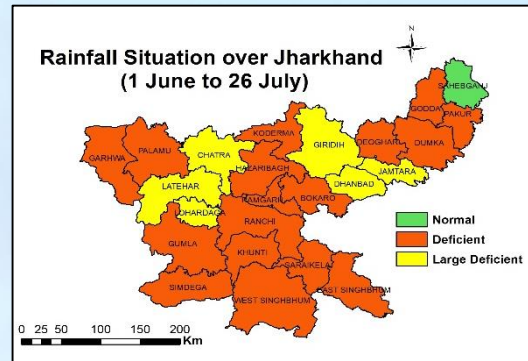
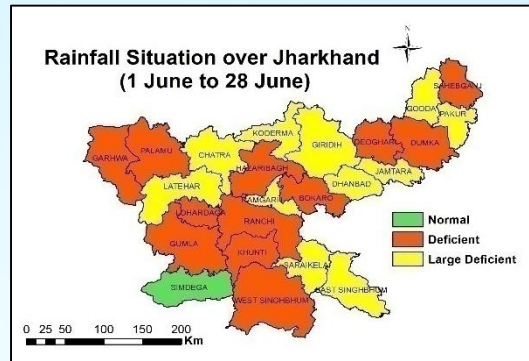


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भारत मौसम विज्ञान विभाग  
INDIA METEOROLOGICAL DEPARTMENT



# Jharkhand

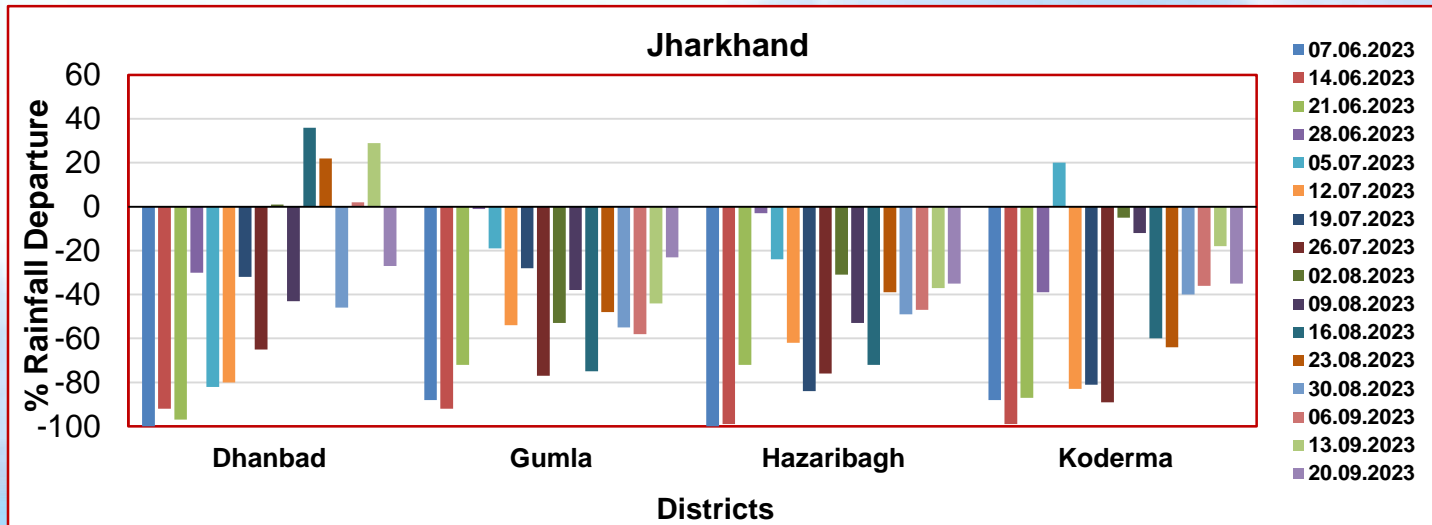


As compared to 2021	Rice	Kharif Pulses	Coarse Cereals	Kharif Foodgrains
Shortfall in Area ('000 Ha)	363.49	122.61	29.68	515.77
Shortfall in percentage	25.16	27.53	10.12	23.62

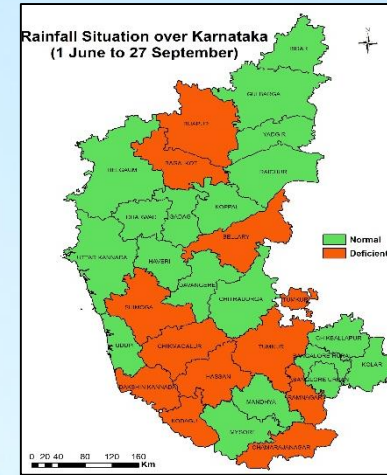
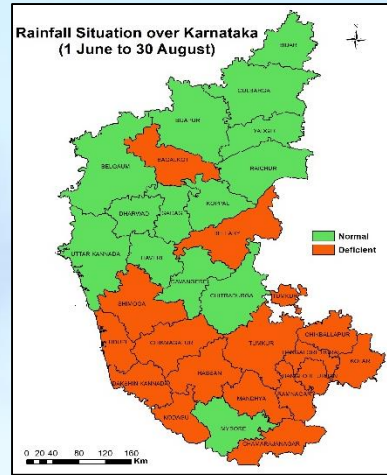
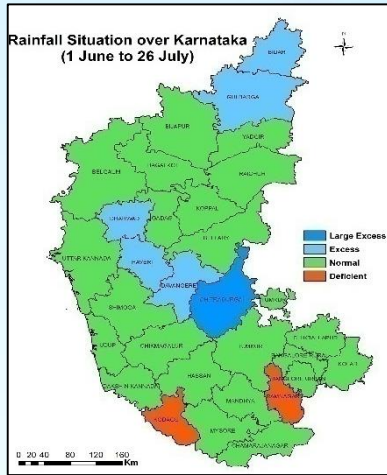
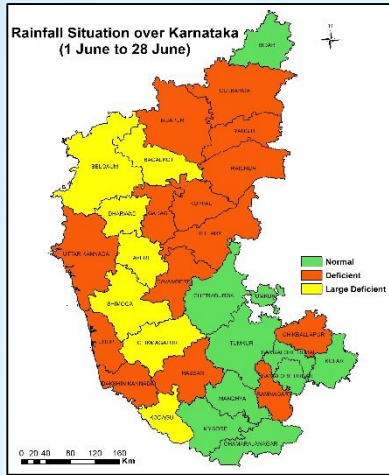
**Rainfall Situation:** Out of 24 districts, 17 districts were in deficient category.

### Adaptive Measures:

- Cultivation of **Toria** (BR 23, T9, PT 303, Panchali) and **Green pea** (Dantewada 1, Arkel, or Azad pea) in South Eastern Plateau Zone.
- Life saving irrigation to rice, maize, red gram and vegetables.
- Foliar spray of 2% KNO<sub>3</sub> or 2% urea solution or 1% water soluble fertilizers to supplement nutrition during dry spells.
- Cultivation of **short duration early potato varieties viz.** Kufri Ashoka, Kufri Pukhraj, Kufri Surya, Kufri Puskar of 80-90 days.



# Karnataka

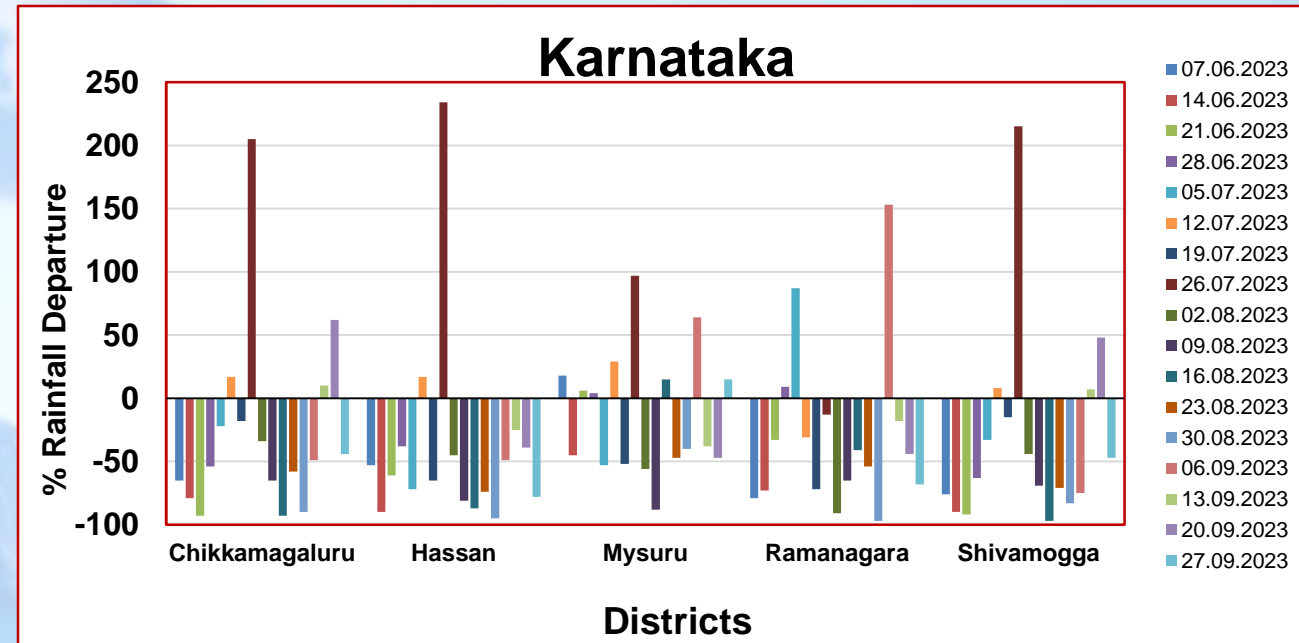


As compared to 2021	Shortfall in Area ('000 Ha)	Shortfall in percentage
Rice	116.00	11.51
Pulses	588.00	25.54
Maize	<b>+182.60</b>	<b>+13.06</b>
Oilseeds	136.40	14.71
Foodgrains	731.40	12.60

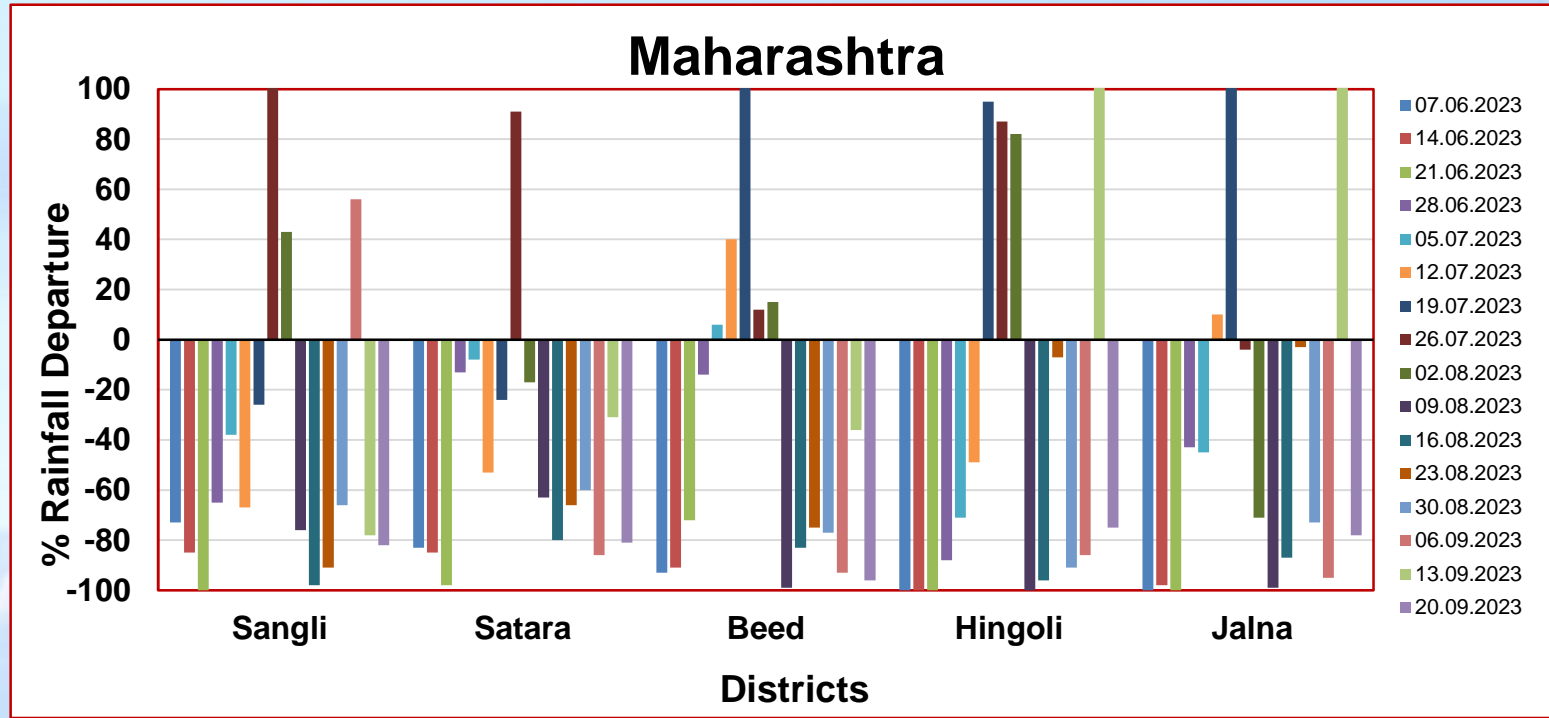
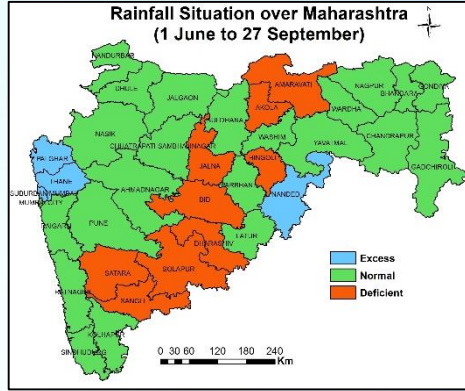
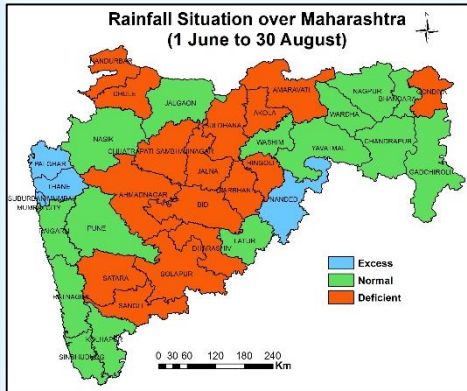
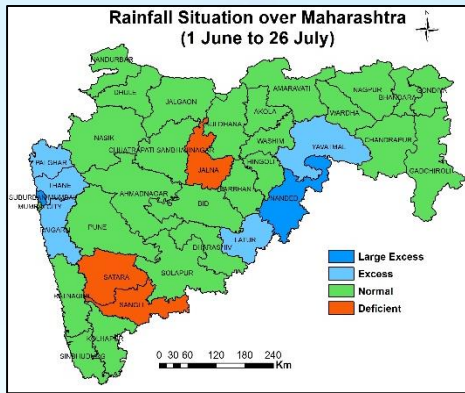
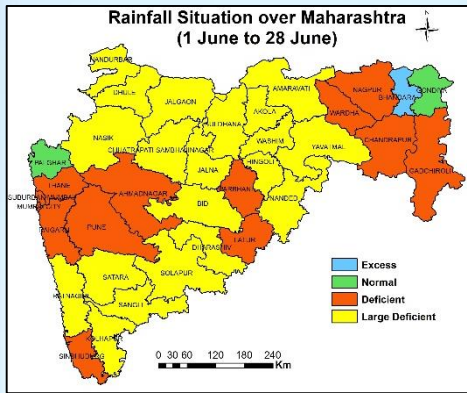
## Adaptive Measures:

- In Interior Karnataka, thinning and earthing up in long duration varieties of red gram.
- Protective irrigation to various field crops through sprinkler / drip methods.
- **Mulching** with crop residues.
- Selection of **short duration varieties of foxtail millet (DHFT-1093) and finger millet (Indaf-7 and ML-322).**
- Application of water soluble fertilizer 13:00:45 @ 5 g/liter or 19:19:19 @ 5 g/liter to resist abiotic stress situation.

**Rainfall Situation:** Out of 30 districts, 11 were deficient.



# Maharashtra



**Rainfall Situation:** Out of 36 districts, 9 were deficient.

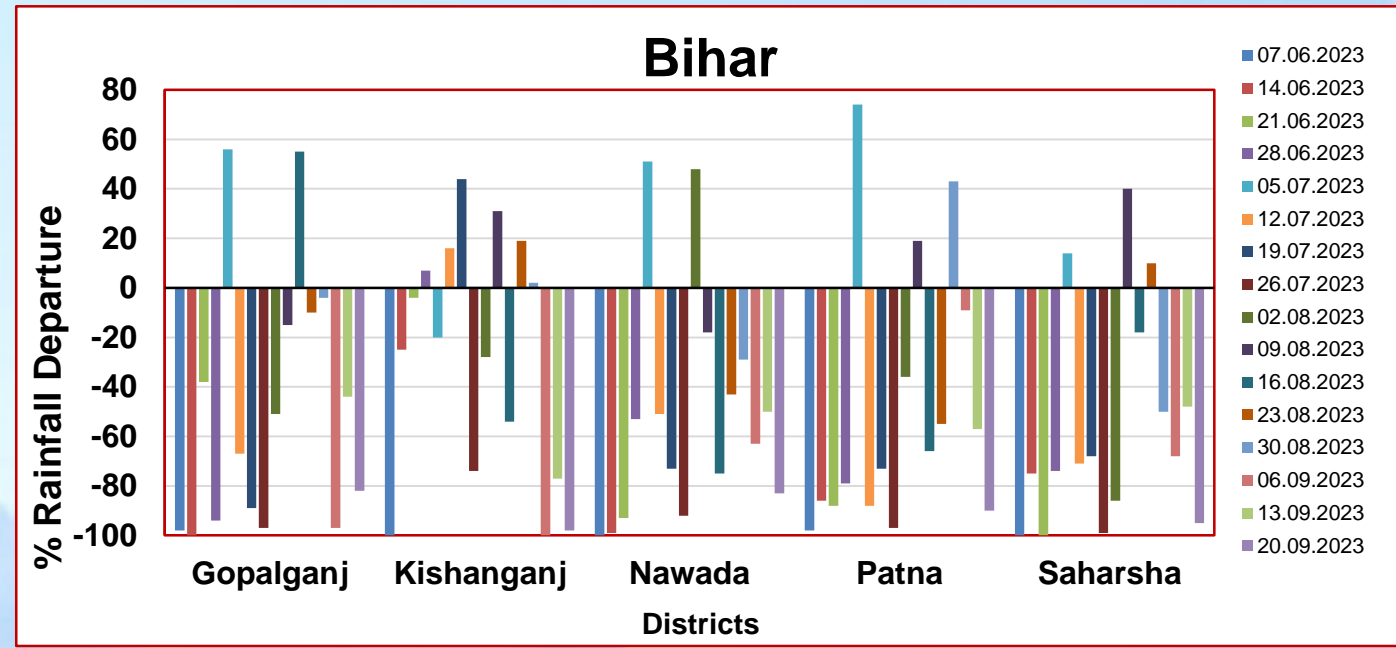
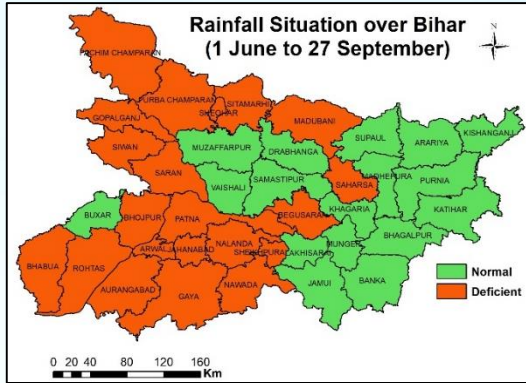
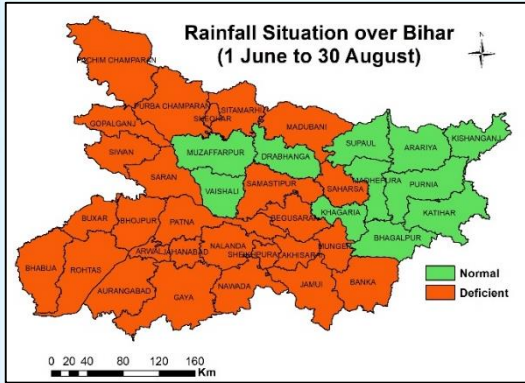
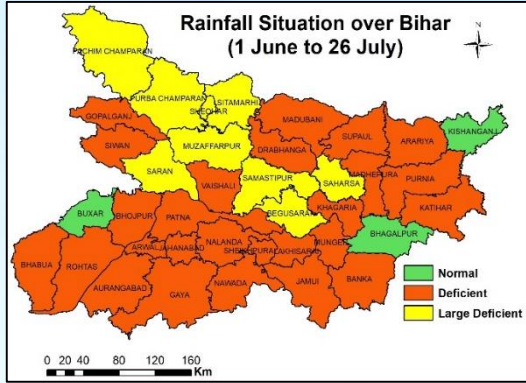
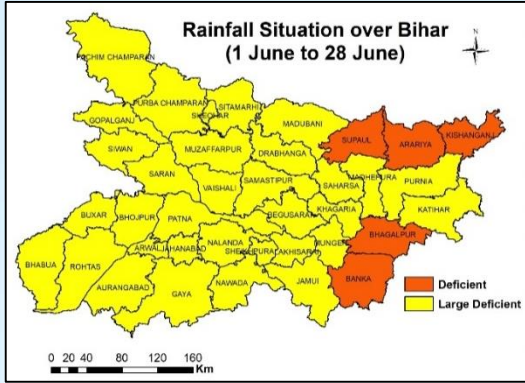
## Adaptive Measures:

- Spraying of 1%  $KNO_3$  (13:00:45) in soybean, pigeon pea, black gram and green gram.
- Foliar spray of 1% Commercial production of **Phule micro grade II (micronutrient nutrition)** of government notified grade II (Fe (2.5%), Zn (3.0%), Mn (1.0%), Cu (1.0%), Mo (0.1%) and B (0.5%)) in soybean, pigeon pea, green gram and black gram.
- **Intercultural operations to reduce moisture stress** and apply protective irrigation in cotton, pigeon pea, soybean, green gram, black gram, maize, groundnut and vegetables.
- Undertake **mulching** in orchards and vegetables to conserve soil moisture.

As compared to 2021	Shortfall in Area ('000 Ha)	Shortfall in percentage
Tur	223.77	16.76
Black Gram	179.69	41.22
Green Gram	196.70	52.02
Groundnut	88.08	38.01
Pulses	616.57	27.68
Foodgrains	958.14	17.09



# Bihar



**Rainfall Situation:** Out of 38 districts, 21 were deficient.

### Adaptive Measures:

- Transplanting of short duration rice varieties in low/medium land areas.
- **Making bunds for conserving rain water** in the field.
- If rice crop damaged due to deficient rainfall, taking up short duration, low water requiring crops like cowpea, black gram, green gram, horse gram, sesame and fodder crops.

As compared to 2021	Rice	Kharif Foodgrains
Shortfall in Production ('000 Tonnes)	1107.33	616.39
Shortfall in percentage	14.62	7.85





# **EXCESS RAINS / FLOODS AND ITS IMPACT ON AGRICULTURE**



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**भारत मौसम विज्ञान विभाग  
INDIA METEOROLOGICAL DEPARTMENT**



# Himachal Pradesh (July & August 2023)

Period	Districts Most Affected	Sector	Area Affected (In Lakh Hectare)	Estimated Loss (in Crores)
7-11 July 2023	Kinnaur, Kullu, Solan, Bilaspur, Shimla, Sirmaur	Crop	1.35	200.01
11-14 August 2023	Mandi, Hamirpur, Kangra, Bilaspur, Shimla, Solan	Horticulture	0.35	289.20
21-23 August 2023	Bilaspur, Hamirpur, Solan, Mandi	Livestock	-	53.40
		Fisheries	-	15.63



**Mandi district**

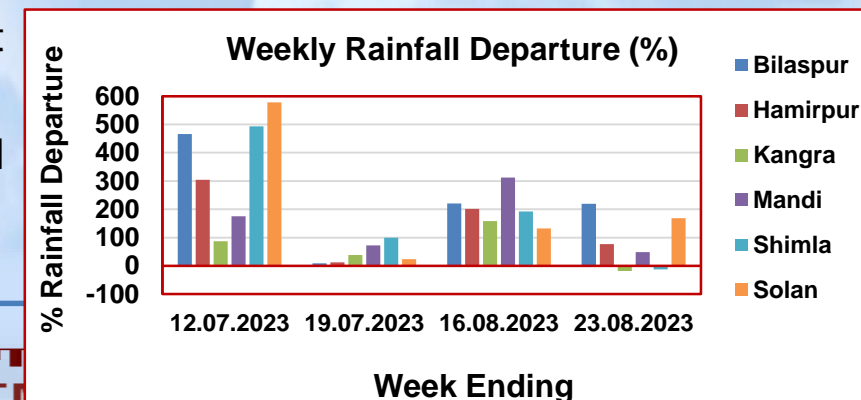
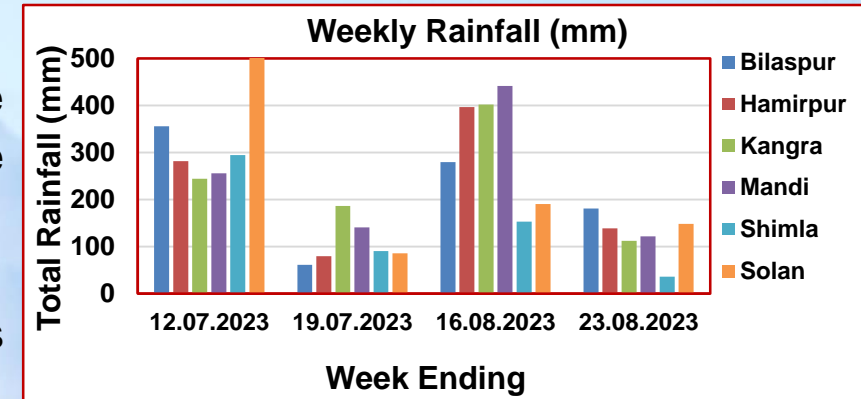
Govt. of Himachal Pradesh (2023) . Report On Post Disaster Needs Assessment Himachal Pradesh Monsoon – 2023 : Floods, Cloudbursts and Landslides. Disaster Management Cell, Shimla.



## Adaptive Measures:

- Immediate harvesting of the matured crops and their safe storage prior to rains.
- Maintenance of proper drainage.
- Thatching of Vegetable nurseries with ploy sheets.
- Regular monitoring to prevent pest / disease occurrence.
- Avoiding irrigation and any kind of chemical spray.

**Most affected Districts during various Spells of Floods**



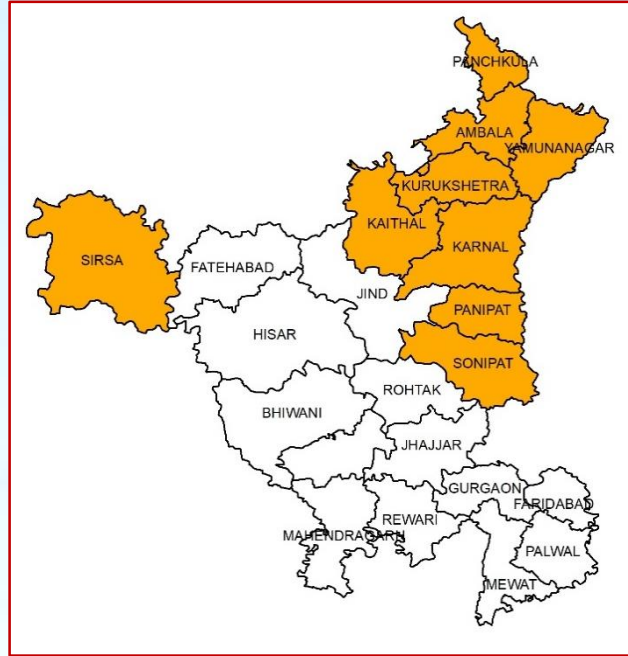
# Haryana (Mid July 2023)

## Affected Crop Area:

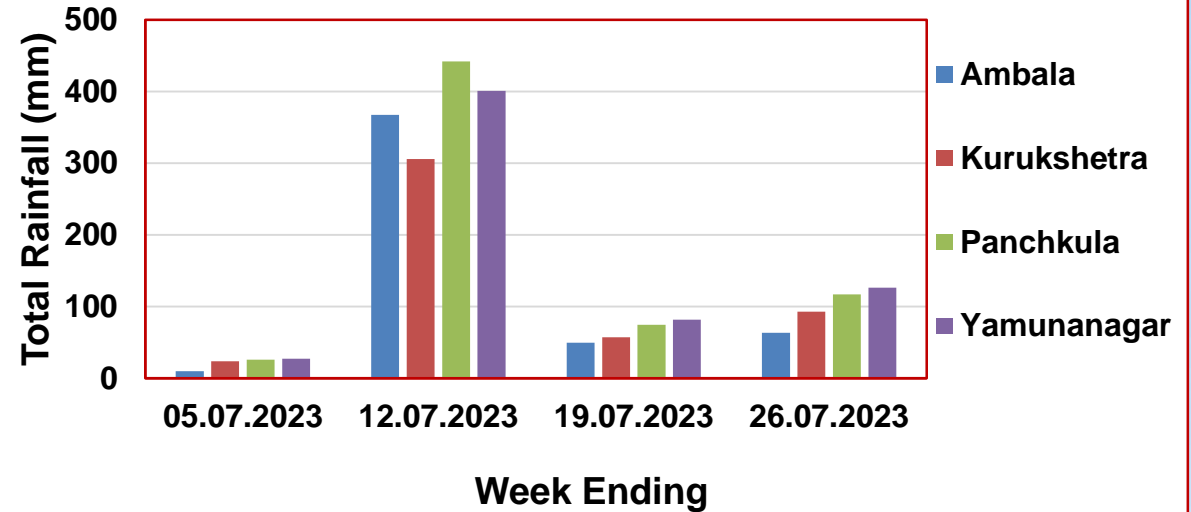
1.24 Lakh Hectares.

## Most affected districts:

Panchkula, Ambala, Karnal, Kaithal, Kurukshetra, Panipat, Sonipat, Sirsa and Yamunanagar.



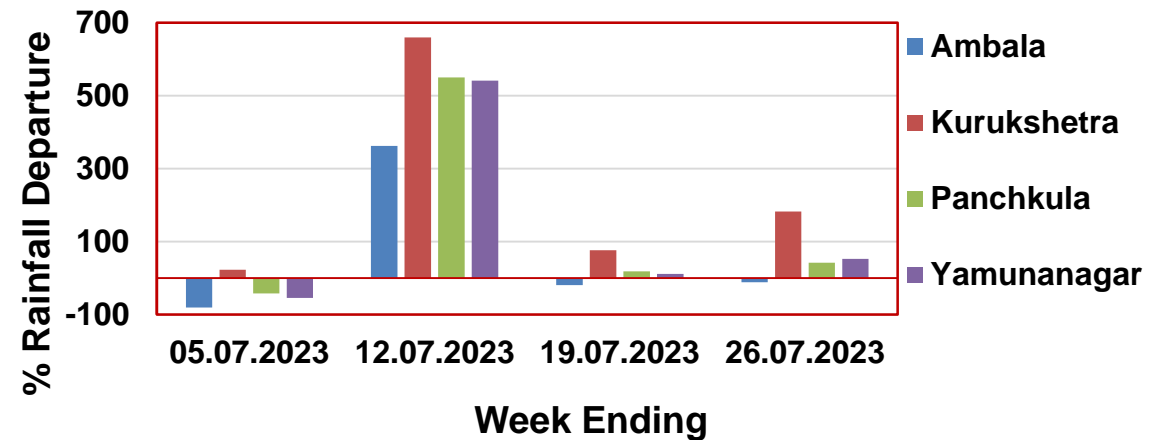
### Weekly Rainfall (mm)



## Adaptive Measures:

- Draining out **excess water** from **rice nurseries**.
- Re-sowing of rice nurseries and re-transplanting using short duration varieties.
- Delayed sowing of late varieties of non-basmati rice.

### Weekly Rainfall Departure (%)

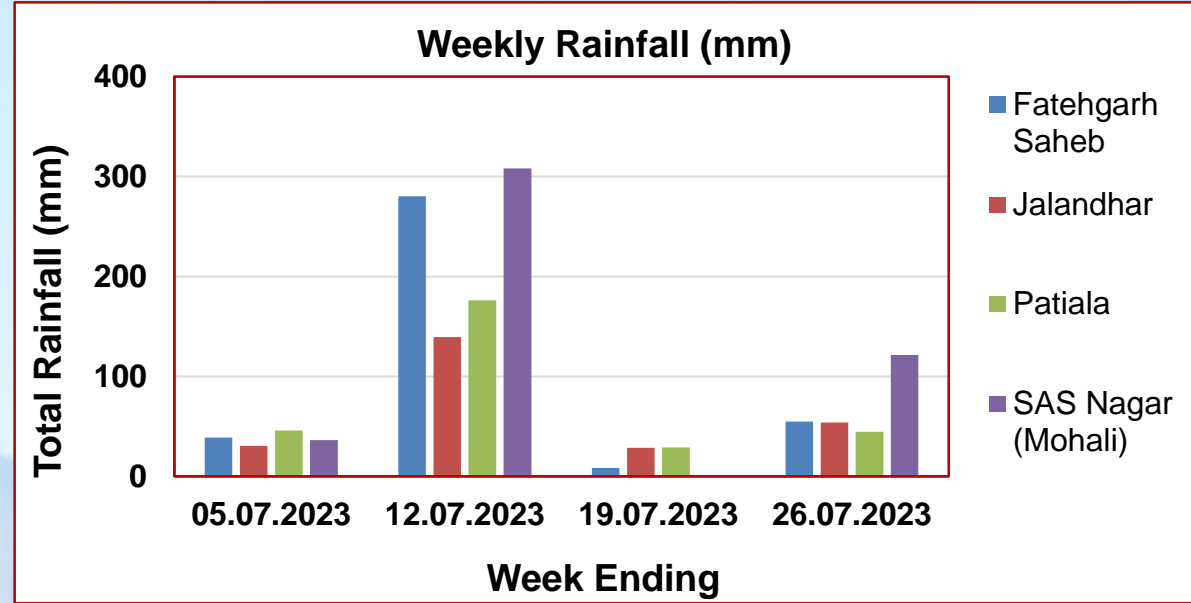
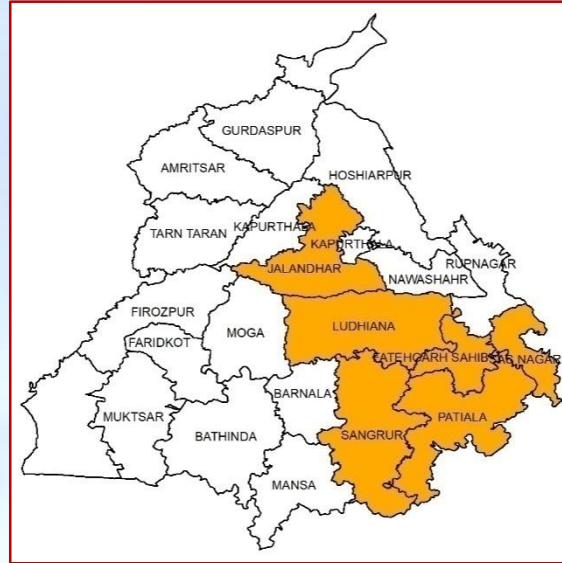


# Punjab (Mid July 2023)

**Affected Crop Area:** 2.40 Lakh Hectares.

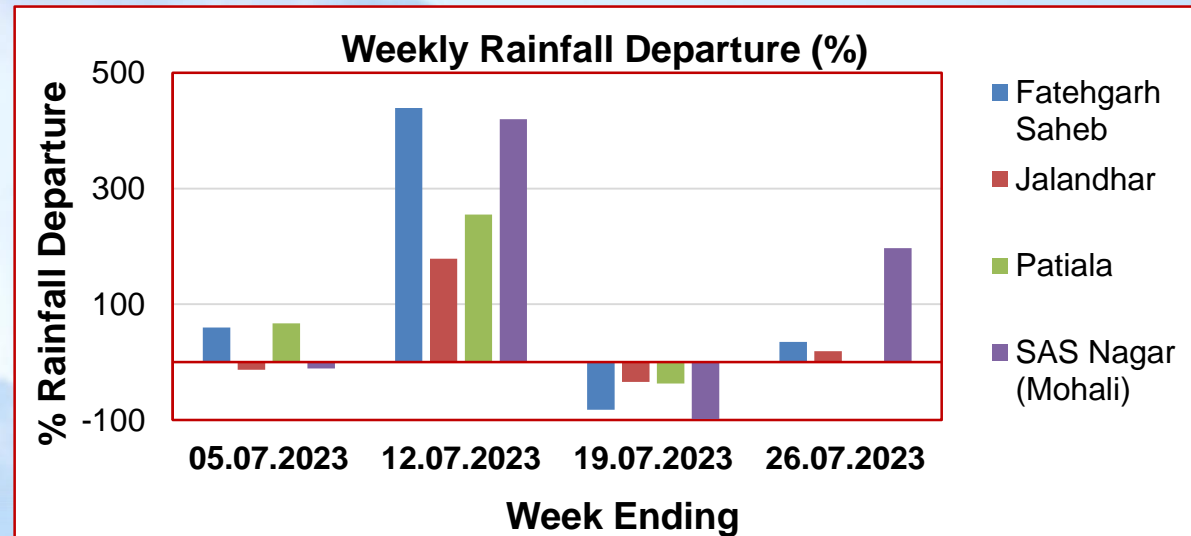
**Paddy crop severely affected.**

**Most affected districts:** Patiala, Sangrur, Mohali, Ludhiana, Jalandhar, and Fatehgarh Sahib.



## Adaptive Measures:

- Draining out excess water from crop fields to avoid water stagnation.
- Postponement of sowing of *kharif* pulses and maize.
- Delayed sowing of late varieties of non-basmati rice.

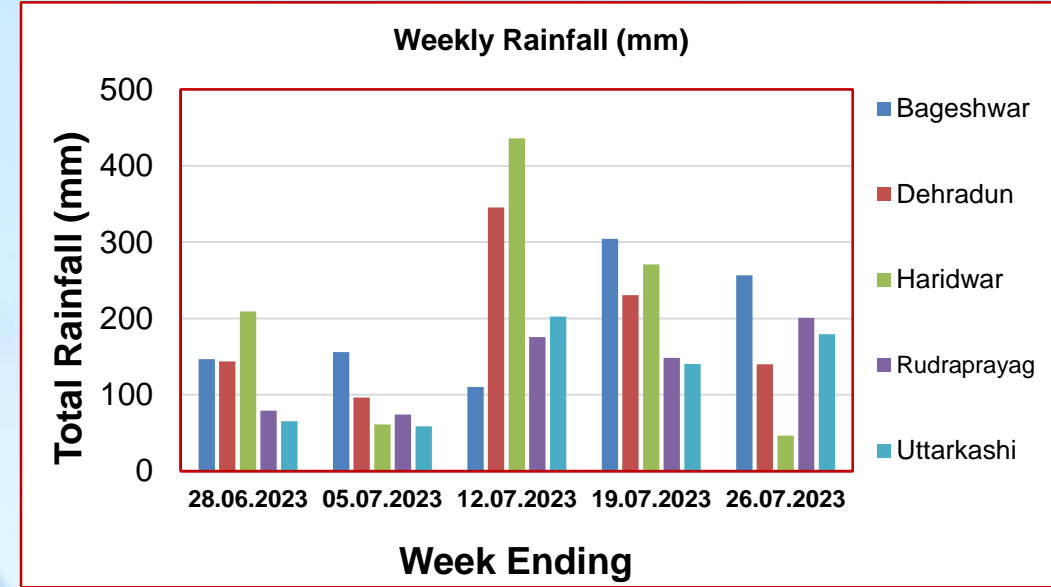


# Uttarakhand (July 2023)



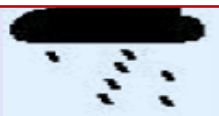
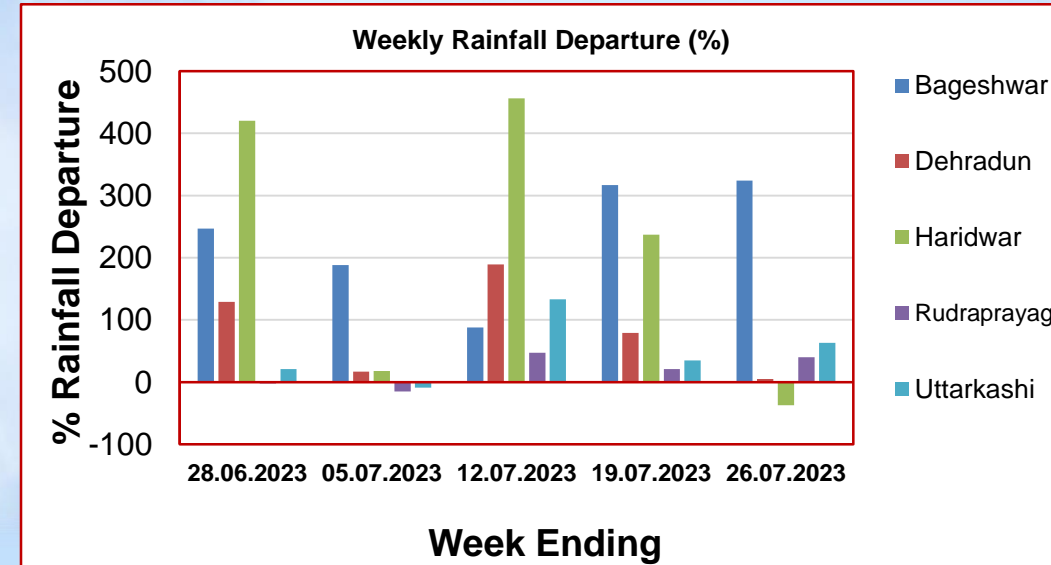
**Affected Area:** 17,800 Hectares agricultural land.

**Most affected Districts:** Dehradun, Haridwar, Rudraprayag, Uttarkashi.



## Adaptive Measures:

- Draining out excess water from crop fields to avoid water stagnation.
- Postponement of **transplanting of rice.**
- Postponement of **sowing of maize, soybean and vegetables.**



# Agromet Advisory Generation

- ❖ Block level = ~3100
- ❖ District level = ~700 Districts
- ❖ State Level = 30
- ❖ National Agromet Advisory Service (AAS) bulletin by Agrimet Div. IMD Pune on every Friday.
- ❖ National AAS Bulletin based on Two weeks Extended range weather forecast (ERFS) in collaboration with ICAR-CRIDA.

Significant past weather for the preceding week (Period - 15/06/2022 to 21/06/2022)		Weather Parameters		Weather forecast from 08.30 hrs of 22/06/2022 to 26/06/2022							
15/06	16/06	17/06	18/06	19/06	20/06	21/06	22/06	23/06	24/06	25/06	26/06
2.0	4.0	2.5	1.5	3.5	77.5	146.0	45	28	46	106	64
34.1	33.1	33.1	33.4	34.1	31.0	25.7	32	33	30	29	29
26.6	26.7	25.8	26.0	26.3	24.6	24.8	24	25	24	23	23
94	87	97	100	94	100	100	cloudy	cloudy	cloudy	cloudy	cloudy
75	98	75	69	93	100	-	85	85	87	91	86
2	2	3	1	1	2	1	65	59	63	64	65
SSE	ESE	SE	ESE	W	SSE	E	16	12	7	8	17
Rainfall (mm) in last week		Rainfall (mm) from 01/01/2022 to till dated		Total Rainfall (mm) in last year							
239.0		-		-							

**Agro-met Advisory Based on Weather Forecast Prediction**

Weather summary	General advisory	SMS
As per the forecast given by RMC, Mumbai, there is a possibility of Heavy rainfall at isolated places during 22 <sup>nd</sup> to 26 <sup>th</sup> June 2022. Sky may remain cloudy during next five days. Maximum temperature will remain between 33 to 29 °C and Minimum temperature may remain between 25 to 23 °C during next five days. As per Extended range forecast for Konkan division for the period of 26 June to 02 July 2022 above normal rainfall expected.	Due to Heavy rains at isolated places during 19 to 20 June 2022, Drain out excess water from all fruit crop orchards and paddy seed nursery beds.	During next five days there is forecast of light to moderate rainfall, hence it is advice to complete nursery sowing of kharif crops like rice and finger millet.

Crop	Stage	Agro-met Advisory
kharif Rice	Nursery Sowing	<ul style="list-style-type: none"> <li>There is forecast for heavy rainfall at isolated places during 22 to 26 June, 2022, hence it is advice to complete nursery sowing of rice</li> <li>Farmers are suggested to sow the kharif paddy seed on nursery beds. Application of 1 kg urea and 3 kg of single super phosphate with sufficient quantity of FYM per 1 R area of nursery advocated. Seed treatment to paddy seed with Thiram 2 gm per kg is advised. If possible, sow the seed on raised beds.</li> <li>Seed rate for paddy is 50 kg per ha for bold varieties, 40 kg per ha for fine varieties and 20 kg per ha for hybrid varieties is recommended.</li> </ul>
Finger millet	Nursery Sowing	<ul style="list-style-type: none"> <li>For raising finger millet nursery select the well drain soil. Plough the nursery area and bring the soil to fine tilth, add FYM@250 kg per guntha area. Prepare raised bed of 120 cm. breadth at bottom and 90 cm. on top along the slope of land. Convenient length of raised bed</li> </ul>

AAS Bulletin for Palghar block

**राष्ट्रीय कृषि मौसम परामर्श सेवा बुलेटिन**  
National Agromet Advisory Service Bulletin

शुक्रवार दि. 17 जून, 2022  
(वैधता: 17 से 21 जून, 2022)

Friday 17 June, 2022  
For the period 17 to 21 June, 2022

कृषि मौसम विज्ञान प्रभाग,  
भारत मौसम विज्ञान विभाग, पुणे  
द्वारा जारी

Issued by  
Agricultural Meteorology Division,  
India Meteorological Department, Pune.

National AAS Bulletin

**National Agromet Advisory Service Bulletin**

based on  
Extended Range Weather Forecast (ERFS)

Validity: 10 - 23 June 2022  
Date of issue: 10 June 2022

Issued by  
AICRP on Agro-Meteorology (AICRPAM)  
Central Research Institute for Dryland Agriculture (CRIDA)  
Indian Council of Agricultural Research (ICAR)  
&  
India Meteorological Department (IMD)  
Earth System Science Organization

National AAS Bulletin based on ERFS



# Agromet Advisories during Cyclonic storm “BIPARJOY” (June 2023)

- Harvest matured vegetables and fruits such as mango, banana immediately and store them in safer places.
- Shift to safer places the harvested produce of crops like castor, groundnut, pearl millet and green gram in Gujarat and summer pearl millet in Rajasthan.
- Make arrangements for adequate drainage to avoid water logging in crop fields.
- Postpone sowing of cotton, groundnut and pigeon pea in Gujarat and cotton and groundnut in Rajasthan.
- Provide mechanical support to young fruit plants and staking in vegetables to avoid lodging.
- Keep the livestock indoors during the rainfall period.
- Provide a net around the fish pond to avoid escape of fish / spawn in Gujarat.

S. No.	State	Districts	Number of SMSs sent
1	Gujarat	Junagarh, Porbandar, Gir Somnath, Rajkot, Amreli, Devbhumi Dwarka, Morbi, Surendranagar, Kutch, Ahmedabad, Bhavnagar, Botad, Jamnagar, Banaskantha, Patan, Mehsana, Aravalli, Gandhinagar and Sabarkantha	1,03,94,538
2	Rajasthan	Jaipur, Ajmer, Nagaur, Tonk, Jalore, Pali, Jodhpur, Barmer, Sirohi, Udaipur, Bhilwara, Rajsamand, Sawai Madhopur, Bikaner and Jaisalmer	1,04,41,775
<b>Total SMSs sent</b>			<b>2,08,36,313</b>



# Agromet Advisories during Cyclonic Storm “MICHAUNG” (December 2023)

- Complete harvesting of matured rice, late sown *kharif* groundnut and chilli in Andhra Pradesh; rice and finger millet in Odisha and picking of matured cotton bolls in Andhra Pradesh, Odisha and Telangana.
- Keep already harvested produce of crops in safer places or cover the harvested produce in the fields with tarpaulin/polythene sheets.
- Make necessary arrangements for adequate drainage in crop fields to avoid water logging.
- Postpone sowing of Bengal gram in Andhra Pradesh; *rabi* groundnut in Rayalaseema and sunflower, green gram and maize in Telangana.
- Provide mechanical support to young fruit plants and staking in vegetables to avoid lodging.

S. No.	State	Districts	Number of SMSs sent
1	Andhra Pradesh	Anakapalli, Vishakhapatnam, Krishna, Nandyal, Kadapa, Tirupati, Chttoor, Guntur, Prakasam, Ongole and East Godavari	32,04,507
2	Tamil Nadu	Tiruvallur and Cuddalore	4,23,040
3	Odisha	Khordha, Puri, Rayagada, Gajapati, Ganjam, Kandhamal, Kalahandi, Koraput, Nabrangpur and Nayagarh	23,73,337
<b>Total</b>			<b>60,00,884</b>





# Sample IBFs issued



**DISTRICT AGROMET UNIT  
(DAMU) KVK KIPHIRE**

ICAR RESEARCH COMPLEX FOR NEH  
REGION LONGTOK TROK, KIPHIRE -  
798611, NAGALAND

Telephone no: 03862-247241 (O) / Email: damukiphire@gmail.com



Date	Warning
20 September 2023	Heavy rain very likely at isolated places
21 September 2023	Heavy rain very likely at isolated places
22 September 2023	Heavy rain very likely at isolated places

District level forecast and warning issued by RMC, Guwahati on 18 September, 2023

**IMPACT BASED FORECAST (IBF) AND AGROMET ADVISORIES**

District	Crop	Growth Stage	Likely impact on crop	Weather based Agro-Advisories
Kiphire	Maize	Maturity/harvesting stage	<ul style="list-style-type: none"> <li>Crop/cob lodging, loss of grains</li> <li>Rotting or disease pest infestation in the store house.</li> </ul>	<ul style="list-style-type: none"> <li>Matured cobs should be harvested immediately</li> <li>Store houses should be made in such that the harvested cobs does not get wet in the rain</li> </ul>
		Pumpkin	Fruiting stage	<ul style="list-style-type: none"> <li>Stagnation of water in the field may hamper its usual growth and may led to the attack of unwanted pest and diseases</li> </ul>
	Potato	Harvesting stage	<ul style="list-style-type: none"> <li>If the harvested tubers are kept in the field it may led to rotting</li> </ul>	<ul style="list-style-type: none"> <li>Harvested produce should be stored in a well roofed and dry ventilated store house</li> </ul>
	Livestock	Various	<ul style="list-style-type: none"> <li>Viral infection in poultry.</li> <li>Stagnation water in the farm houses may led to animal sickness.</li> </ul>	<ul style="list-style-type: none"> <li>All animal shed should be well roofed and proper arrangements should be made for the safety of the livestock.</li> <li>Rugged sack/dry hays can be kept at the side of the sty where there is no chances of raindrops to keep the animals warm, <u>incase</u> the temperature drops.</li> <li>Mineral dosage on timely basis should be administered to wart from any sickness of farm animals.</li> </ul>




**Impact based forecast (IBF) for Agriculture for Guna district,  
Madhya Pradesh**

**by District AgroMet Units, KVK Guna**

District Level Forecast and warning issued by MC, Bhopal on 12.07.2023  
IBF & Agromet Advisories based on the forecast issued on 12-07-2023 by District  
Agromet Units, KVK Guna

Date	Forecast and Warning
12-07-2023	Heavy to Very Heavy Rainfall and Thunderstorm accompanied with Lightning likely to occur at isolated places
13-07-2023	Heavy Rainfall and Thunderstorm accompanied with Lightning likely to occur at isolated places
14-07-2023	Heavy Rainfall and Thunderstorm accompanied with Lightning likely to occur at isolated places
15-10-2023	Heavy Rainfall and Thunderstorm accompanied with Lightning likely to occur at isolated places
16-07-2023	Heavy Rainfall and Thunderstorm accompanied with Lightning likely to occur at isolated places

District	Crop	Stage	Likely Impact on crop	Advisory	
Guna	<b>General Advisory</b>			Avoid agricultural work in the open sky at the time of thunderstorm and lightening condition.	
	Maize	Germination	Poor Germination	Drainout excess water from farm field. Make proper arrangement of drainage channel.	
	soybean	Germination	Poor Germination	Those farmers who did not use BBF/Ridge Furrow method of sowing, are advised to open conservation furrows at certain interval ( at 6 or 10 rows) in order to have effective drainage of excess rain water.	
	Soybean	Sowing	Poor Germination	It is advised to sow the crop using Broad Bed Furrow (BBF) or Ridge & Furrow methods of sowing in order to save the crop in event of excessive rainfall as well as drought situations.	
	<b>Vegetable crops in small area</b>			Crop damage	Drain out excess water from standing crops and vegetables such as okra, brinjal, chilli, tomato and cucurbits.
	Tomato	Nursery and Fruiting	Crop damage	postpone irrigation, intercultural operations. Drain out excess water from standing crop fields to avoid waterlogging. Use raised bed nursery for new plantation	
	<b>Livestock</b>				Avoid standing in the open or working in the fields and keep farm animals indoors during thunderstorm/lightning periods. Provide clean water to cattels

**जिला कृषि मौसम इकाई**

**ग्रामीण कृषि मौसम सेवा**

(A Joint collaboration of IMD and ICAR, New Delhi)

**जो.वी.टी.-कृषि विज्ञान केंद्र, गोड्डा, झारखण्ड**

Special Bulletin No. - ताप लहर/ 12      Date- 07.06.2023

**गोड्डा जिले के कृषि क्षेत्र पर ताप लहर का " प्रभाव आधारित पूर्वानमान "**

क्रम सं.	फसल	अवस्था	कृषि पर संभावित प्रभाव	कृषि परामर्श
01.	मूंग	फली/कटाई अवस्था	<ul style="list-style-type: none"> <li>पूरा फसल झुलस / सूख सकता है।</li> </ul>	<ul style="list-style-type: none"> <li>सुबह और शाम के समय जीवन रक्षक सिंचाई हल्के व लगातार कर मिट्टी में नमी बनाए रखें।</li> <li>मुख्य फसल पर गर्मी की लहर के प्रभाव को कम करने के लिए सीमावर्ती फसल के रूप में मक्के की 3-4 पंक्तियाँ हर 20-25 मीटर के अंतराल पर लगाए।</li> </ul>
02.	सब्जियाँ	विभिन्न अवस्थाएं	<ul style="list-style-type: none"> <li>अत्यधिक तापमान से फूल से फल बने/उपज में कमी हो सकता है।</li> <li>नमी के कमी के कारण फलों के आकार में बदलाव हो सकता है।</li> <li>नमी के आभाव में सही से अंकुरण नहीं होता है।</li> <li>अत्यधिक ताप एवं नमी की कमी से पौधे झुलस सकते हैं।</li> <li>लतार वाली सब्जियाँ अत्यधिक मृदा ताप से झुलस सकते हैं।</li> </ul>	<ul style="list-style-type: none"> <li>सुबह और शाम के समय जीवन रक्षक सिंचाई हल्के व लगातार कर मिट्टी में नमी बनाए रखें।</li> <li>मिट्टी की नमी संरक्षित करने के लिए स्थानीय स्तर पर उपलब्ध छर-पतवार, फसल अवशेष से आच्छादन (मल्टिचिंग) करें।</li> <li>मुख्य फसल पर गर्मी की लहर के प्रभाव को कम करने के लिए सीमावर्ती फसल के रूप में मक्के की 3-4 पंक्तियाँ हर 20-25 मीटर के अंतराल पर लगाए।</li> <li>गर्मी की लहर के दौरान फसलों में फूल आने के पूर्व एवं फूल आने के समय में पोटेशियम नाइट्रेट का 0.5% की दर से पर्णोप छिड़काव कर पैदावार में संभावित हानि को कम करें।</li> <li>बागवानी फसलों में जैविक पतवार के साथ टपक बँट/ ड्रिप सिंचाई की व्यवस्था करें।</li> <li>सब्जियाँ तथा मुख्य फसलों के उच्च तापमान सहिष्णु, कम अवधि वाले तथा कम पानी की आवश्यकता वाली प्रजातियाँ चुनें।</li> </ul>
04.	पशुपालन		<ul style="list-style-type: none"> <li>पशुओं के शारीरिक तापमान और पशुओं के रहने के स्थान को ठंडा रखने के लिए पंखा, स्प्रेकर, फोगर आदि का प्रयोग करें।</li> <li>पशुओं में उपयुक्त शारीरिक तापमान बनाए रखने के लिए पशुशाला के उपर तापरोधक वस्तुओं का प्रयोग करें तथा तापमान के प्रभाव को कम करने के लिए पशुशाला में उचित वायु संचार और पंखे तथा कूलर का प्रयोग करें।</li> <li>दूधार पशुओं को धूप में खुला ना छोड़ें तथा हाइड्रोपोनिकस चारा खिलाएं। पीने के लिए साफ एवं ताजा पानी दें।</li> <li>पर्याप्त पोषक तत्व प्रदान करने और दूध की पैदावार बढ़ाने के लिए खनिज मिश्रण 50 ग्राम/दिन/पशु अहार के रूप में दें।</li> <li>पशुओं में गर्मी से सम्बंधित रोग भूख में कमी और दूध उत्पादन में कमी हो जाती है इसलिए पशुओं को गर्म हवाओं से बचाएं तथा उनके निर्जलिकरण, बुखार, पीने के लिए साफ एवं ताजा पानी की व्यवस्था करें।</li> <li>पशुशाला को हवादार बनाएं तथा जूट के बोरे का पर्दा बनाकर खिड़की दरवाजों को ढंके तथा उसे पानी छिड़क कर ठंडा रखें।</li> <li>गर्मी में हरे चारे की कमी हो जाती है अतः हाइड्रोपोनिकस चारा का उत्पादन कर पशुओं को खिलाएं।</li> </ul>	

# IBF for agriculture and Agromet advisories issued during heavy rainfall warnings

Himachal Pradesh (June 2023)

**Warning issued on 23.06.2023:**

Isolated heavy/very heavy rainfall very likely over Himachal Pradesh during 23-27 June 2023.

Districts	Major Crops	Crop Stage	Agromet advisories (Issued on 23.06.2023)
Kullu and Solan	Apple/ Pear	Fruit development	<ul style="list-style-type: none"><li>• Maintain proper drainage in the field.</li><li>• Avoid irrigation and any kind of chemical spray.</li><li>• Monitoring of plants after the rainfall due to chances of bacterial and fungal diseases.</li></ul>
	Apricot/ Plum/ Peach	Fruit development /Harvest	<ul style="list-style-type: none"><li>• Timely harvest the fruits and store them in safer places.</li><li>• Monitoring of plants after the rainfall due to chances of bacterial and fungal diseases.</li></ul>
Kullu,Solan, Bilaspur and Mandi	Vegetables (Tomato/Capsicum/ Chilli/ Brinjal etc)	Flowering / Fruiting	<ul style="list-style-type: none"><li>• Harvest the matured fruits immediately.</li><li>• Undertake stacking in vegetable crops to protect them from soil borne diseases.</li><li>• Maintain proper drainage of the excess water to avoid water stagnation in the fields.</li></ul>
	Maize	Sowing/Field Preparation	<ul style="list-style-type: none"><li>• Withhold the sowing operations in the main fields.</li></ul>
Bilaspur	Soybean, Rajmah, Moong	Sowing/Field Preparation	<ul style="list-style-type: none"><li>• Delay the sowing of the pulses if did not done earlier.</li><li>• Make drainage channels in the fields.</li></ul>
Mandi	Paddy	Nursery sowing /transplanting	<ul style="list-style-type: none"><li>• Postpone sowing/transplanting operations.</li><li>• Make proper drainage channel in fields.</li></ul>
	Milletts	Sowing	<ul style="list-style-type: none"><li>• Postpone sowing/transplanting operations.</li><li>• Make proper drainage channel in fields.</li></ul>

# IBF for agriculture and Agromet advisories issued during heavy rainfall warnings

Tamil Nadu (December 2023)

**Warning Issued on 15.12.2023:**

Isolated **heavy rainfall** likely over south Tamil Nadu during 15 -19 December, 2023.

Isolated **very heavy rainfall** also very likely over south Tamil Nadu on 16 December, 2023.

Districts	Major Crops	Crop Stage	Agromet advisories
Toothukudi, Tirunelveli, Thenkasi and Virudhunagar	Chilli	Nursery preparation	<b>Issued on 15.12.2023</b> <ul style="list-style-type: none"> <li>Avoid spraying and provide drainage facilities.</li> </ul>
	Paddy	Nursery	
Kanyakumari	Coconut, rubber, banana, fruit trees		<ul style="list-style-type: none"> <li>Provide proper drainage facilities to avoid fungus root damage.</li> </ul>
	Paddy	Harvesting	<ul style="list-style-type: none"> <li>Harvested grain should be stored in safer place.</li> </ul>
Ariyalur, Thanjavur, Karur, Perambur, Trichy, Nagapattinam and Thiruvarur	Rice	Nursery	<ul style="list-style-type: none"> <li>Farmers are advised to provide adequate drainage facilities to rice nursery.</li> </ul>
	Cotton	Harvest	<ul style="list-style-type: none"> <li>Pick the matured cotton bolls before commencement of rains.</li> </ul>
	Banana		<ul style="list-style-type: none"> <li>Provide support with wooden poles to avoid lodging of tree.</li> </ul>
	Sugarcane		<ul style="list-style-type: none"> <li>To avoid lodging, de-trashing and propping of five month old sugarcane is recommended.</li> </ul>
Karaikal	Banana	Bearing Stage	<ul style="list-style-type: none"> <li>Maintain proper drainage in the field to avoid water logging in fields. Provide support with wooden poles to avoid lodging. Avoid application of fertilizers and pesticides in heavy rainfall.</li> </ul>
	Vegetables	Bearing Stage	<ul style="list-style-type: none"> <li>Maintain proper drainage in the field to avoid water logging in fields.</li> </ul>
	Coconut	----	<ul style="list-style-type: none"> <li>Maintain proper drainage in the field.</li> </ul>

# Preparation and dissemination of Agromet Advisories (2023-24)

➤ Daily weather forecast to all the blocks and Agromet Advisory Services (AAS) for all districts and ~3100 blocks twice a week.

➤ Enhancement of outreach for AAS through

- Meghdoot Mobile App in English and 13 regional languages.
- Unified Mobile App “MAUSAM”
- WhatsApp groups

	Mar-23	Feb-24
Number of Farmers	13,85,836	17,74,702
Villages Covered	1,22,093	1,36,321
Blocks Covered	3,654	4,023
Number of WhatsApp Groups	16,499	18,662

- **Total 27.4 Million out of 118.8 Million (2011 census) farmers in the country are covered.**
- 963 Mandis of Agriculture Produce and Livestock Market
- 14 State Govt. Website/Mobile Apps (>15 Million farmer are accessing the information).
- Dissemination through Meghdoot mobile app: Total download of Mobile App are ~3.68 lakhs (including both Android and IOS users)
- Dissemination during extreme weather events (SMSs sent through mKisan portal):

S. No.	Cyclonic Storm	Number of SMSs sent	States
2	“BIPARJOY” over Arabian Sea (June 2023)	2,08,36,313	Gujarat and Rajasthan
3	“MICHAUNG” over Bay of Bengal (December 2023)	60,00,884	Andhra Pradesh, Tamil Nadu and Odisha

- Launched Panchayat Mausam Seva portal aiming to provide weather forecast and AAS to all elective representatives of Gram panchayats in the country.





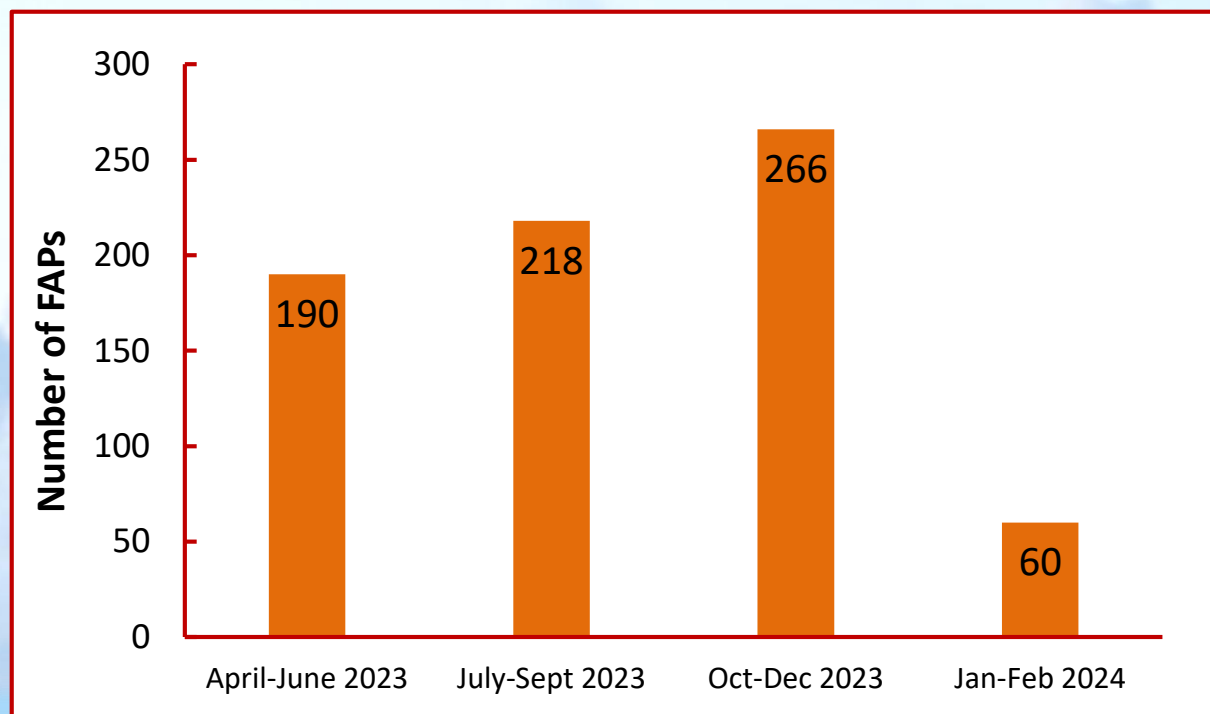
# Farmers Awareness Programme (FAP)

- A total of 734 FAPs were conducted during Apr 2023 – Feb 2024.
- Field visits, field demonstrations, farmers' interaction and participation in Kisan Mela
- Popularizations of the Mausam, Meghdoot and Damini Apps.
- GKMS services also demonstrated in FAP organized under other programmes of KVK.

AMFU, Ooty, Tamil Nadu      DAMU, Shahdol, M.P.



DAMU, Panipat, Haryana      AMFU, Kalyani, W.B.



# New Initiative: Panchayat Mausam Sewa for Dissemination of weather forecast and AAS

- Launched on 15th January 2024 by the Honorable Vice President of India Shri Jagdeep Dhankar.
- A joint venture of IMD-MoES, MoPR, and Green Alert under PPP mode
- An open/freely accessible portal to provide **block level weather forecast** issued by IMD in **English and other regional languages**.
- The quantified values of five days weather forecast are translated in text format to make it more farmers friendly.
- **Automatic system** to send the real time **weather information/alerts** on registered **mobile numbers of sarpanch and Sachiv of each panchayat**.
- Block wise panchayat mapping of all ~ **269,189 Gram Panchayat** : To send the specific information to concerned panchayat and further to farmers.

<https://mausam.imd.gov.in/greenalerts>



## महाराष्ट्रातील बुलढाणा जिल्ह्यातील खामगाव ब्लॉकचा ५ दिवसांचा हवामान अंदाज

आम्ही महाराष्ट्रातील बुलढाणा जिल्ह्यातील खामगाव ब्लॉकसाठी आगामी पाच दिवसांसाठी सर्वात अचूक हवामान अंदाज प्रदान करतो, थेट **भारतीय हवामान विभागाकडून**.

**पावसाची माहिती** : येत्या आठवड्यात एकूण 0 मिमी पाऊस अपेक्षित आहे.

येथे हवामान अंदाजाचे दैनंदिन ब्रेकडाउन आहे

**19-01-2024**

सध्या पावसाची शक्यता नाही.

कमाल तापमान 29.0 अंश सेल्सिअस आणि किमान तापमान 13.0 अंश सेल्सिअस राहण्याची शक्यता आहे.

कमाल सापेक्ष आर्द्रता 44% आणि किमान सापेक्ष आर्द्रता 26% असण्याची शक्यता आहे.

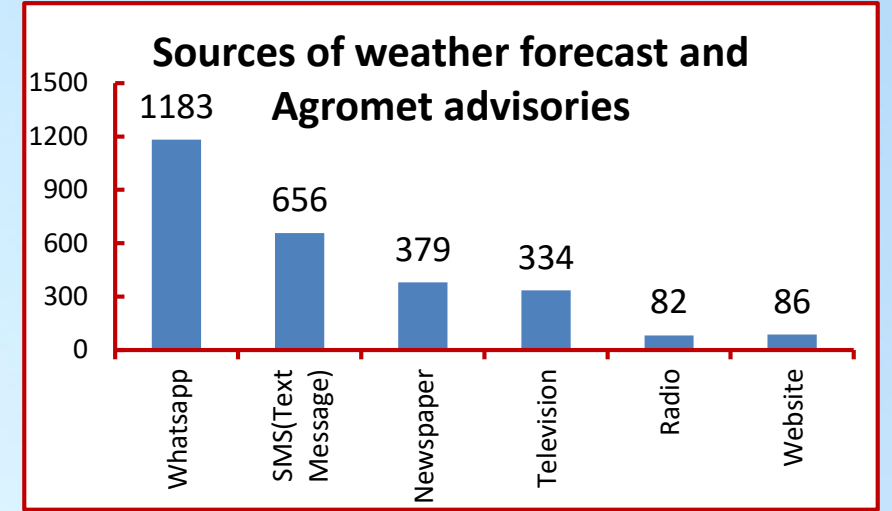
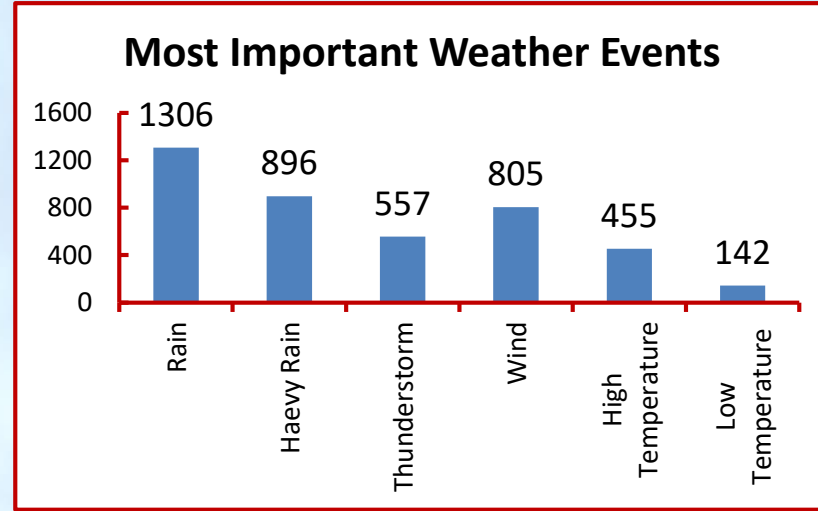
वाऱ्याचा वेग ताशी 7.0 किलोमीटरपर्यंत जाऊ शकतो. उत्तर दिशेसह

दगांचे आवरण (ऑक्ट) म्हणजे दगांच्या घनतेचे वाचन 1 असू शकते त्यामळे मस्यतः निरभ्र आकाश असण्याची शक्यता आहे.

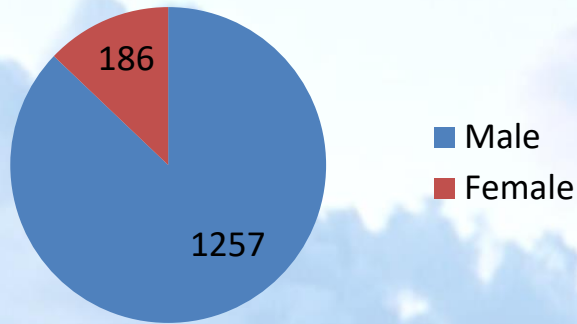


# End of Season Feedback: Monsoon 2023

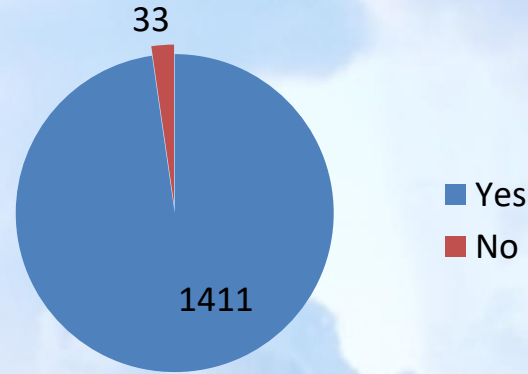
Total No of responses: 1444  
District Covered: 69  
State Covered: 20



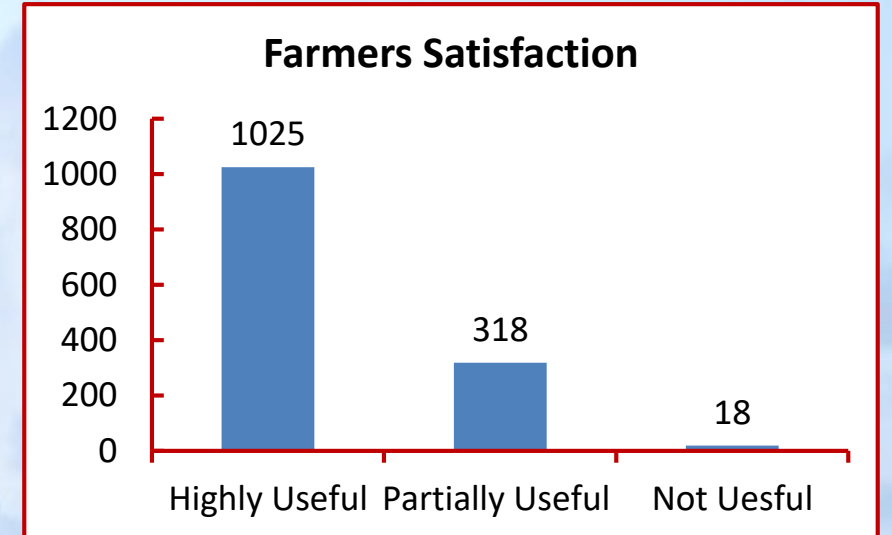
### Gender



### Advisory followed



### Farmers Satisfaction





# Dynamic Feedback Mechanism

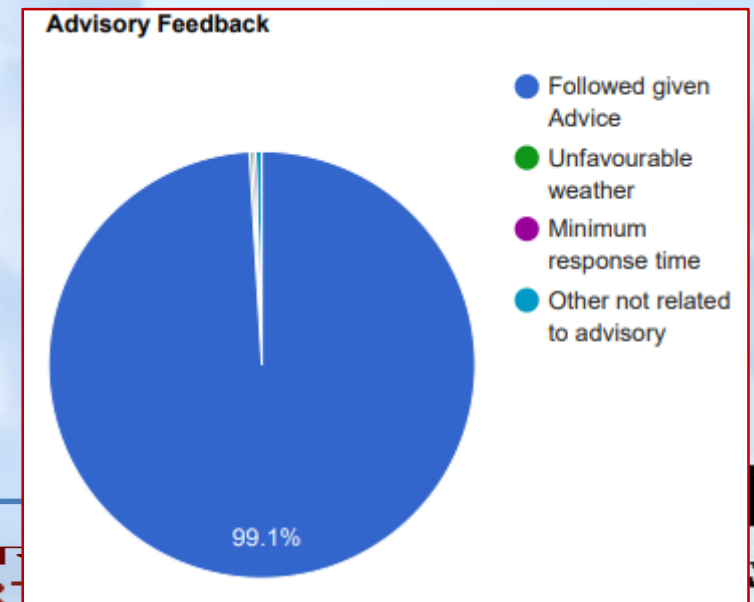
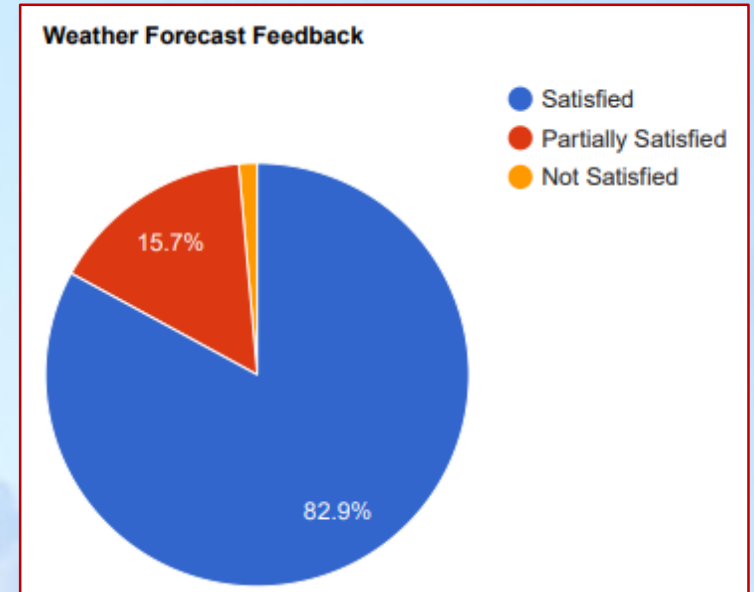
## Dynamic Feedback - Monsoon 2023

### Requirement:

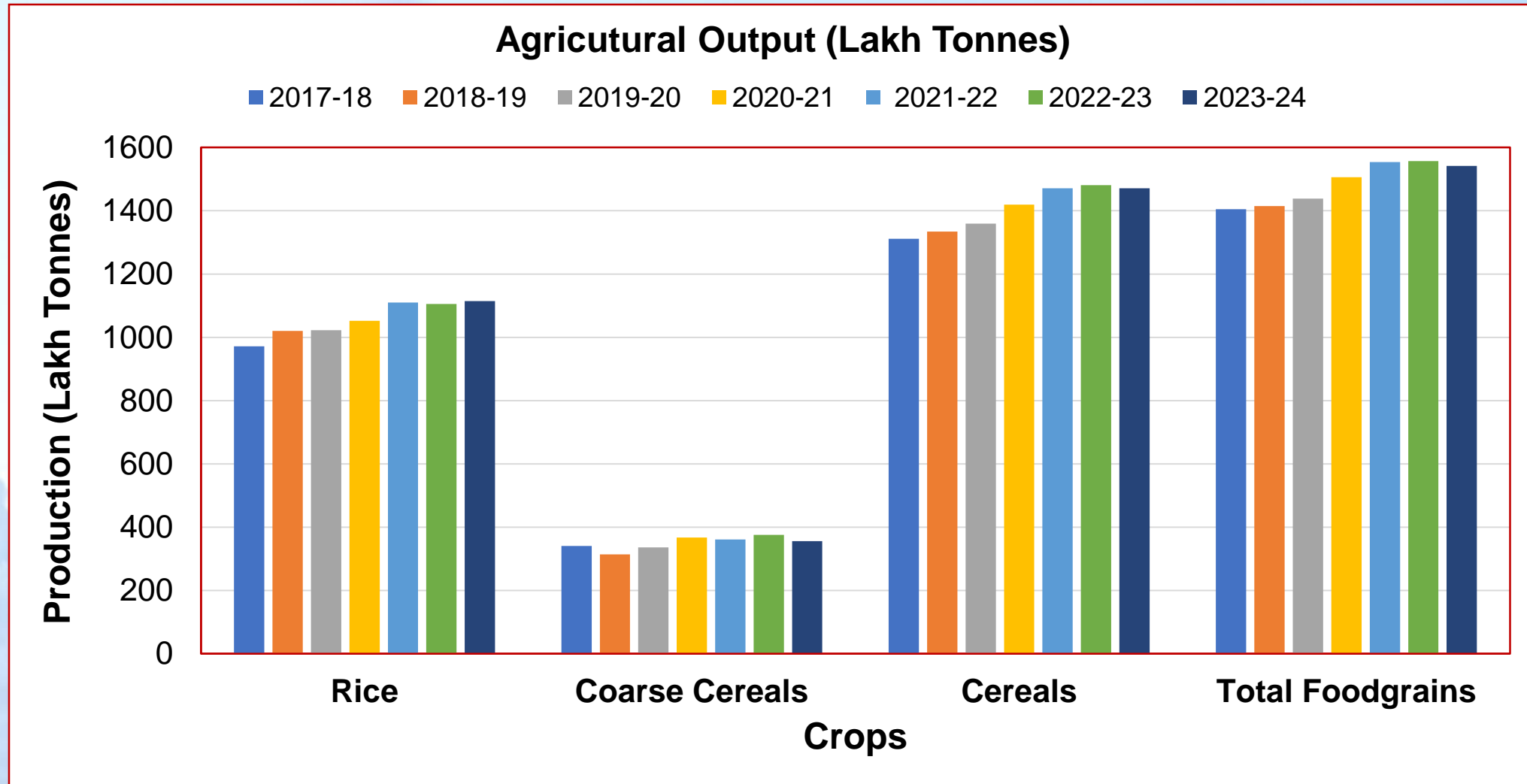
- Real-time adjustment in the Bulletin based on feedback
- Enhance the quality and acceptability of the Bulletin

### Weekly / fortnightly feedback collected and analysed on Crop-wise and stage-wise response of the farmers on:

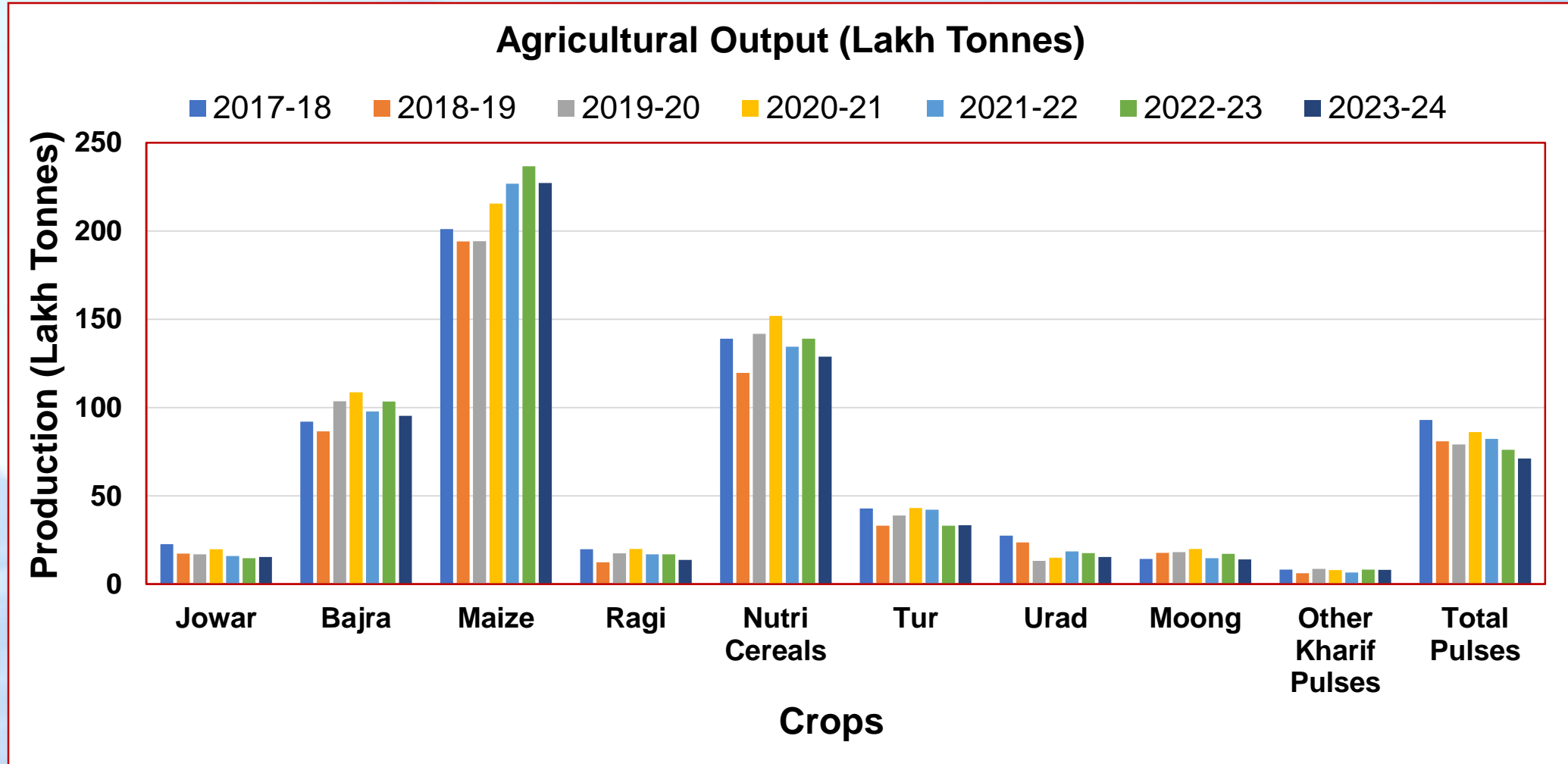
- Whether the advisories followed or not
- Reason if not followed by the farmer
- Farmers' satisfaction level for advisory
- Farmers' satisfaction level for weather forecast
- Approximately 20-30 farmers are surveyed weekly by AMFUs and DAMUs
- Since 2023, Dynamic feedback collection and real time analysis module is developed and integrated in Agromet DSS.



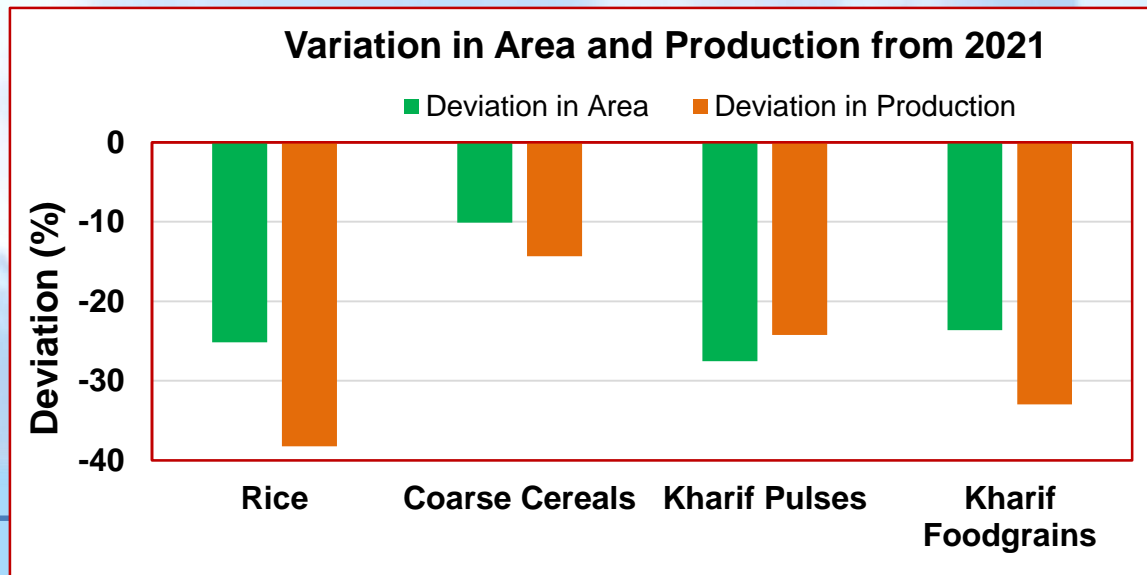
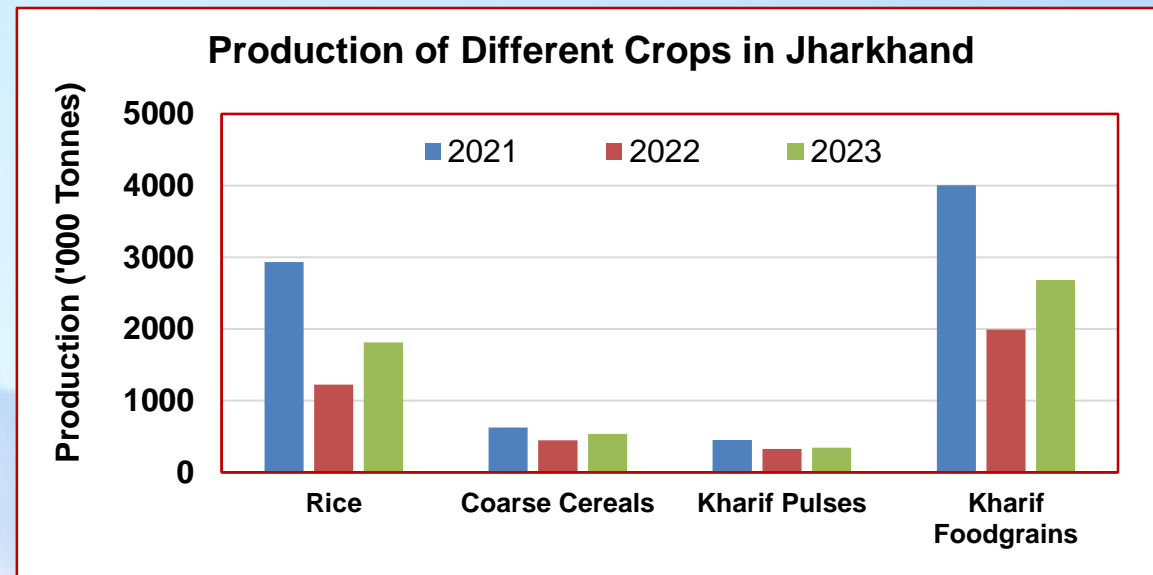
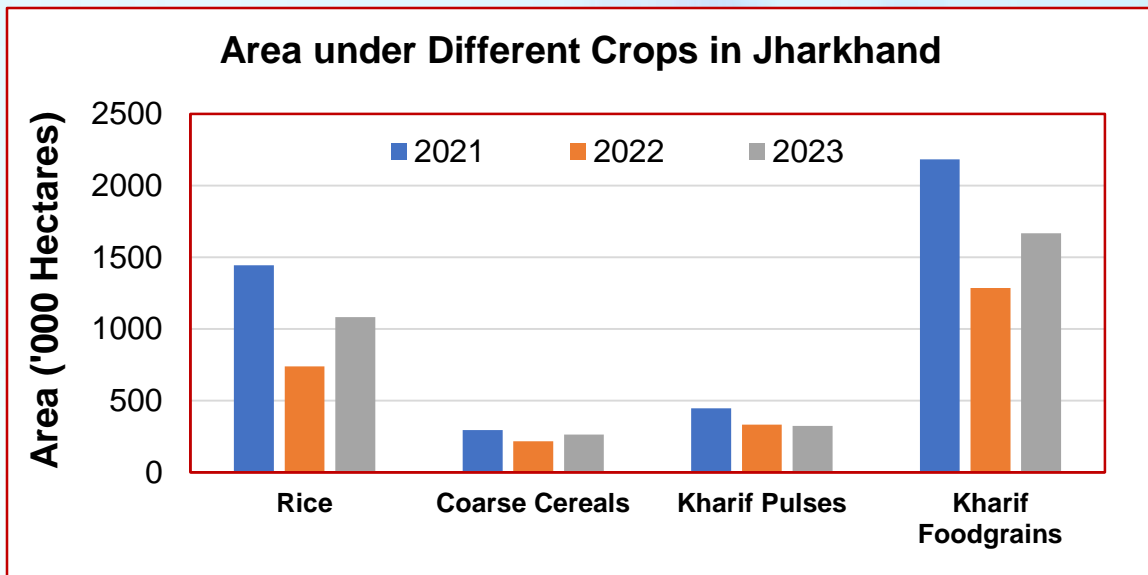
# Production of major kharif crops in India during 2017-2023



# Production of major kharif crops in India during 2017-2023

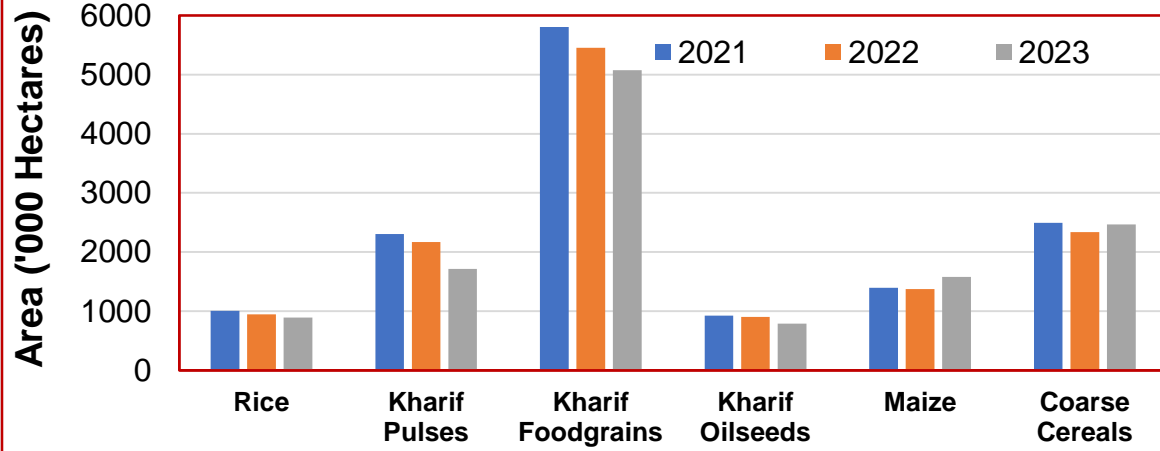


# Change in Area and Production of different crops in 2023 as compared to 2021 for Jharkhand

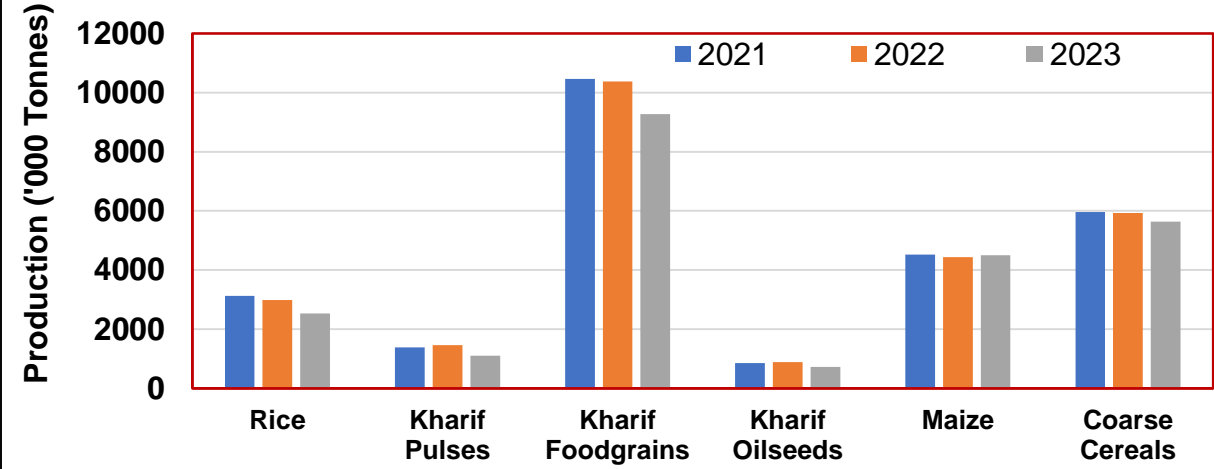


# Change in Area and Production of different crops in 2023 as compared to 2021 for Karnataka

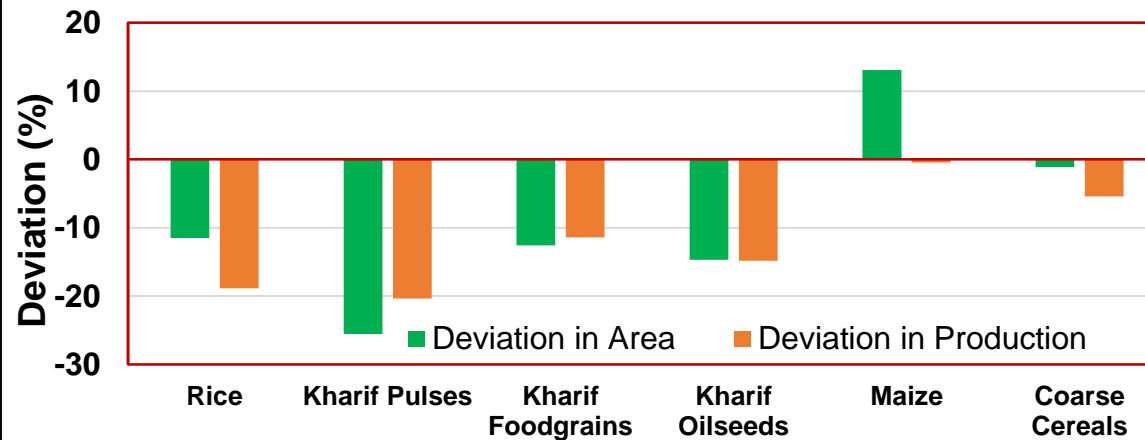
Area under Different Crops in Karnataka



Production of Different Crops in Karnataka

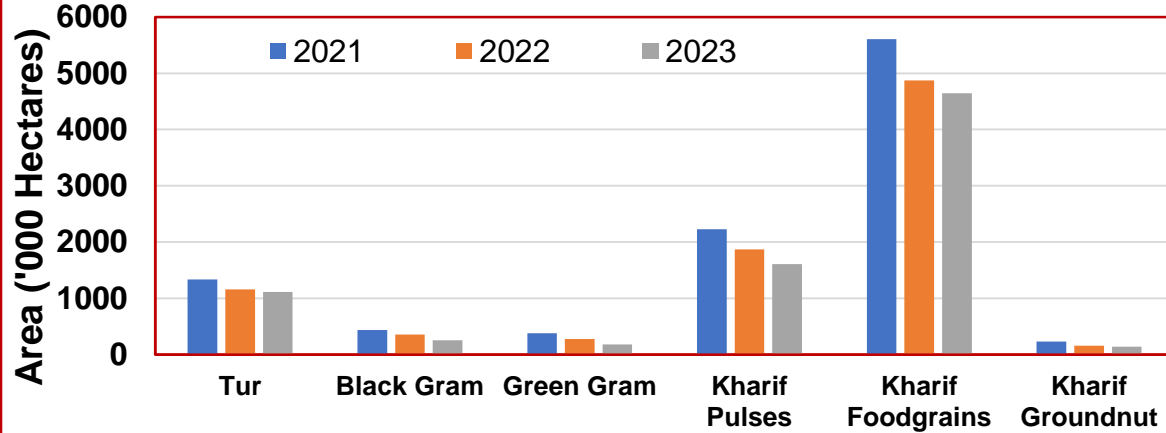


Variation in Area and Production from 2021

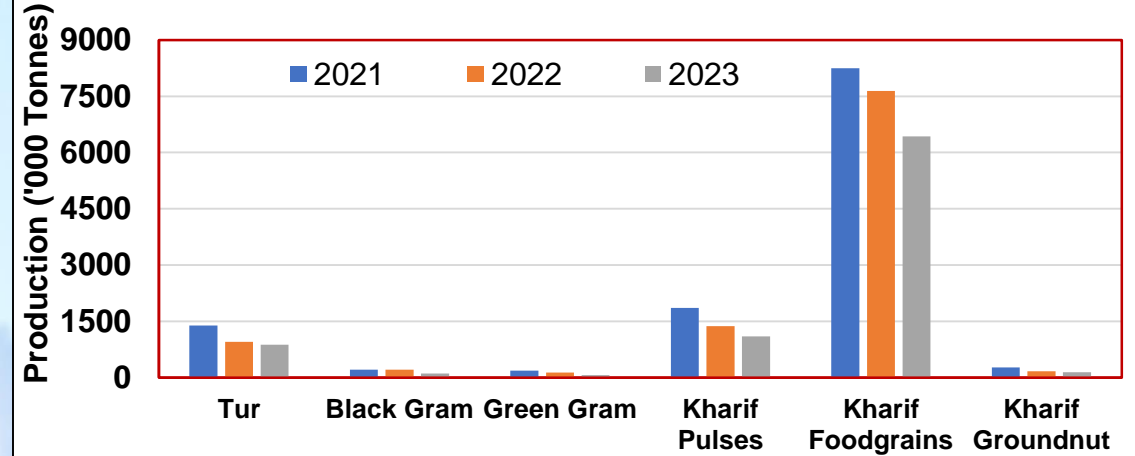


# Change in Area and Production of different crops in 2023 as compared to 2021 for Maharashtra

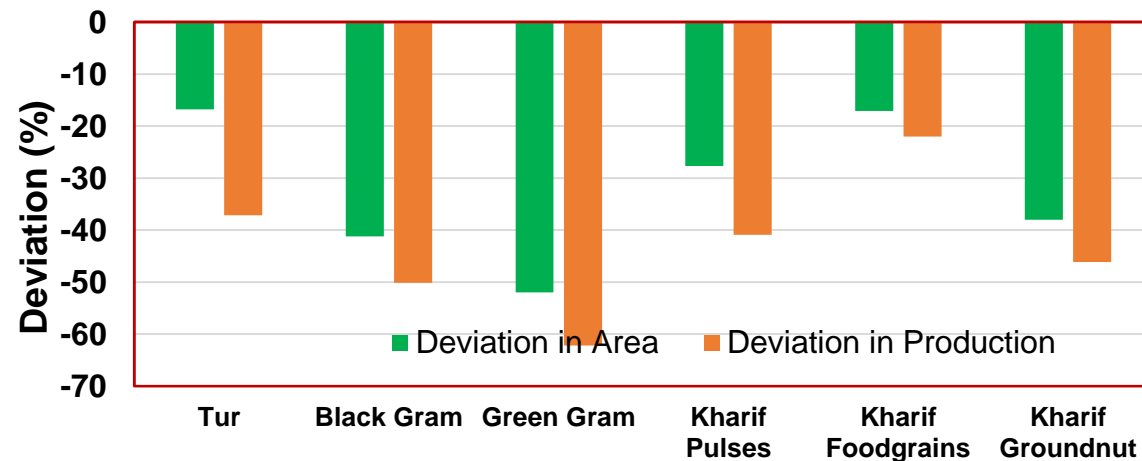
Area under Different Crops in Maharashtra



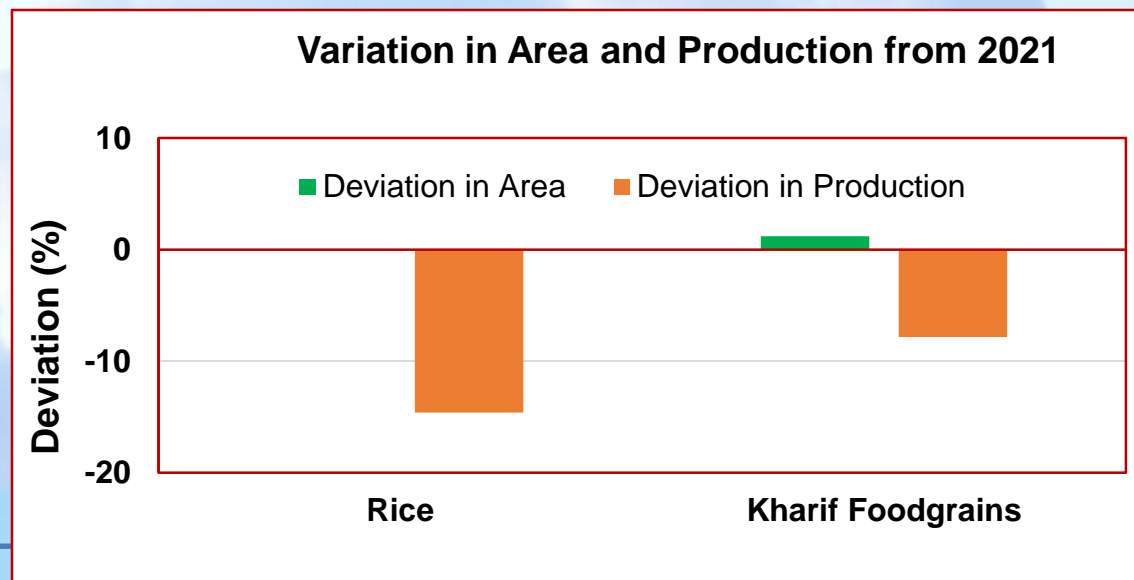
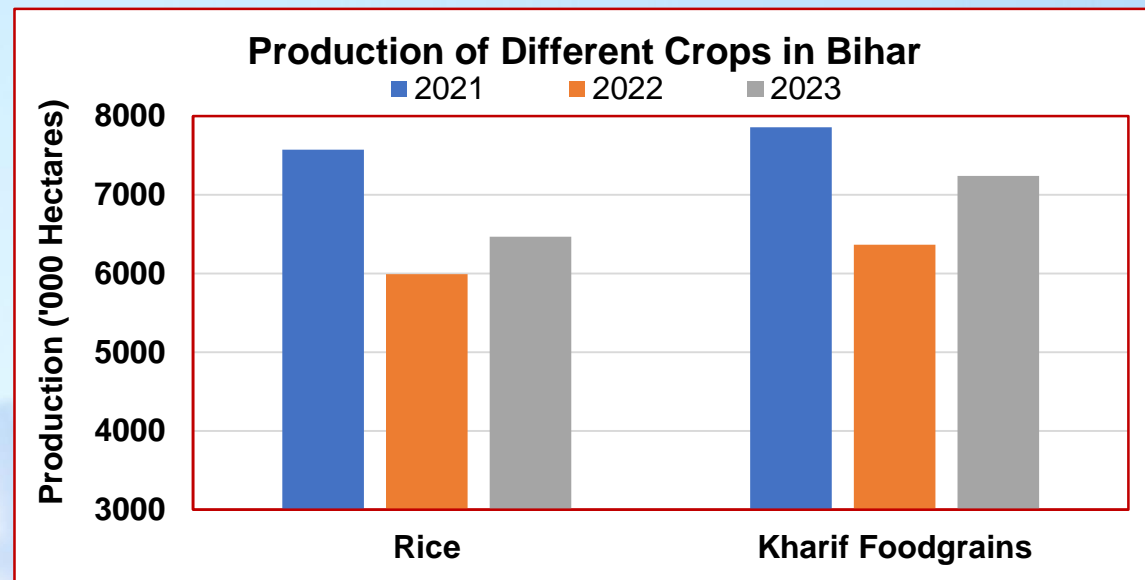
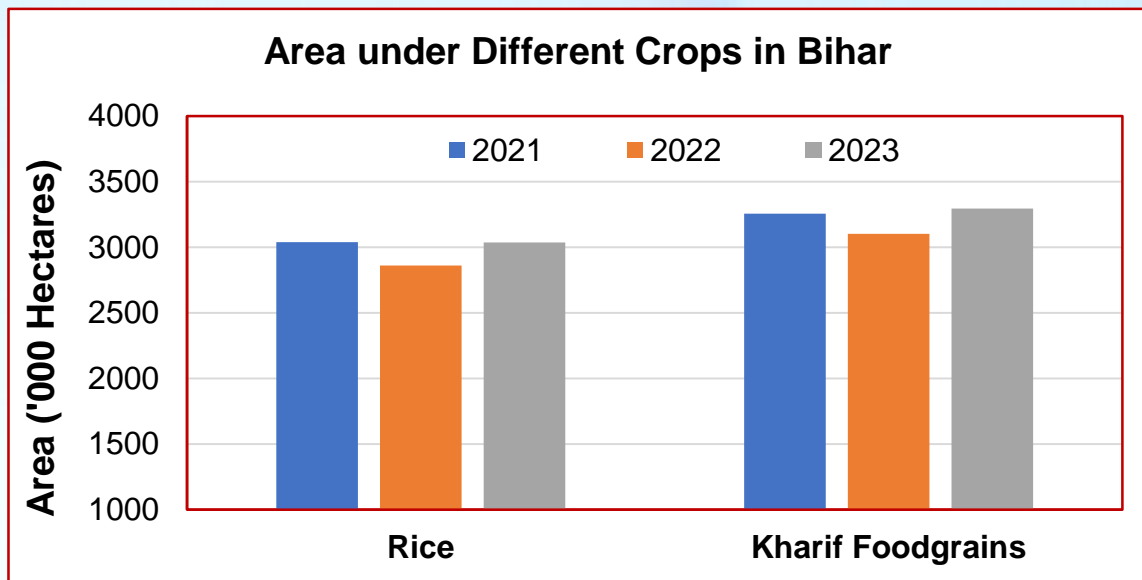
Production of Different Crops in Maharashtra



Variation in Area and Production from 2021



# Change in Area and Production of different crops in 2023 as compared to 2021 for Bihar



**Thank you**



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**भारत मौसम विज्ञान विभाग  
INDIA METEOROLOGICAL DEPARTMENT**

