

**Weather forecast based
Agrometeorological Advisory
Services**

**Under Gramin Krishi Mausam Sewa-
GKMS scheme at Banaras Hindu University**

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Why Agromet Advisory Services ?

- Minor climatic variations can have a major impact on agricultural output
- Long-term agricultural productivity and food security is affected by ongoing climate variability.
- Over next 30 years food production needs to be doubled when climate change is looming.
- Empowering Farmers on weather & Climate related issues through advisories and its dissemination is the first step.
- Provides Climatic information and weather forecast along with farm management options
- Provide access to dynamic technological development & its weather sensitivity

Information Needs of Farmers/Planners

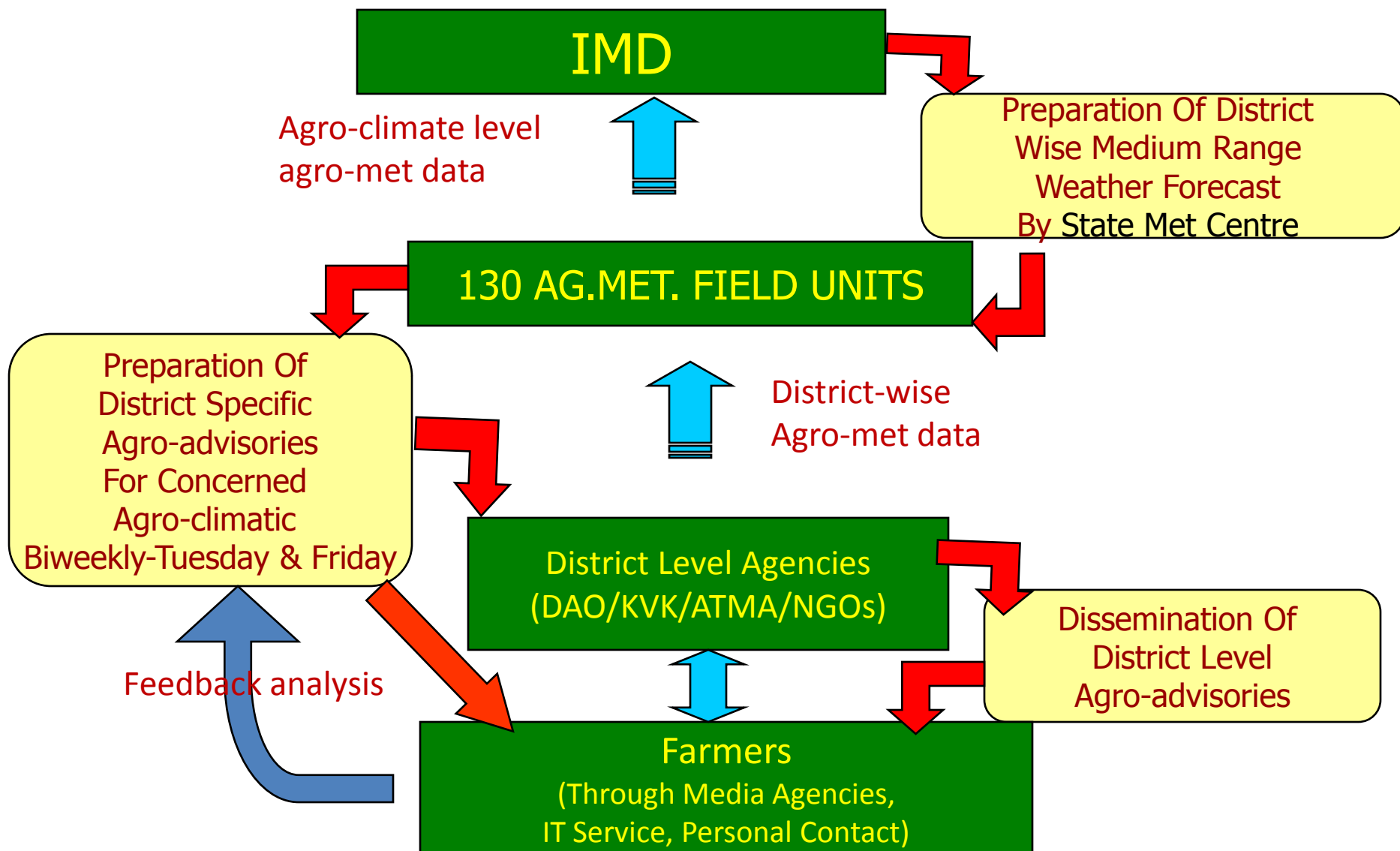
- Local specific changes & variability in weather & climate
- Weather forecast
 - Nowcasts, Short & Medium Range
 - Extended range, Seasonal Scale
- Crop Stresses and Pest/disease conditions and their prognosis
- Weather/climate based farm management

Weather based farm management advisory

- Cultivar Selection
- Sowing & Harvesting Dates
- Irrigation Management
- Plant Protection from Pest/Disease
- Livestock Management (Shelter, Health, Nutrition)
- Fertilizer Application

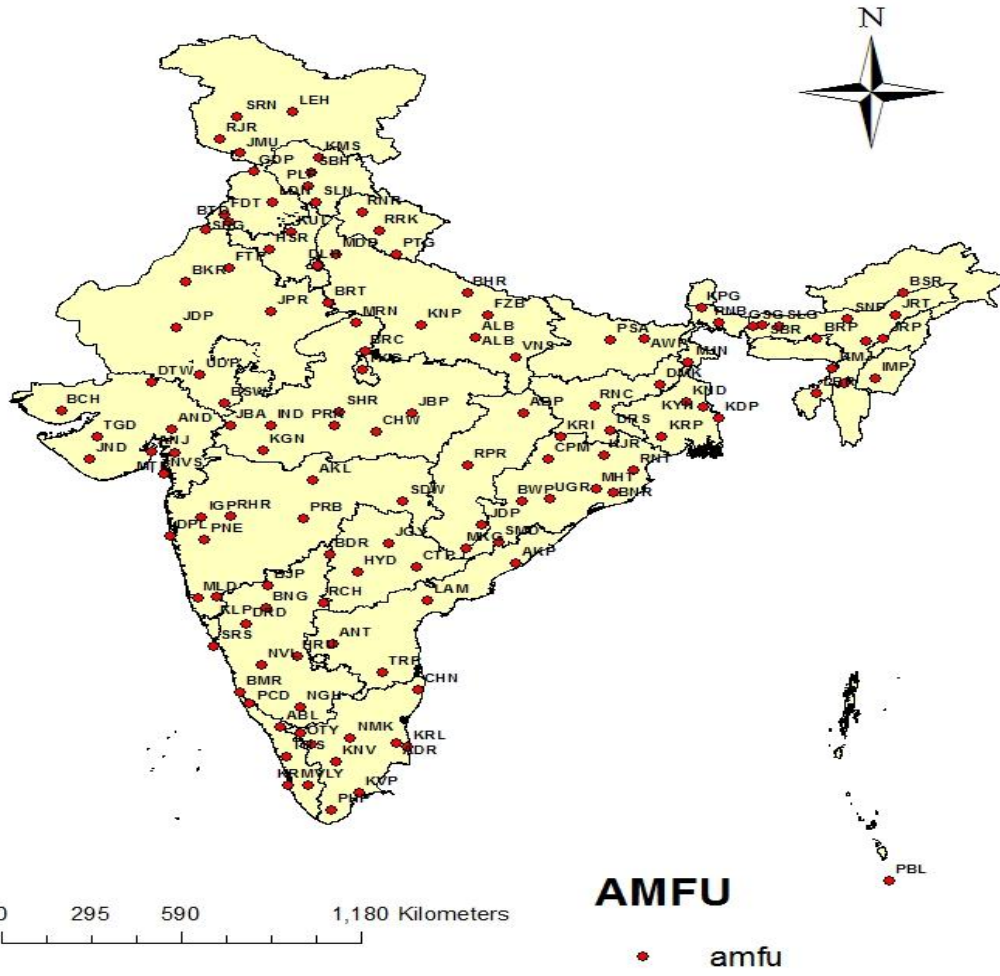
Emphasize Agromet Component in Advisories: Prepare crop wise matrix of advisories for different weather phenomenon

District Level Agromet Advisory Service System



Network of Agro-Met Field Units (AMFUs)

130 AGROMET FIELD UNITS



AMFUs (GKMS) are established in State Agriculture Universities, Central University, IITs and few ICAR centres, one in each Agro-Climatic Zone created under ICAR-NARP.

Weather Forecast spectrum for Agriculture

- Nowcast for 3 hours (Location specific)**
- Short Range for 72 hours (Location/District/City)**
- Medium Range for 3-10 days (City/District/ Met Subdiv.)**
- Extended range for 4 weeks (Met Subdiv./ State/
Homogeneous regions)**
- Long range for season (Homogeneous regions/country)**
- Early warning system on extreme events: Cyclone/
Hailstorm/Thunderstorm/Cold & Heat wave/Drought**

Medium range Forecast

NWP model: T-1534

Res: 12.5 km

Forecast for 10 days

INDIA METEOROLOGICAL DEPARTMENT
NWP MODELS BASED DISTRICT LEVEL WEATHER PREDICTION
ISSUED ON: 14-03-2018
VALID TILL 08:30 IST OF THE NEXT 5 DAYS

STATE : DELHI

PARAMETERS

WEATHER FCST

DAY-1
15032018

DAY-2
16032018

DAY-3
17032018


DAY-4
18032018

DAY-5
19032018

DISTRICT : DELHI

Rainfall (mm)	0	0	0	0	0
Max Temperature (deg C)	35	33	33	33	34
Min Temperature (deg C)	17	15	17	15	17
Total cloud cover (octa)	0	0	1	0	3
Max Relative Humidity (%)	31	40	34	21	15
Min Relative Humidity (%)	9	15	11	8	6
Wind speed (kmph)	007	004	006	006	009
Wind direction (deg)	227	202	24	347	349


Sample Bulletin



**BANARAS HINDU UNIVERSITY, VARANASI,
UTTAR PRADESH**

AAS BULLETIN FOR VARANASI DISTRICT

**AMFU, AGRICULTURAL RESEARCH
STATION**



Bulletin No: _____ Period: 12/08/2017 to 16/08/2017
Issued On: 11/08/2017

Weather condition of last four days							
Station Name	Rainfall(mm)	Max Temperature(°C)	Min Temperature(°C)	Total cloud cover(octa)	Max Relative Humidity(%)	Min Relative Humidity(%)	Wind Speed(Kmph)Direction(deg)
	Rainfall(mm)	Max Temperature(°C)	Min Temperature(°C)	Total cloud cover(octa)	Max Relative Humidity(%)	Min Relative Humidity(%)	Wind Speed(Kmph)Direction(deg)
12/08	38	32	27	8	95	85	12 240
13/08	25	31	26	8	95	85	7 230
14/08	9	33	26	8	90	80	5 160
15/08	23	30	25	7	95	85	5 270
16/08	3	32	24	7	90	80	7 230


Weather forecast for next five days in VARANASI district

Station Name	Rainfall(mm)	Max Temperature(°C)	Min Temperature(°C)	Total cloud cover(octa)	Max Relative Humidity(%)	Min Relative Humidity(%)	Wind Speed(Kmph)Direction(deg)
12/08	38	32	27	8	95	85	12 240
13/08	25	31	26	8	95	85	7 230
14/08	9	33	26	8	90	80	5 160
15/08	23	30	25	7	95	85	5 270
16/08	3	32	24	7	90	80	7 230

Weather summary of the preceding week: Weather forecast valid
Light rains may occur. Next week, the minimum and maximum temperature range between 24.0-27.0 and 30.0-32.0 Deg.C. The minimum and maximum relative humidity range between 80.0-85.0 and 90.0-95.0 %. South-Eastern winds blow at a speed of 5.0-12.0 kmph.

General Advisory
Undertake vaccination in animal as per schedule and provide clean drinking water to him. Undertake drainage from standing field crop under heavy rainfall and undertake weeding and spraying of insecticides under no rainfall situation.


Crop Advisory			
S. NO.	Crop	Stage/Condition	Agro-Met Advisory
1	CAULIFLOWER	Nursery	Undertake drainage under heavy rainfall situation.
2	MAIZE (MAKKA)	Cob Initiation	Undertake drainage under heavy rainfall situation.
3	PADDY (DHAN)	Active Tilling	Undertake weeding, split application nitrogen/ top dressing of zinc/iron/sulphur in standing crop's field.
4	PEARL MILLET (BAJRA/BULRUSH MILLET/SPIKED MILLET)	Vegetative Growth	Undertake drainage under heavy rainfall situation. Undertake weeding and thinning and split application nitrogen in standing crop's field.
5	PIGEON PEA (RED GRAM/ARHAR)	Vegetative Growth	Undertake drainage under heavy rainfall situation. Undertake weeding and thinning in standing crop's field.
6	SESAME (GINGELLY/TIL)	Vegetative Growth	Undertake drainage under heavy rainfall situation. Undertake weeding and thinning in standing crop's field.
7	SORGHUM (JOWAR/GREAT MILLET)	Vegetative Growth	Undertake drainage under heavy rainfall situation. Undertake weeding and thinning and split application nitrogen in standing crop's field.
8	BRINJAL	Picking	Undertake picking of fruits and sent to market.
9	BOTTLE GOURD	Picking	Undertake picking of fruits and sent to market.
10	BUFFALO	General	Undertake vaccination in animals per schedule and provide clean drinking water to him.
11	CATTLE	General	Undertake vaccination in animals per schedule and provide clean drinking water to him.



बनारस हिंदू विश्वविद्यालय, वाराणसी, उत्तर प्रदेश

कृषि मौसम सलाह वाराणसी जिले के लिए

वाराणसी



बुतेदिन संज्ञा: _____ अवधि: 12/08/2017 - 16/08/2017
जारी करने की तिथि: 11/08/2017

पिछले चार दिनों के मौसम और फसल की स्थिति

आगामी सप्ताह में मौसम पूर्वानुमान वाराणसी जिले के लिए

वर्षा (mm)	अधिकतम तापमान (°C)	न्यूनतम तापमान (°C)	बादलों की स्थिति (octa)	अधिकतम सापेक्ष आर्द्रता %	न्यूनतम सापेक्ष आर्द्रता %	हवा की गति (Kmph)	हवा की दिशा (deg)
12/08	38	32	27	8	95	85	12 240
13/08	25	31	26	8	95	85	7 230
14/08	9	33	26	8	90	80	5 160
15/08	23	30	25	7	95	85	5 270
16/08	3	32	24	7	90	80	7 230

Weather summary of the preceding week: Weather forecast valid
हल्की बारिश हो सकती है। अगले हफ्ते, न्यूनतम और अधिकतम तापमान की सीमा 24.0-27.0 / 30.0-32.0 डिग्री सेंटीग्रेड-न्यूनतम और अधिकतम सापेक्ष आर्द्रता की सीमा 80.0-85.0/90.0-95.0 % दक्षिण - पूर्वी हवाओं की गति 5.0-12.0 किमी / घंटा

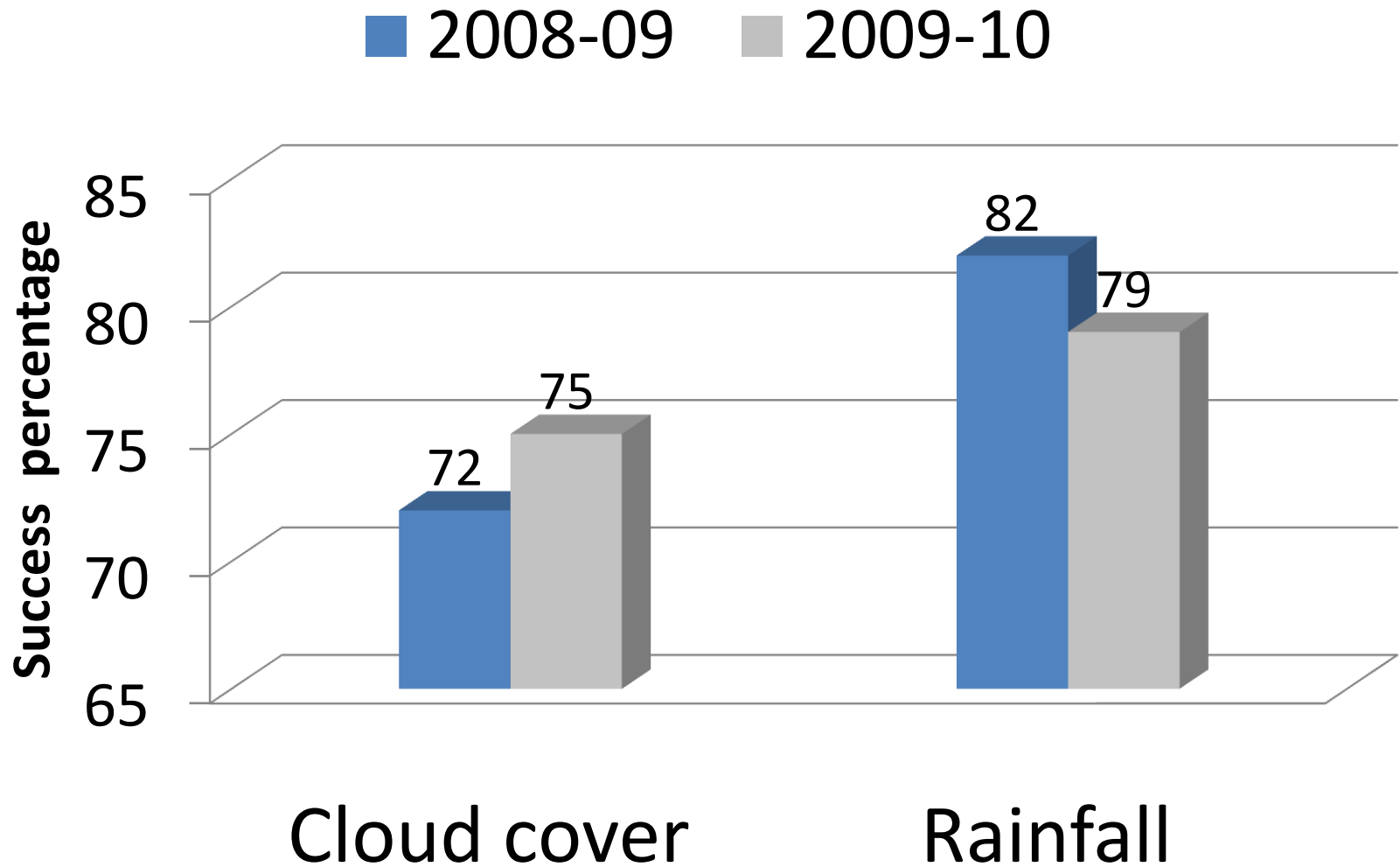
सामान्य सलाह
तेज बरसात होने का अंदेशा होने पर खेत में खड़ी फसल में जल निकास की व्यवस्था व मौसम खुला रहने पर खरपतवार नियंत्रण व कीटनाशी रसायनों का छिड़काव करें। सिञ्चन के हिसाब से पशुओं का टीकाकरण कराये व उनके पीने के लिए साफ पानी की व्यवस्था करें।

फसल सलाह			
क्र.सं.	फसल	फेनोफेस	सलाह
1	धान	कल्ले निकलना	खड़ी फसल में खरपतवार नियंत्रण तथा नत्रजन, जिंक/लोह/सल्फर का छिड़काव करें।
2	मक्का	भुंटे बनना	तेज बरसात होने की दशा में जल निकास की व्यवस्था करें।
3	बाजरा	वानस्पतिक वृद्धि	तेज बरसात होने की दशा में जल निकास की व्यवस्था करें। खड़ी फसल में खरपतवार नियंत्रण, विरलीकरण तथा शेष बची नत्रजन की टोप ड्रेसिंग करें।
4	ज्वार	नस्पतिक	तेज बरसात होने की दशा में जल निकास की व्यवस्था करें। खड़ी फसल में खरपतवार नियंत्रण, विरलीकरण तथा शेष बची नत्रजन की टोप ड्रेसिंग करें।
5	अरहर	नस्पतिक	तेज बरसात होने की दशा में जल निकास की व्यवस्था करें। खड़ी फसल में खरपतवार नियंत्रण व विरलीकरण करें।
6	तिल	नस्पतिक	तेज बरसात होने की दशा में जल निकास की व्यवस्था करें। खड़ी फसल में खरपतवार नियंत्रण व विरलीकरण करें।
7	फूलगोभी	नर्सरी	तेज बरसात होने की दशा में जल निकास की व्यवस्था करें।
8	बैंगन	तुड़ाई	तैयार फल तोड़कर बाजार भेजें।
9	लौकी	तुड़ाई	तैयार फल तोड़कर बाजार भेजें।
10	मैस	सामान्य	सिञ्चन के हिसाब से पशुओं का टीकाकरण कराये व उनके पीने के लिए साफ पानी की व्यवस्था करें।
11	गाय	सामान्य	सिञ्चन के हिसाब से पशुओं का टीकाकरण कराये व उनके पीने के लिए साफ पानी की व्यवस्था करें।

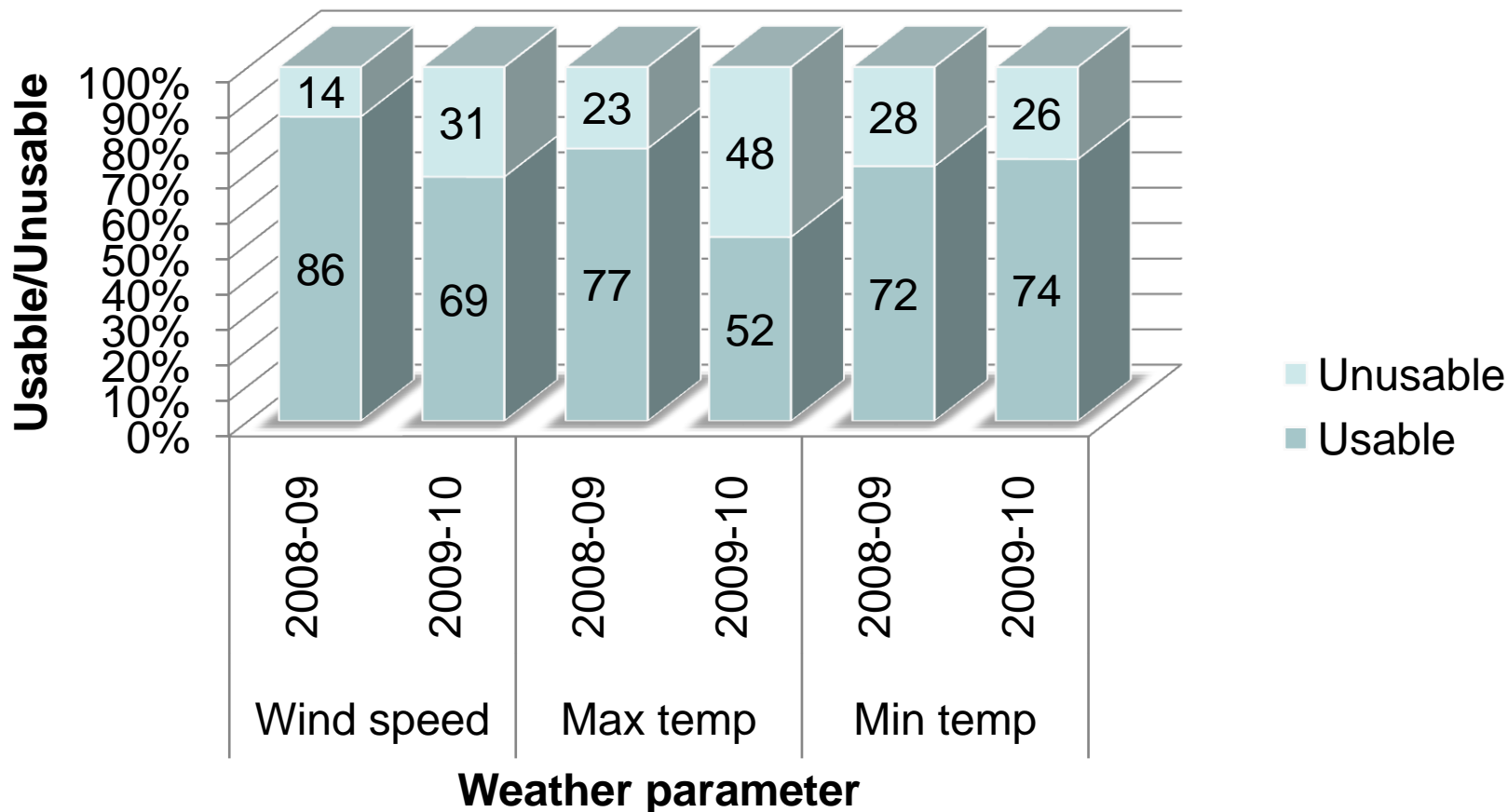
DISSEMINATION OF AAS

- At present, 22.71 millions farmers are getting SMS advisories
- SMS through Farmers Portal biweekly on Tuesday and Friday.
- Website
 - Farmers portal
 - IMD-Agrimet website
 - State Agriculture University website
 - Biweekly Agromet Advisory also uploaded on KVK portal of ICAR
- Dissemination through TV
 - DD KISAN Daily bulletin
 - DD KISAN Weekly summary
- Newspaper and Radio
- PPP Mode- IFFCO KISAN SANCHAR LIMITED
 - NOKIA
 - HANDYGO
 - MAHINDRA
 - RELIANCE FOUNDATION

Success percentage of medium range forecast regarding cloud cover and rainfall during 2008-09 and 2009-10



Success percentage of medium range weather forecast w.r.t. Max, Min temp. & wind speed during 2008-09 and 2009-10



Economic Impact Assessment Of AAS

- Survey conducted by National Council of Applied Economic Research (NCAER) in 2015
- 95% of farmers experienced improved accuracy & reliability
- Incremental profit assessed to be 25% of net income.
- 24% farmers have access to AAS (???)
- Annual Economic Profit on 4-principal crops (wheat, paddy, sugarcane and cotton), assessed as Rs. 38,463 crs in 2010 which raised to Rs. 42,000 crs in 2015.
- Service has the potential of generating net economic benefit up to Rs. 3.3 lakh crores on the 22-principal crops when AAS is utilized by All farming households in the country

Shortfalls

- A. Weather observations
- B. Sub-district / Block level forecast
- C. Limited involvement of State Ag Deptt & other knowledge partners
- D. Limited FIELD INFO with AMFUs for the area under its jurisdiction – status/progress of sowing, stage & state of crops, pest/disease infestation, updates about availability of inputs
- E. Limited outreach through SMS

Future Plan

- At least one full Weather Station in each district
- One Rain Gauge in each block
- Weather forecasts and Agromet Advisories up to Block level
- Expansion of AAS network to District level to support block level advisory (DAMU in each KVK)
- Automation of Agromet Advisory, use of ICAR/SAU knowledge, dynamic crop calendar, separate advisories for rainfed and irrigated agriculture
- Multi-channel communication with direct dissemination to at least one member in each farming household

Thank You