

Decadal Agromet Bulletin of Pakistan



Highlights...

- ❖ Moderate to high amount of rainfall reported from upper Potohar region while light to moderate amount of rainfall reported from most of the agriculture plains of the country.
- ❖ Highest amount of rainfall recorded as 184.6 mm at Jhelum during the last decade.
- ❖ Highest Maximum temperature recorded as 43.0°C at Dadu during the last decade.
- ❖ Rain-wind/thundershower is expected in Punjab, Islamabad, Khyber Pakhtunkhwa, Kashmir, Gilgit-Baltistan and upper Sindh during the first half of the decade. Isolated heavy falls are also expected during the period.
- ❖ Removing weeds from the standing crops is very important as weeds utilize moisture and food which are to be utilized by the crops. As a result considerable loss in yield occurs every year.
- ❖ Accumulation of stagnant water in the fields due to heavy rains is fatal for standing crops like cotton. Farmers may take suitable measures to resolve the issue.

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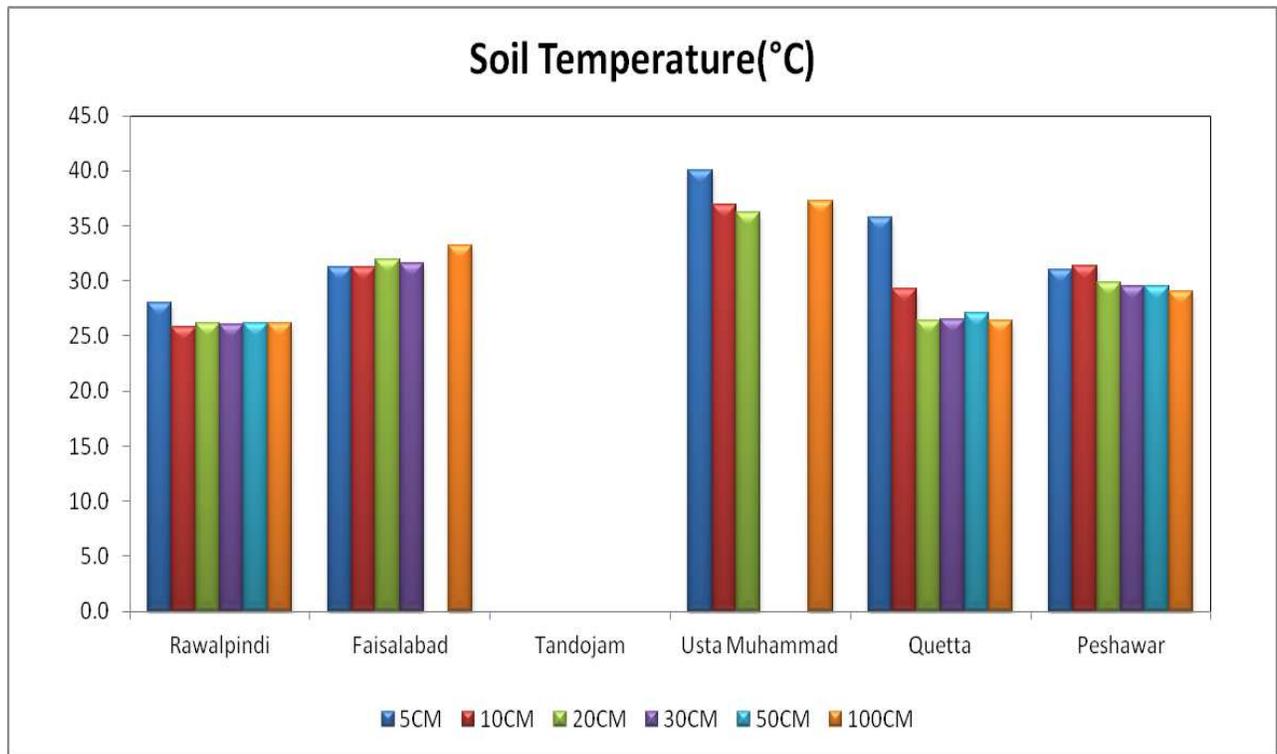
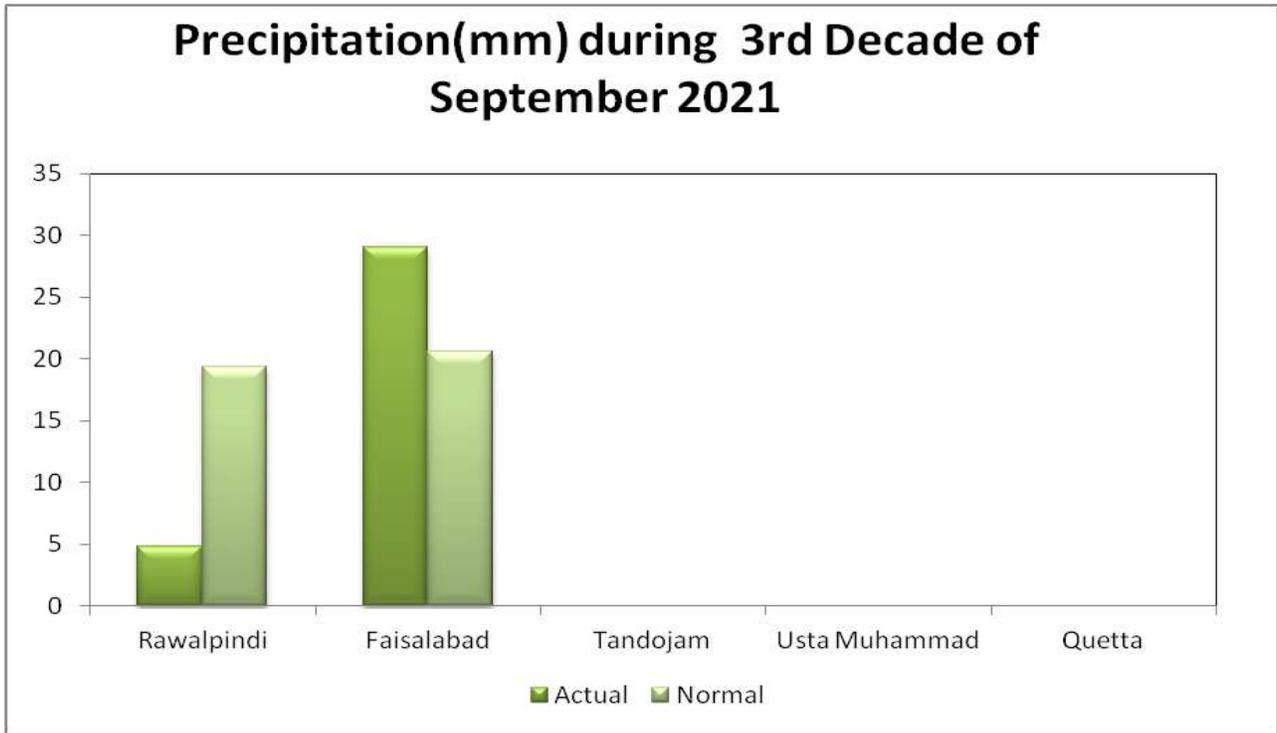
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Meteorological Conditions during 3rd Decade of September, 2021

Sr. No.	Station	Precipitation (mm)			Air Temperature (°C)			Soil Temperatures (°C)						R.H (%)	Sunshine Duration (hours)	Wind Speed (km/hr)	ETo (mm/day)
		Normal	Actual	Dep	Tmx Dep	Tmin Dep	Mean	5cm	10cm	20cm	30cm	50cm	100cm				
1	Rawalpindi	19.3	4.8	-14.5	-1.6	0.8	25.7	28.0	25.8	26.2	26.0	26.2	26.2	60	83.2	2.0	3.5
2	Faisalabad	20.5	29.0	8.5	-1.1	2.6	29.5	31.2	31.2	31.9	31.6	**	33.2	64	66.2	2.0	3.6
3	Jhelum	9.4	184.6	175.2	0.0	2.4	29.7	31.9	30.9	29.8	29.2	29.7	***	71	84.4	3.1	4.1
4	Lahore	10.8	15.6	4.8	-1.2	0.9	29.4	31.1	31.1	30.2	29.7	***	29.8	71	66.5	1.3	3.5
5	Sargodha	8.9	0.0	-8.9	-0.4	1.9	30.3	35.0	33.8	31.8	31.4	***	30.7	66	77.7	1.7	3.5
6	Multan	1.3	36.0	34.7	-1.3	2.8	31.1	***	***	***	***	***	***	62	71.1	3.5	4.2
7	Khanpur	0.0	11.3	11.3	-0.1	3.1	31.4	***	35.9	36.0	36.2	36.4	35.5	63	81.2	3.1	4.5
8	Tandojam	0.1	34.3	34.2	-0.1	4.1	31.7	45.2	***	***	***	***	25.4	67	83.2	2.8	4.0
9	Sakrand	0.0	3.0	3.0	-0.4	2.5	32.8	***	***	***	***	***	***	56	0.0	6.0	4.9
11	Rohri	6.7	16.0	9.3	1.0	1.7	30.4	32.1	31.9	***	32.1	21.6	***	65	74.3	2.9	4.0
12	D.I Khan	11.2	0.0	-11.2	2.8	3.0	30.4	31.1	31.3	29.9	29.5	29.6	29.1	60	68.5	2.3	3.7
13	Peshawar	0.0	0.0	0.0	-1.4	1.5	32.5	40.0	36.9	36.3	***	***	37.2	62	0.0	0.4	3.8
14	Usta M.	0.0	0.0	0.0	1.5	7.2	23.8	35.7	29.3	26.4	26.5	27.1	26.4	43	96.9	49.0	5.0
15	Quetta	1.4	0.0	-1.4	3.8	1.8	18.7	***	***	***	***	***	***	39	61.3	1.4	2.7
16	Skardu	19.3	4.8	-14.5	-1.6	0.8	25.7	28.0	25.8	26.2	26.0	26.2	26.2	60	83.2	2.0	3.5
17	Gilgit	20.5	29.0	8.5	-1.1	2.6	29.5	31.2	31.2	31.9	31.6	**	33.2	64	66.2	2.0	3.6

Table-1: Meteorological parameters for selected station of Pakistan. "Dep" in the table stands for difference from climatic normal, i.e. actual value minus normal. The climatic normal used in the Bulletin is extracted from the 2007 - 2016 observed data. ETo stands for reference crop Evapotranspiration. *** stands for no data.

Graph at RAMCs during September, 2021



Past Weather (21st to 30th September, 2021)

Moderate to high amount of rainfall reported from upper Potohar region while light to moderate amount of rainfall reported from most of the agriculture plains of the country.

1.1 Punjab

Moderate to high amount of rainfall reported from most parts of the agricultural plains of the province. Highest rainfall reported from Jhelum and Kasur followed by D.G. Khan. Decadal Maximum and minimum both remained below normal by 0.4°C and 1.2°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 65%, 75.5 hrs, 2.4 km/hr and 3.8 mm/day respectively.

1.2 Sindh

Light to moderate amount of rainfall reported from most parts of the agricultural plains of the province. Highest rainfall reported from Chor followed by Badin & Mithi. Decadal Maximum and minimum both rose above normal by 1.7°C and 2.3°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 62%, 41.6 hrs, 4.4 km/hr and 4.5 mm/day respectively.

1.3 Khyber Pakhtunkhwa

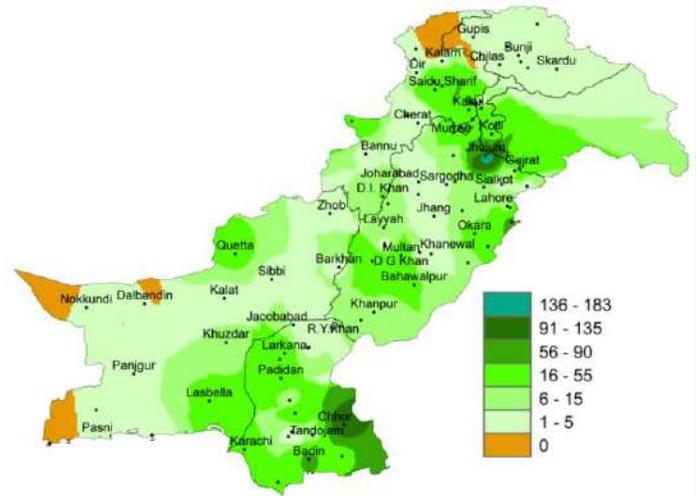
Moderate to high amount of rainfall reported from most parts of the agricultural plains of the province. Highest rainfall reported from Balakot followed by Kakul & Malam Jabba. Decadal Maximum and minimum both rose above normal by 2.7°C & 2.4°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 63%, 71.4hrs, 2.6 km/hr and 3.9 mm/day respectively.

1.4 Baluchistan

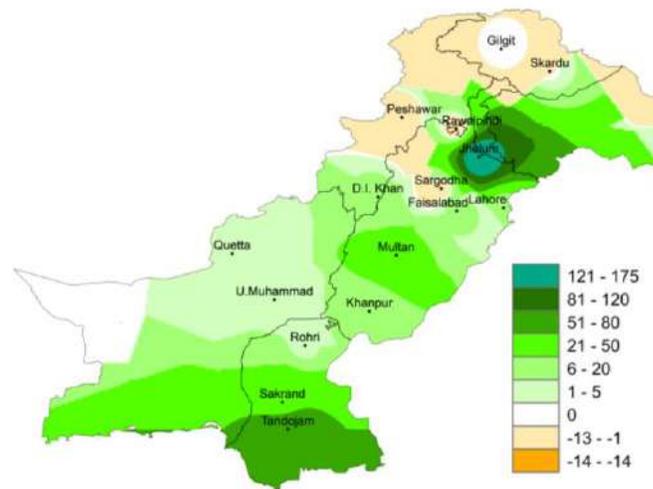
Light amount of rainfall reported from the agricultural plains of the province. Highest rainfall reported from Lasbella. Decadal Maximum and minimum both rose above normal by 0.2°C and 4.3°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 53%, 48.5hrs, 2.1 km/hr and 4.2 mm/day respectively.

1.5 Gilgit-Baltistan and Azad Jammu & Kashmir

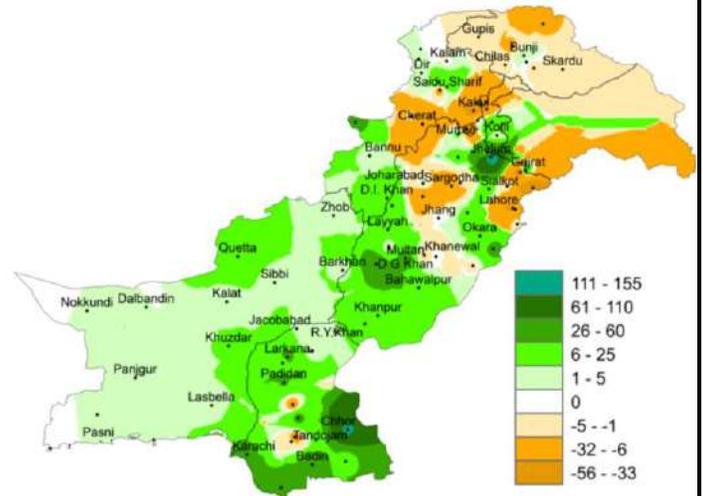
Light to moderate amount of rainfall reported from most parts of the agricultural plains of the province. Highest rainfall reported from Muzaffarabad followed by G.Dopatta. Decadal maximum & minimum rose above normal by 2.7°C and 2.1°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 39%, 61.3hrs, 1.4 km/hr and 2.7 mm/day respectively.



I. Actual rainfall during the decade



II. Departure of rainfall from Normal



III. Departure of rainfall from Previous Decade

Figure.1: Rainfall distribution during previous decade (mm)

2(a) Past Weather for Major Agricultural Plains (21st to 30th September, 2021)

2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 4.8 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 34.8°C while night temperature recorded as 20.5°C with 82.4hours bright sunshine duration. Wind speed recorded as 2.1 km/hr with mean wind direction as *south easterly*.

2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as 29.0 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 35.7°C while night temperature recorded as 25.6°C with 75.7 hours bright sunshine duration. Wind speed recorded as 3.6 km/hr with mean wind direction as *southerly*.
Cotton: Very good, Boll opening stage.

2.3 RAMC, Tandojam (Lower Sindh)

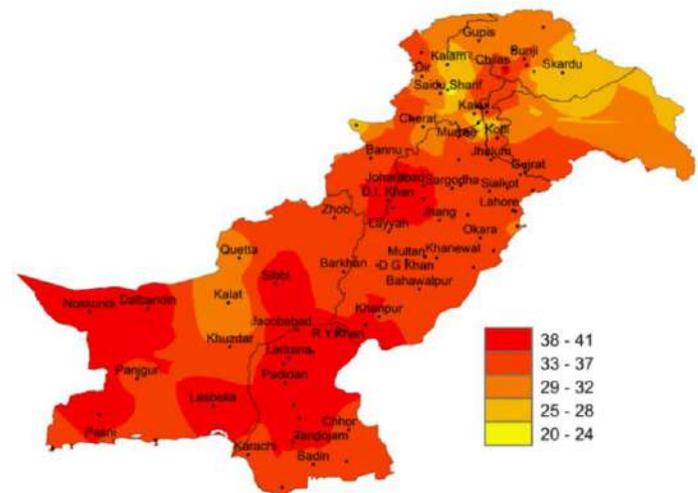
Dry weather reported during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 61%. Mean day temperature was 38.0°C while night temperature recorded as 27.1°C with 83.8 hours bright sunshine duration. Wind speed recorded as 2.0 km/hr with mean wind direction as *northerly*.
Cotton (Sindh-1): Good, Boll opening stage.

2.4 RAMC, Usta Muhammad (Eastern Baluchistan)

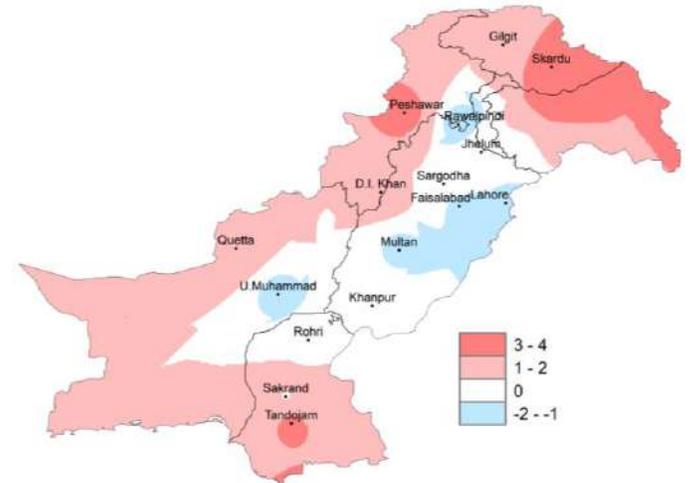
Dry weather observed during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 38.0°C while night temperature recorded as 28.4°C with wind speed recorded as 0.3 km/hr with mean wind direction as *south easterly*.
Rice: Good, Shooting stage.

2.5 RAMC, Quetta (Northern Baluchistan)

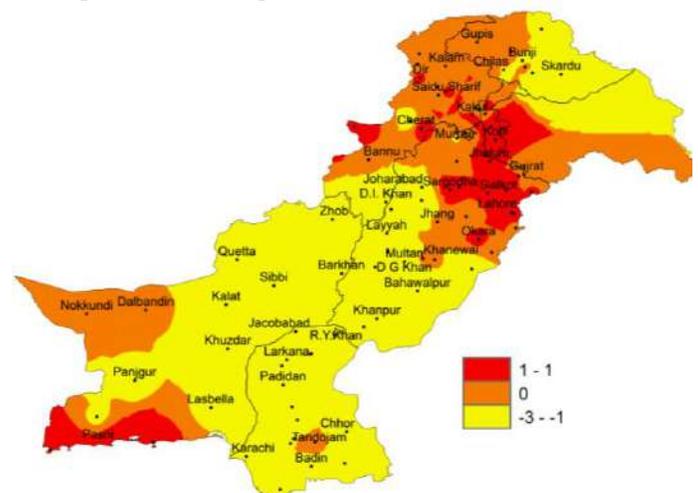
Dry weather observed during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 32%. Mean day temperature was 32.7°C while night temperature recorded as 15.9°C with 100.0 hours bright sunshine duration. Wind speed recorded as 3.8 km/hr with mean wind direction as *north westerly*.



I. Actual max-temp



II. Departure of max-temp from Normal



III. Departure of max-temp from Previous Decade

Figure.2: Maximum Temperature distribution during previous decade (°C)

2(b) Past Weather for Sub-Regional Agricultural Plains (21st to 30th September, 2021)

2.6 Jhelum

Rainfall reported as 184.6 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 74%. Mean day temperature was 34.3°C while night temperature recorded as 25.7°C with 72.9 hours bright sunshine duration. Wind speed recorded as 2.3 km/hr with mean wind direction as *south easterly*.

2.7 Lahore

Rainfall reported as 15.6 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 74%. Mean day temperature was 32.5°C while night temperature recorded as 25.1°C with 70.5 hours bright sunshine duration. Wind speed recorded as 1.7 km/hr with mean wind direction as *westerly*.

2.8 Sargodha

Dry weather observed during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 68%. Mean day temperature was 35.6°C while night temperature recorded as 26.5°C with 75.8 hours bright sunshine duration. Wind speed recorded as 1.8 km/hr with mean wind direction as *variable*.

2.9 Multan

Rainfall reported as 36.0 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 57%. Mean day temperature was 37.3°C while night temperature recorded as 27.9°C with 79.9 hours bright sunshine duration. Wind speed recorded as 6.9 km/hr with mean wind direction as *north easterly*.

2.10 Khanpur

Rainfall reported as 11.3 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 38.2°C while night temperature recorded as 27.0°C with 92.4 hours bright sunshine duration. Wind speed recorded as 3.9 km/hr with wind direction as *northerly*.

2.11 Sakrand

Rainfall reported as 34.3 mm during the decade however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 65%. Mean day temperature was 38.2°C while night temperature recorded as 27.3°C with 100.0 hours bright sunshine duration. Wind speed recorded as 3.7 km/hr with mean wind direction as *north easterly*.

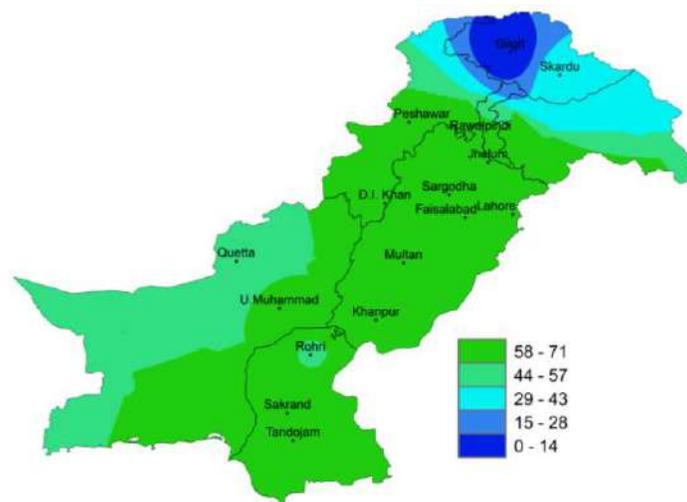


Figure.3: Relative Humidity in Percentage (%)

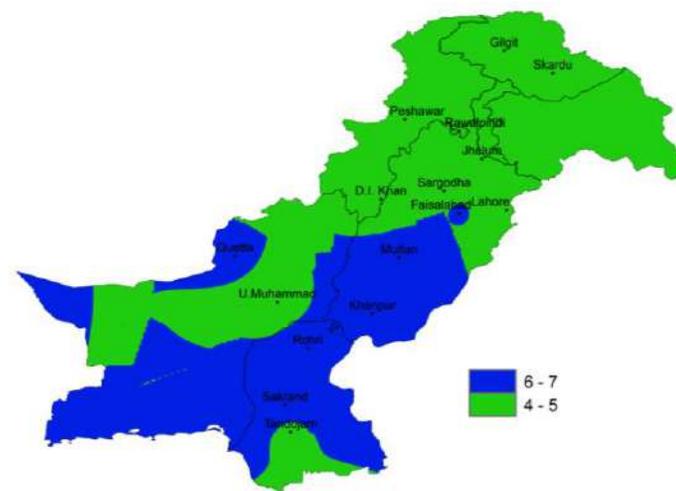


Figure.4: Reference Crop Evapotranspiration ETo (mm/day)

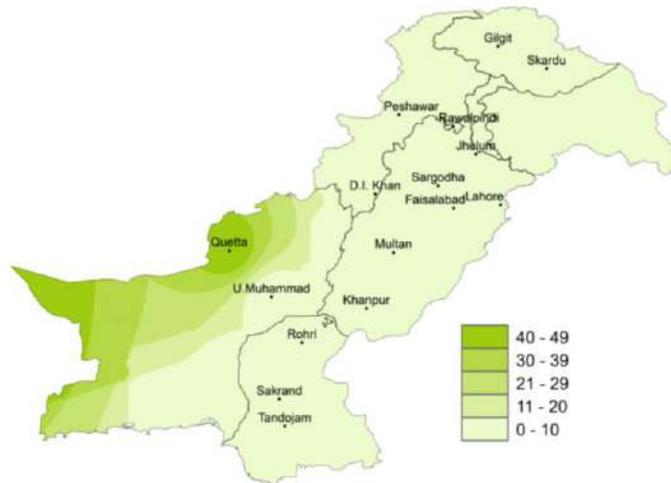


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Rainfall reported as 3.0 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 53%. Mean day temperature was 39.4°C while night temperature recorded as 29.5°C. Wind speed recorded as 5.9 km/hr with mean wind direction as *north easterly*.

2.13 D.I. Khan

Rainfall reported as 16.0 mm during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 59%. Mean day temperature was 39.1°C while night temperature recorded as 26.6°C with 84.9 hours bright sunshine duration. Wind speed recorded as 4.3 km/hr with mean wind direction as *easterly*.

2.14 Peshawar

Rainfall reported as 0.01 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 65%. Mean day temperature was 36.8°C while night temperature recorded as 25.5°C with 68.2 hours bright sunshine duration. Wind speed recorded as 1.5 km/hr with mean wind direction as *north easterly*.

2.15 Skardu

Rainfall reported as 0.01 mm during the decade; however weather remained cloudy for 02 days during the decade. Average relative humidity recorded as 45%. Mean day temperature was 29.1°C while night temperature recorded as 10.8°C with 68.0 hours bright sunshine duration. Wind speed recorded as 0.7 km/hr with mean wind direction as *north easterly*.

2.16 Gilgit

Rainfall reported as 1.2 mm during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 46%. Mean day temperature was 34.5°C while night temperature recorded as 14.0°C with 81.1 hours bright sunshine duration. Wind speed recorded as 2.0 km/hr with mean wind direction as *south easterly*.

Ten Days Weather Advisory for Farmers **(1st to 10th October, 2021)**

3.1 Temperature Forecast

Day time temperatures are expected normal, however night temperature are expected to be normal or slightly below normal in most of the agricultural plains of the country during the decade.

3.2 Wind Forecast

Normal wind pattern may prevail in most of the agricultural plains of the country. However, strong winds are expected along with thunder/dust storm at particular places over the upper half of the country.

3.3 Rain Forecast

- ❖ **Punjab:** Rain-wind/thunderstorm is expected in the province including Islamabad during the 1st half of the decade.
- ❖ **Khyber Pakhtunkhwa:** Rain-wind/thunderstorm is expected in the province during the 1st half of the decade.
- ❖ **Sindh:** Rain-wind/thunderstorm is expected in the upper/south eastern parts of the province during the 1st half. However, dry weather is expected during the 2nd half of the decade.
- ❖ **Baluchistan:** Rain-wind/thunderstorm is expected in the upper/south eastern parts of the province during the 1st half. However, dry weather is expected during the 2nd half of the decade.
- ❖ **Gilgit-Baltistan:** Mainly dry weather is expected over most parts. However, rain-wind/thunderstorm is expected during the start of the decade.
- ❖ **Kashmir:** Mainly dry weather is expected over most parts. However, rain-wind/thunderstorm is expected during the start of the decade.

3.4 Advisory for Farmers

- ❖ Farmers are advised to schedule the picking of cotton on time.
- ❖ Removing weeds from the standing crops is very important as weeds utilize moisture and food which are to be utilized by the crops. As a result considerable loss in yield occurs every year.
- ❖ Accumulation of stagnant water in the fields due to heavy rains is fatal for standing crops like cotton. Farmers may take suitable measures to resolve the issue.

Findings of AgMIP Pakistan, University of Agriculture, Faisalabad

- ❖ There would be significant increase in temperature i.e., 2.8°C in day and 2.2°C in the night during mid-century (2040-2069).
- ❖ There would be significant variability in rainfall patterns (about 25% increase in summer & 12% decrease in winter during 2040-2069).
- ❖ Climate Change will affect the crop yields negatively (about 17% for rice and 14 % for wheat).
- ❖ If there will be no adaptation to Climate Change, majority of farmers would be the economic losers.
- ❖ With Adaptation to Climate Change (through technology and management), there would be significant decrease in poverty and improvement in the livelihood of farming community.

(Agricultural Model Inter-comparison and Improvement Project (AgMIP) Pakistan 2012-2014)

- 1- سال 2040-69 کے دوران درجہ حرارت میں قابل ذکر اضافہ ہو سکتا ہے۔ جو کہ دن کے وقت 2.8°C اور رات کو 2.2°C تک ہوگا۔
- 2- گرمیوں کی بارش میں 25 فیصد اضافہ اور سردیوں کی بارش میں 12 فیصد تک کمی کا امکان ہے۔
- 3- مندرجہ بالا موسمی تغیرات کی وجہ سے دھان کی پیداوار میں 17 فیصد اور گندم کی پیداوار میں 14 فیصد تک کمی ہو سکتی ہے۔
- 4- اگر موسمی تغیرات کا مناسب بندوبست نہ کیا گیا۔ تو کسانوں کی اکثریت کو معاشی نقصان کا سامنا کرنا پڑے گا۔
- 5- موسمی تغیرات کے سدباب (بذر یعنی ٹیکنالوجی کا استعمال اور بہتر نظم و نسق) سے غربت میں کمی اور کسانوں کی زندگی میں خوشحالی لائی جاسکتی ہے۔

(ایگمپ پاکستان 2012-2014)