Decadal Agromet Bulletin of Pakistan

Highlights…

- Moderate to high amount of rainfall reported from upper half of country while light to moderate amount of rainfall reported from most of the agriculture plains in the lower parts of the country.
- Highest amount of rainfall recorded as 114.6 mm at Chaklala during the last decade.
- Highest Maximum temperature recorded as 43.0ºC at Turbat during the last decade.
- Rain-wind/thundershower is expected in the upper parts of the country during the 2nd half of the decade. Mostly dry period is expected during the decade.
- 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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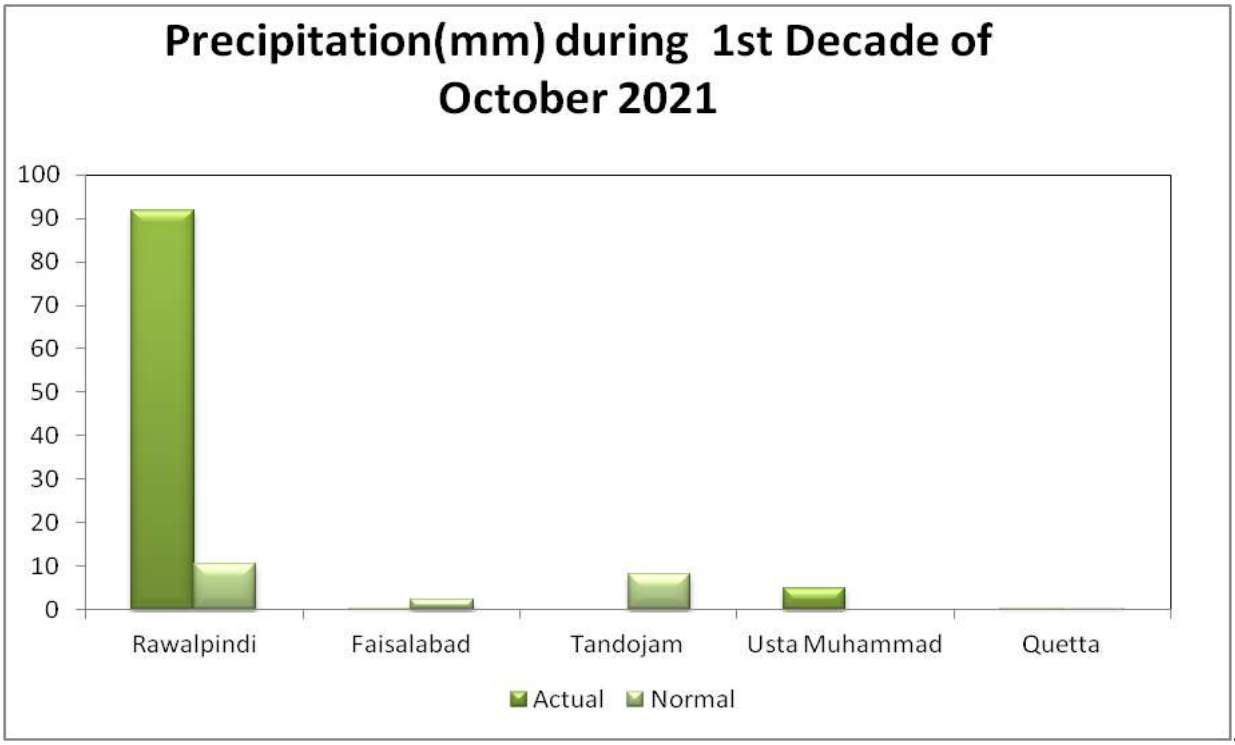
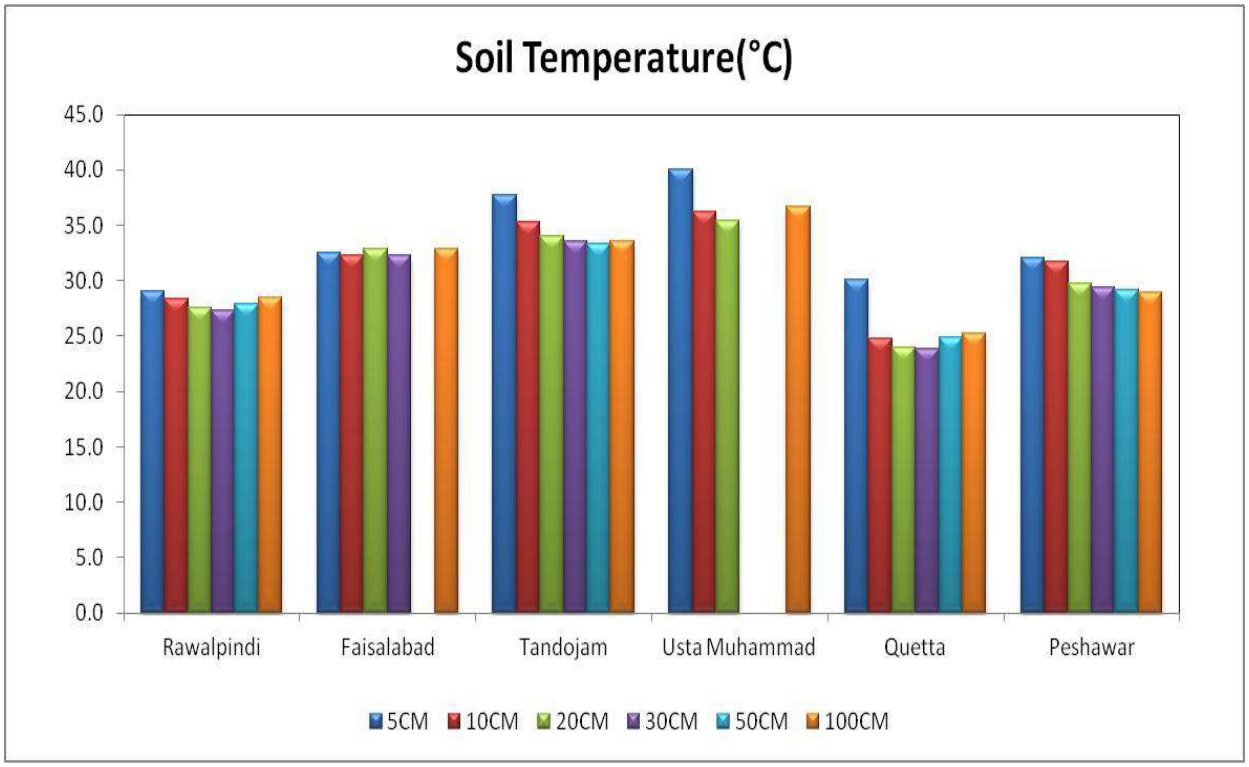
Meteorological Conditions during 1st Decade of October, 2021

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	10.4	91.7	81.3	0.5	1.9	26.4	29.1	28.4	27.5	27.3	27.9	28.5	65	79.7	2.3	3.3
2	Faisalabad	2.4	0.0	-2.4	1.0	3.8	30.1	32.5	32.3	32.9	32.3	**	32.9	55	81.4	2.5	3.8
3	Jhelum	3.6	11.6	8.0	-0.2	2.2	28.8	31.5	30.4	29.3	28.8	29.4	***	67	78.5	2.4	3.6
4	Lahore	0.6	47.0	46.4	0.1	0.7	29.3	30.8	30.6	29.8	29.5	***	29.7	64	88.2	1.4	3.6
5	Sargodha	1.5	0.0	-1.5	0.5	2.6	30.5	35.2	34.1	32.2	31.8	***	30.8	61	80.0	1.7	3.6
6	Multan	1.7	0.0	-1.7	0.3	4.2	31.4	***	***	***	***	***	***	55	77.8	6.8	5.1
7	Khanpur	0.0	14.7	14.7	0.6	5.7	32.4	***	34.6	34.8	34.2	33.8	33.7	63	90.6	3.9	4.7
8	Tandojam	0.0	2.0	2.0	0.0	3.8	31.2	45.4	***	***	***	***	***	62	102.1	3.1	4.8
9	Sakrand	8.1	0.0	-8.1	-1.2	3.3	30.2	37.7	35.3	34.0	33.5	33.4	33.6	62	87.6	2.0	4.2
11	Rohri	0.0	0.0	0.0	1.8	5.3	34.5	***	***	***	***	***	***	53	0.0	5.9	4.9
12	D.I Khan	3.1	0.0	-3.1	1.5	3.6	30.9	31.4	31.3	***	31.6	21.0	***	61	70.3	4.9	4.3
13	Peshawar	10.5	5.0	-5.5	0.7	2.0	28.1	32.0	31.7	29.7	29.4	29.2	29.0	63	60.2	1.9	3.0
14	Usta M.	0.0	5.0	5.0	1.2	2.8	32.0	40.0	36.3	35.4	***	***	36.7	63	0.0	0.2	3.3
15	Quetta	0.1	0.0	-0.1	-1.6	3.4	20.3	30.1	24.8	23.9	23.8	24.9	25.3	38	82.3	4.8	3.9
16	Skardu	1.2	2.2	1.0	0.7	2.0	16.5	***	***	***	***	***	***	37	66.6	2.9	2.8
17	Gilgit	1.9	0.0	-1.9	2.1	3.8	20.9	***	***	***	***	***	***	47	59.1	1.7	2.6

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 October, 2021





Past Weather (1st to 10th October, 2021)

Moderate to high amount of rainfall reported from upper half of country while light to moderate amount of rainfall reported from most of the agriculture plains in the lower parts 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 Chaklala and Islamabad followed by Lahore. Decadal Maximum and minimum both remained below normal by 0.4°C and 3.0°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 61%, 82 hrs, 3.0 km/hr and 4.0 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 Shaheed Benazirabad followed by Karachi & Thatta. Decadal Maximum and minimum both rose above normal by 1.2°C and 4.0°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & Eto were recorded as 59%, 63.2 hrs, 3.7 km/hr and 4.6 mm/day respectively.

1.3 Khyber Pakhtunkhwa

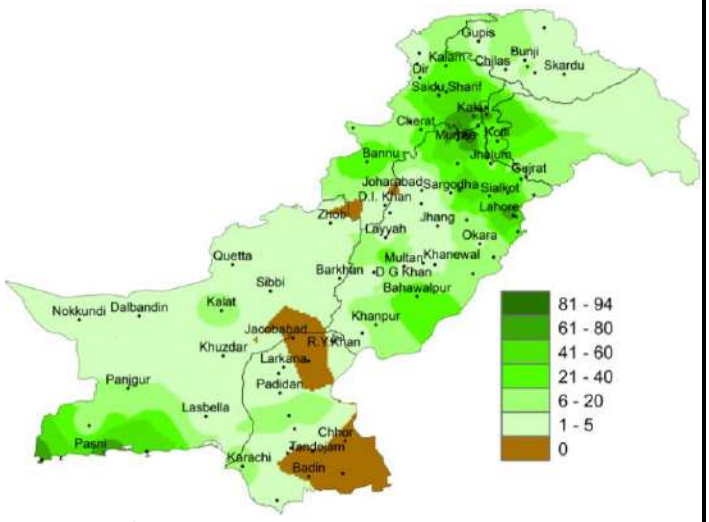
Moderate to high amount of rainfall reported from most parts of the agricultural plains of the province. Highest rainfall reported from Kakul followed by Risalpur & Saidu Sharif. Decadal Maximum and minimum both rose above normal by 1.1°C & 2.8°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 62%, 65.3hrs, 3.4 km/hr and 3.7 mm/day respectively.

1.4 Baluchistan

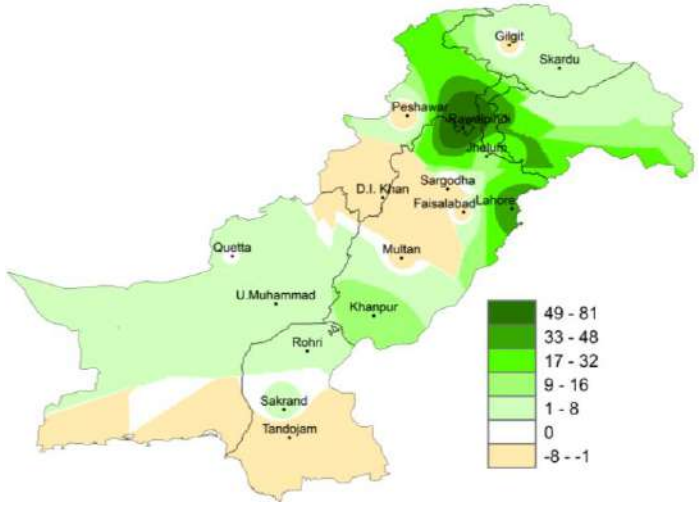
Light amount of rainfall reported from the agricultural plains of the province. Highest rainfall reported from Jiwani & Pasni. Decadal Maximum and minimum both rose above normal by 0.2°C and 3.1°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 51%, 41.2hrs, 2.5 km/hr and 3.6 mm/day respectively.

1.5 Gilgit-Baltistan and Azad Jammu & Kashmir

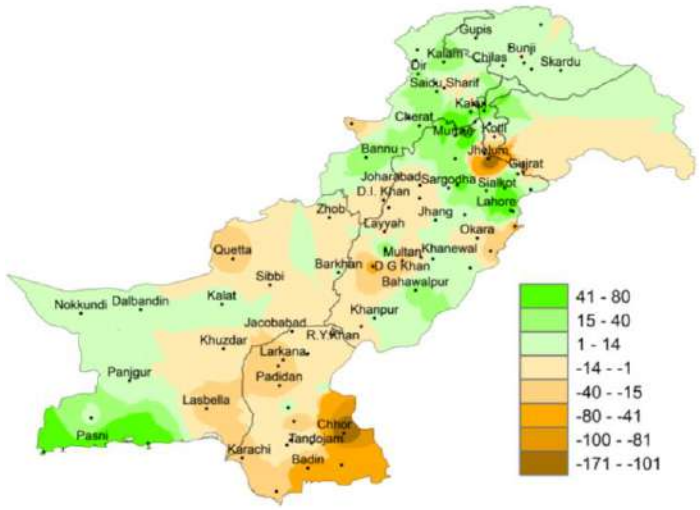
Light to moderate amount of rainfall reported from most parts of the agricultural plains of the province. Highest rainfall reported from G.Dopatta followed by Muzaffarabad. Decadal maximum & minimum rose above normal by 1.4°C and 2.9°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 42%, 62.9hrs, 2.3 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 (1st to 10th October, 2021)

2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 91.7 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 33.4°C while night temperature recorded as 19.4°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 0.01 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 36.2°C while night temperature recorded as 24.0°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****, maturity stage.*

2.3 RAMC, Tandojam (Lower Sindh)

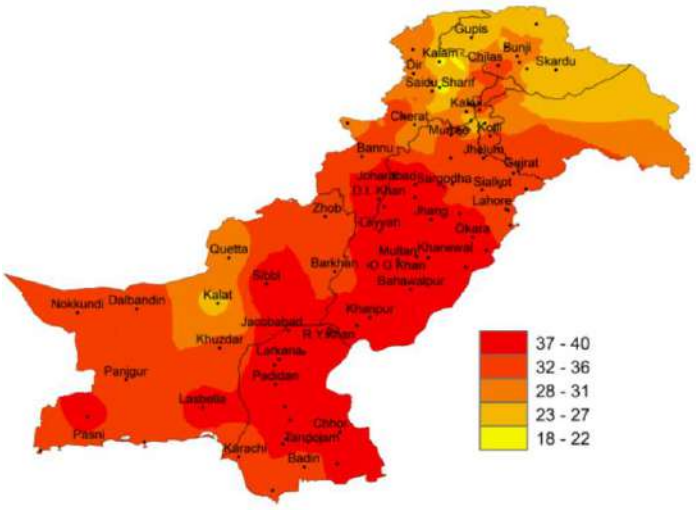
Dry weather reported during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 61%. Mean day temperature was 35.8°C while night temperature recorded as 24.5°C with 83.8 hours bright sunshine duration. Wind speed recorded as 2.0 km/hr with mean wind direction as *northerly*.
Cotton (Sindh-1): Good, *picking stage*.

2.4 RAMC, Usta Muhammad (Eastern Baluchistan)

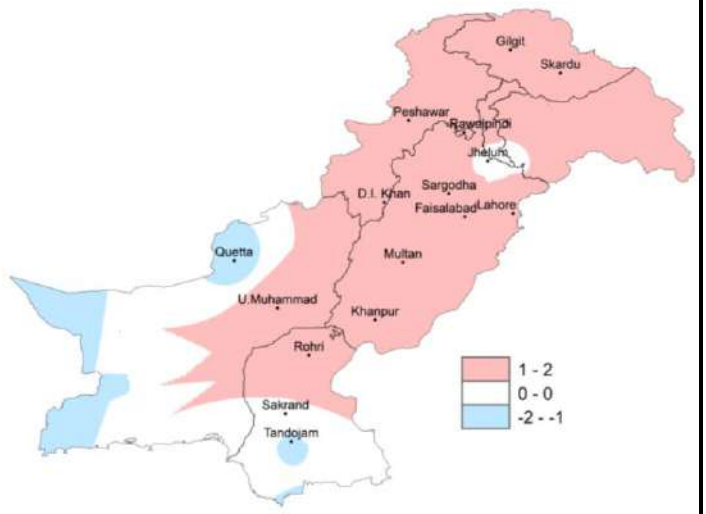
Rainfall reported as 5.0 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 37.6°C while night temperature recorded as 26.3°C with wind speed recorded as 0.3 km/hr with mean wind direction as *south easterly*.
Rice: ***Good****, Flowering stage.*

2.5 RAMC, Quetta (Northern Baluchistan)

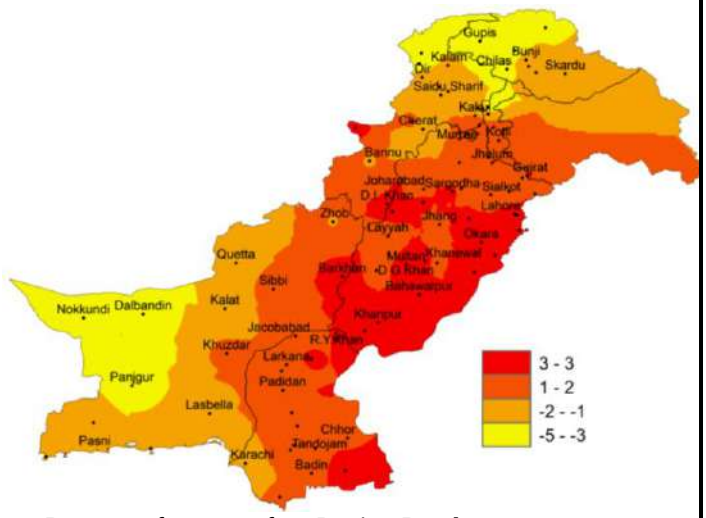
Rainfall reported as 0.01 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 32%. Mean day temperature was 27.2°C while night temperature recorded as 13.3°C with 100.0 hours bright sunshine duration. Wind speed recorded as 3.8 km/hr 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 (1st to 10th October, 2021)

2.6 Jhelum

Rainfall reported as 11.6 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 74%. Mean day temperature was 34.5°C while night temperature recorded as 23.1°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 47.8 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 74%. Mean day temperature was 34.5°C while night temperature recorded as 24.3°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 36.2°C while night temperature recorded as 24.7°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 0.01 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 57%. Mean day temperature was 36.5°C while night temperature recorded as 26.3°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 14.7 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 37.5°C while night temperature recorded as 27.2°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 2.0 mm during the decade however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 65%. Mean day temperature was 37.2°C while night temperature recorded as 25.1°C with 100.0 hours bright sunshine duration. Wind speed recorded as 3.7 km/hr with mean wind direction as *north easterly*.

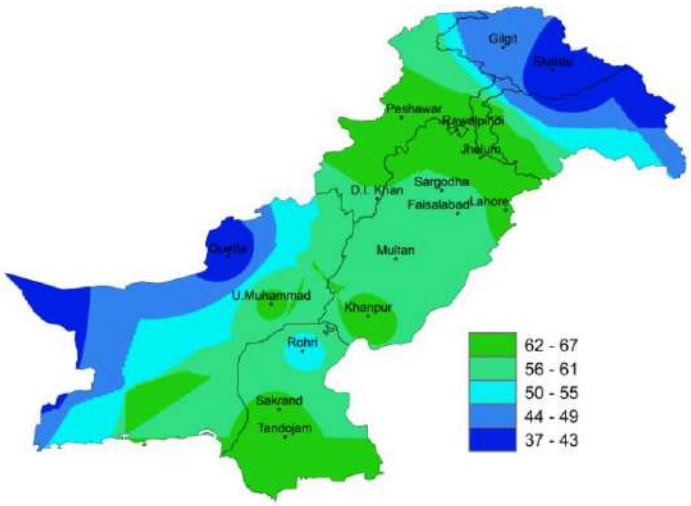


Figure.3: Relative Humidity in Percentage (%)

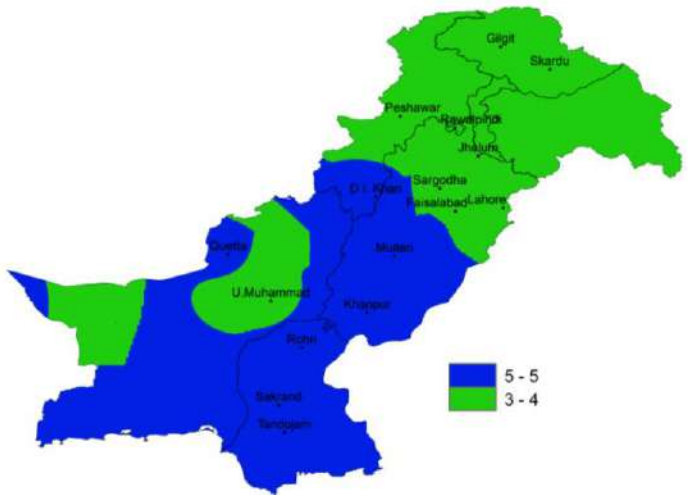


Figure.4: Reference Crop Evapotranspiration ETo (mm/day)

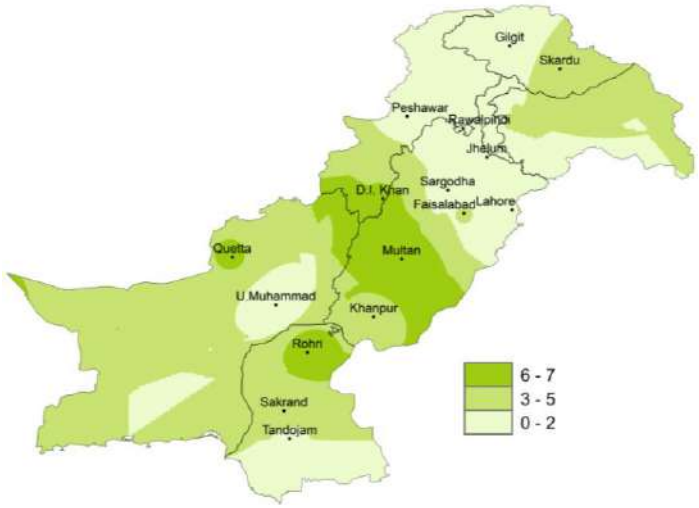


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Dry weather observed 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

Dry weather observed during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 59%. Mean day temperature was 37.3°C while night temperature recorded as 24.4°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 5.0 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 65%. Mean day temperature was 34.1°C while night temperature recorded as 22.1°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 2.2 mm during the decade; however weather remained cloudy for 02 days during the decade. Average relative humidity recorded as 45%. Mean day temperature was 24.7°C while night temperature recorded as 8.2°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

Dry weather observed during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 46%. Mean day temperature was 29.9°C while night temperature recorded as 11.8°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 (11th to 20th 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:** Overall dry weather is expected. Rain-wind/thunderstorm is expected in the upper half of province including Islamabad during the 2nd half of the decade.
- **Khyber Pakhtunkhwa:** Overall dry weather is expected during the decade.
- **Sindh:** Overall dry weather is expected during the decade.
- **Baluchistan:** Overall dry weather is expected during the decade.
- **Gilgit-Baltistan:** Mainly dry weather is expected over most parts. However, rain-wind/thunderstorm is expected during the 2nd half of the decade.
- **Kashmir:** Mainly dry weather is expected over most parts. However, rain-wind/thunderstorm is expected during the 2nd half 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 ہوسکتا 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 ہوسکتی 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 سدِّ باب (بذریعہ نئی ٹیکنالوجی کا استعمال اور بہتر نظم ونسق) سے غربت میں کمی اور کسانوں کی زندگی میں خوشحالی لائی جاسکتی ہے۔

(ایگمپ پاکستان 2012-2014)