

Decadal Agromet Bulletin of Pakistan



Highlights...

- ❖ Heavy amount of rainfall reported from Punjab, Khyber Pakhtunkhwa, Sindh, Gilgit-Baltistan and Azad Jammu & Kashmir whereas light to moderate amount of rainfall reported from Baluchistan during the last decade.
- ❖ Highest amount of rainfall recorded as 297.5 mm at Islamabad during the last decade.
- ❖ Highest maximum temperature recorded as 47.5°C at Nokundi during the last decade.
- ❖ Scattered rains/wind-thunderstorm (with isolated heavy falls) are expected particularly over the upper KP, Punjab and Kashmir, while at isolated places in lower Sindh and northern Baluchistan etc. Whereas hot and humid weather is expected elsewhere in the country.
- ❖ Farmers of Potohar region are advised to remove the weeds from the Peanut fields.
- ❖ After the recent rainfall spell, measures may be taken to flush out the extra water from the fields of Cotton crops and vegetables.
- ❖ Due to higher temperature worm attack is expected on Cotton crop, so farmers are advised to take adoptive measures especially the use of PB ropes in consultancy with plant protection department.

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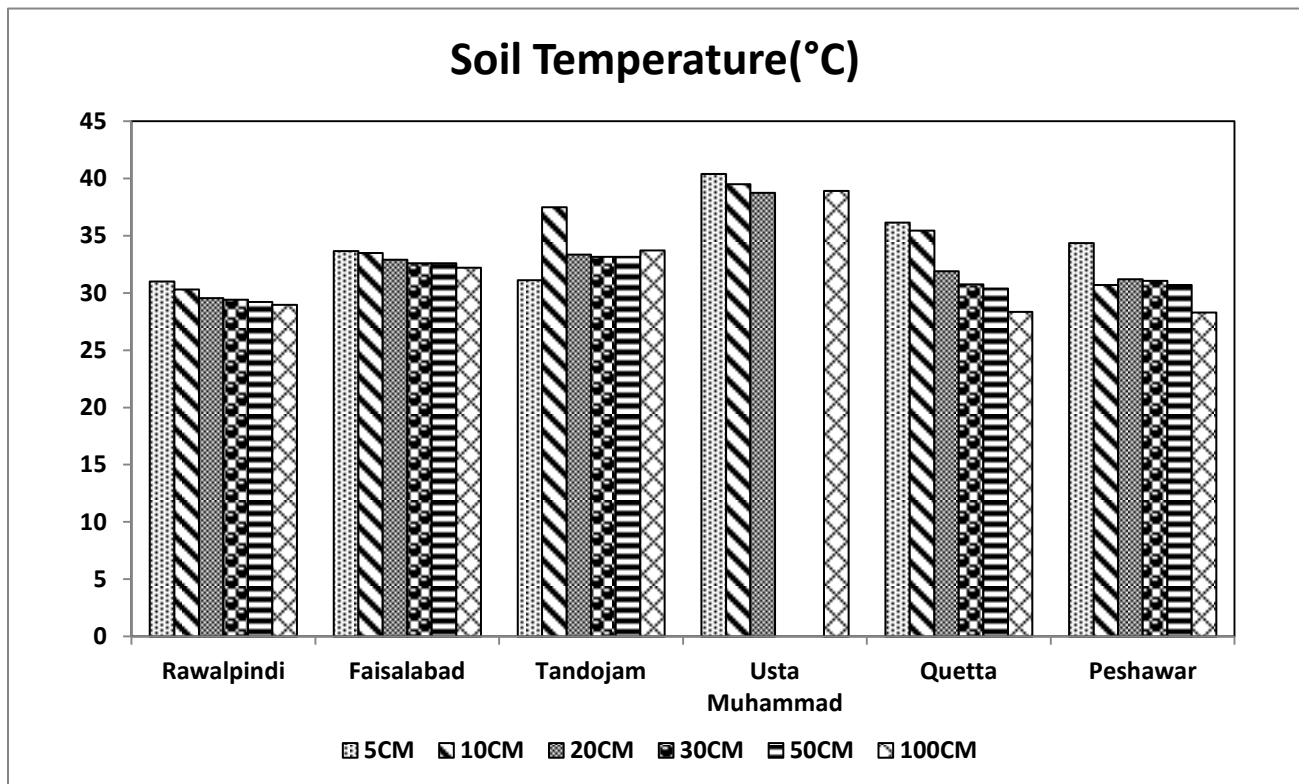
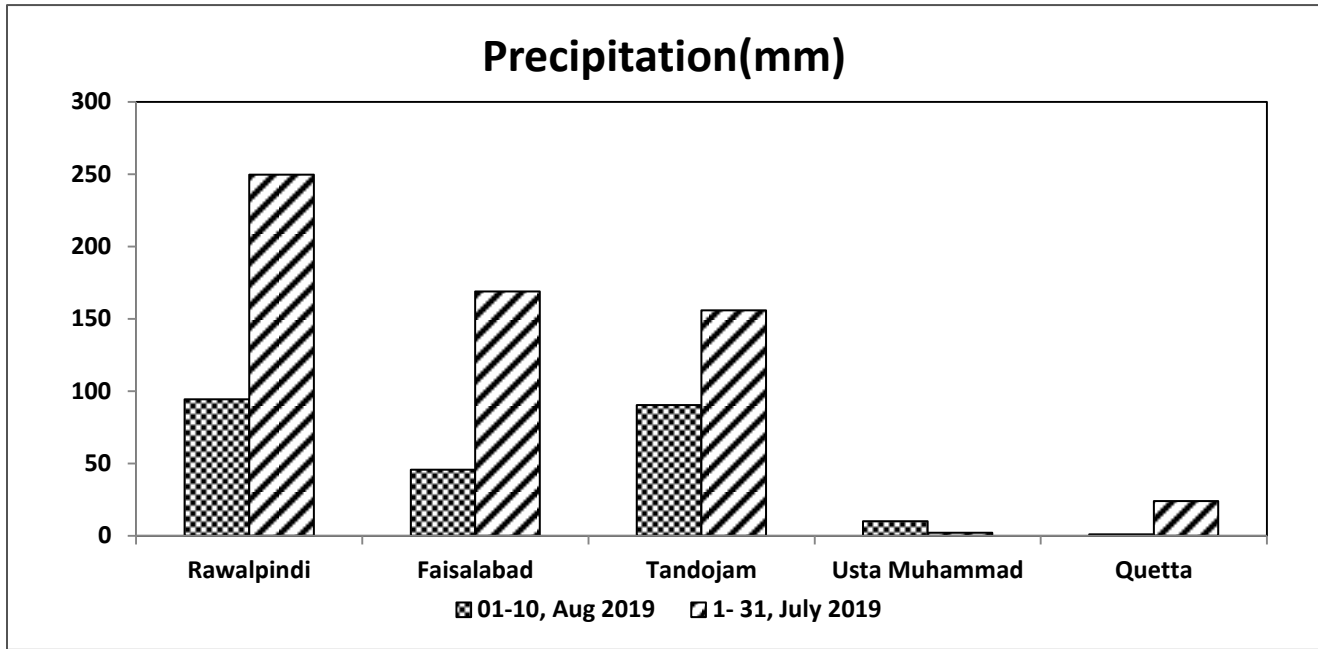
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Meteorological Conditions during 1st Decade of August, 2019

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	13.9	94.4	80.5	0.8	1.9	29.5	31.0	30.3	29.6	29.4	29.2	29.0	79	65.1	2.8	4.3
2	Faisalabad	5.3	45.6	40.3	-0.1	0.6	31.9	33.7	33.5	32.9	32.6	32.6	32.2	70	38.8	3.8	4.1
3	Jhelum	9.0	130.8	121.8	-0.4	0.0	30.1	33.2	32.2	31.1	30.5	30.8	***	78	62.7	4.1	4.4
4	Lahore	5.0	78.0	73.0	-0.4	-0.3	30.7	33.0	32.7	31.6	31.0	***	0.0	77	41.2	2.4	3.8
5	Sargodha	1.6	53.7	52.1	-1.4	0.3	31.5	35.4	34.3	34.3	31.9	***	30.4	76	53.4	3.9	4.3
6	Multan	3.8	28.9	25.1	-0.3	-0.3	32.7	***	***	***	***	***	***	66	66.0	6.9	5.5
7	Khanpur	10.7	29.0	18.3	2.9	1.7	34.3	***	38.9	38.7	38.6	38.4	37.1	61	85.0	5.9	6.2
8	Tandojam	2.5	90.4	87.9	0.5	0.0	30.9	31.1	37.5	33.4	33.2	33.2	33.7	73	63.5	11.2	5.6
9	Sakrand ☆	3.9	38.0	34.1	2.0	-3.8	31.9	43.2	***	***	***	***	36.2	58	80.7	10.5	6.9
11	Rohri ☆	2.8	2.0	-0.8	3.1	***	40.6	***	***	***	***	***	***	54	***	7.8	6.7
12	D.I Khan	4.6	33.0	28.4	-0.2	-0.4	31.2	***	33.8	***	33.2	21.8	***	73	63.5	10.5	5.5
13	Peshawar	3.3	35.6	32.3	0.5	-1.1	30.6	34.4	30.7	31.2	31.1	30.7	28.3	67	56.6	3.9	4.6
14	Usta M.	3.9	10.0	6.1	0.4	0.0	34.5	40.4	39.5	38.8	***	***	38.9	60	***	4.6	5.4
15	Quetta	0.0	1.0	1.0	0.8	2.1	29.1	36.2	35.5	31.9	30.8	30.4	28.4	41	87.9	7.5	6.6
16	Skardu	1.6	0.0	-1.6	-2.9	-10.7	25.2	***	***	***	***	***	***	36	55.3	4.3	4.8
17	Gilgit	0.4	2.8	2.4	-2.0	8.7	29.3	***	***	***	***	***	***	54	95.7	3.3	5.4

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. And “% Dep” is calculated by the formula; **Dep divided by Normal multiplied by 100**. Tmin & Tmax stands for minimum and maximum temperatures respectively. **ETo** stands for reference crop evapotranspiration. *** stands for no data and (☆) indicates the station with five year’s climatic (normal) data for computing departures.

Graph at RAMCs during August, 2019



Past Weather (1st to 10th August, 2019)

Heavy amount of rainfall reported from Punjab, Khyber Pakhtunkhwa, Sindh, Gilgit-Baltistan and Azad Jammu & Kashmir whereas light to moderate amount of rainfall reported from Balochistan.

1.1 Punjab

Heavy amount of rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Islamabad Zero point, Sialkot & Jhelum. Decadal maximum & minimum both raised above the normal by 0.2°C & 0.6°C respectively in the province. Whereas values of relative humidity, sunshine hour, wind speed & ETo were recorded as 62%, 58.9 hrs, 4.3 km/hr and 4.7 mm/day respectively.

1.2 Sindh

Heavy amount of rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Karachi Airport, Thatta & Badin. Decadal maximum & minimum both raised above the normal by 1.96°C & 1.2°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 62%, 72.1 hrs, 9.8 km/hr and 6.4mm/day respectively.

1.3 Khyber Pakhtunkhwa

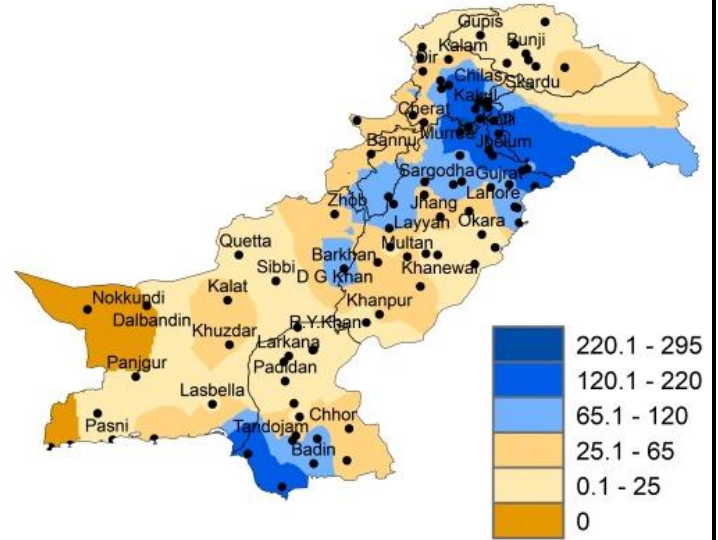
Heavy amount of rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Malam Jabba, Balakot & Takht Bai. Decadal maximum raised above the normal by 0.1°C while Minimum dropped below normal by 0.8°C in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 70%, 87.9 hrs, 7.2 km/hr and 5.1 mm/day respectively.

1.4 Baluchistan

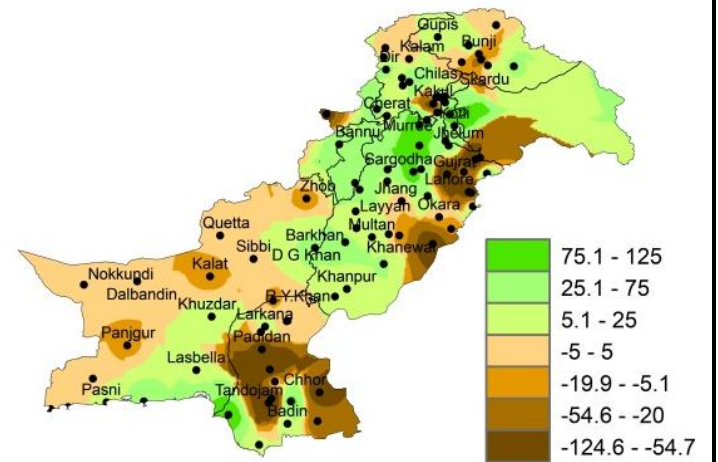
Moderate to heavy rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Barkhan, Zhob & Ormara. Decadal maximum & minimum both raised above the normal by 0.6°C & 1.1°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 51%, 87.9 hrs, 6.1 km/hr and 6.0 mm/day respectively.

1.5 Gilgit-Baltistan and Azad Jammu & Kashmir

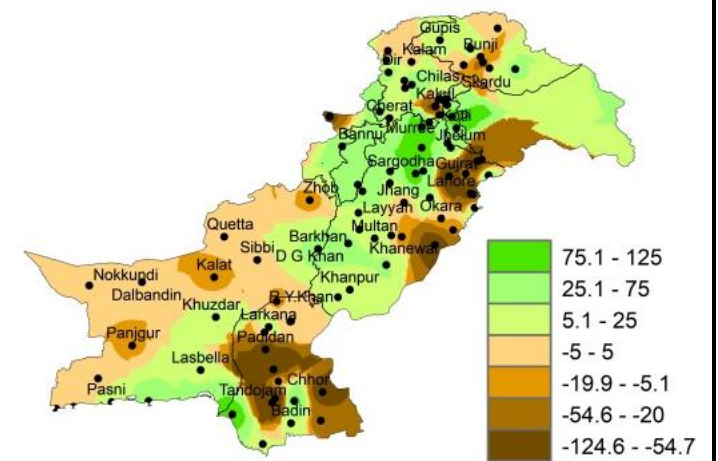
Heavy amount of rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Kotli, Muzaffarabad & Garhi Dupatta. Decadal maximum & minimum both dropped below the normal by 2.5°C & 1.0°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 45%, 75.5 hrs, 3.8 km/hr and 5.1mm/day respectively.



I. Actual rainfall



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 August, 2019)

2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 94.4 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 79%. Mean day temperature was 33.3°C while night temperature recorded as 25.6°C with 65.1 hours bright sunshine duration. Wind speed recorded as 2.8 km/hr with mean wind direction *Westerly*.

2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as 45.6 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 70%. Mean day temperature was 36.2°C while night temperature recorded as 27.5°C with 38.8 hours bright sunshine duration. Wind speed recorded as 3.8 km/hr with mean wind direction *East south-easterly*.

Cotton: *V.Good, Flowering stage completed.*

2.3 RAMC, Tandojam (Lower Sindh)

Rainfall reported as 90.4 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 73%. Mean day temperature was 35.9°C while night temperature recorded as 25.9°C with 63.5 hours bright sunshine duration. Wind speed recorded as 11.2 km/h with mean wind direction *south westerly*.

Cotton (Shahbaz-95): *Good, Boll Opening.*

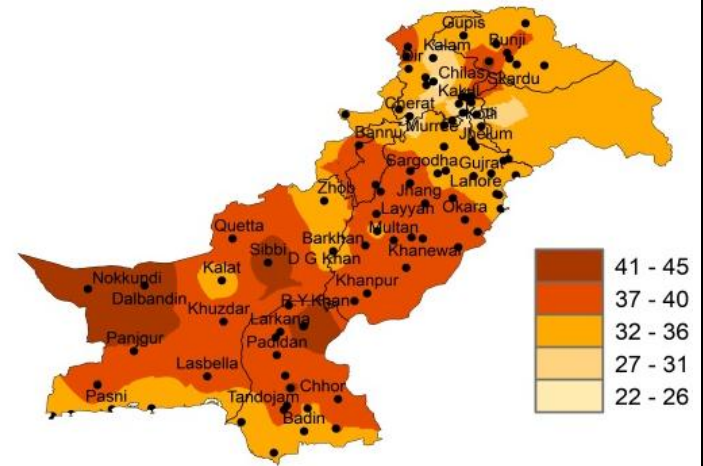
2.4 RAMC, Usta Muhammad (Eastern Baluchistan)

Rainfall reported as 10.0 mm during the decade; however weather remained cloudy for 10 day during the decade. Average relative humidity recorded as 60%. Mean day temperature was 39.1°C while night temperature recorded as 29.8°C & Wind speed recorded as 44.6 km/h with mean wind direction *south easterly*.

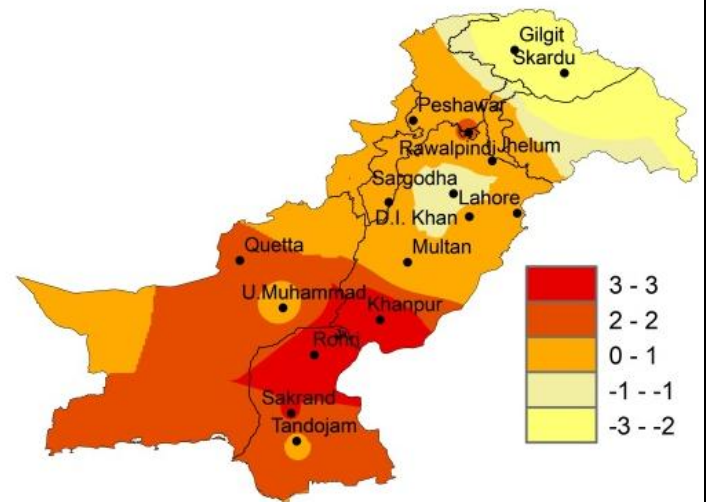
Rice: *Good, Third Leaf.*

2.5 RAMC, Quetta (Northern Baluchistan)

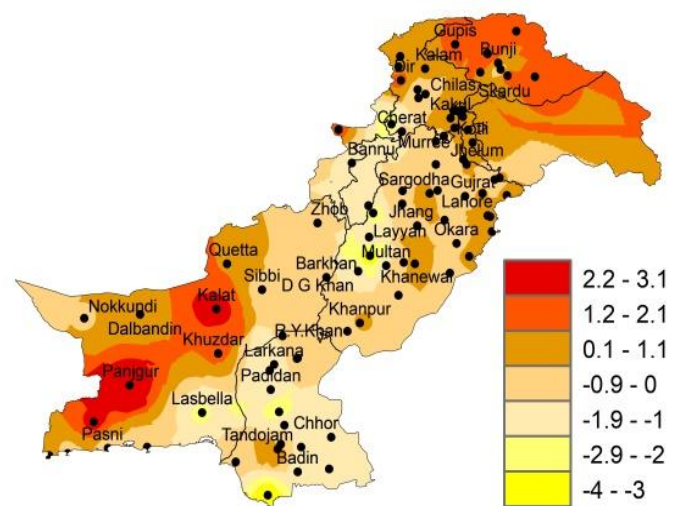
Rainfall reported as 1.0 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 41%. Mean day temperature was 35.6°C while night temperature recorded as 22.6°C with 87.9 hours bright sunshine duration. Wind speed recorded as 7.5 km/hr with mean wind direction *southerly*.



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 August, 2019)

2.6 Jhelum

Rainfall reported as 130.8 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 78%. Mean day temperature was 34.2°C while night temperature recorded as 25.9°C with 62.7 hours bright sunshine duration. Wind speed recorded as 4.1 km/hr with mean wind direction *South easterly*.

2.7 Lahore

Rainfall reported as 78.0 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 77%. Mean day temperature was 34.2°C while night temperature recorded as 27.1°C with 64.8 hours bright sunshine duration. Wind speed recorded as 2.4km/hr with no mean wind direction.

2.8 Sargodha

Rainfall reported as 53.7 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 76%. Mean day temperature was 35.3°C while night temperature recorded as 27.6°C with 53.4 hours bright sunshine duration. Wind speed recorded 3.9 km/hr with mean wind direction *Easterly*.

2.9 Multan

Rainfall reported as 28.9 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 66%. Mean day temperature was 37.3°C while night temperature recorded as 24.5°C with 66.0 hours bright sunshine duration. Wind speed recorded 6.9 km/hr with mean wind direction *North Easterly*.

2.10 Khanpur

Rainfall reported as 21.0 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 59%. Mean day temperature was 40.0°C while night temperature recorded as 28.8°C with 84.5 hours bright sunshine duration. Wind speed recorded 6.1 km/hr with mean wind direction *south Easterly*.

2.11 Sakrand

Rainfall reported as 29.0 mm during the decade; however weather remained cloudy for 07 days during the decade. Average humidity recorded as 61%. Mean day temperature was 39.3°C while night temperature recorded as 29.2°C with 85.0 hours bright sunshine duration. Wind speed recorded 5.9 km/hr with wind direction *south westerly*.

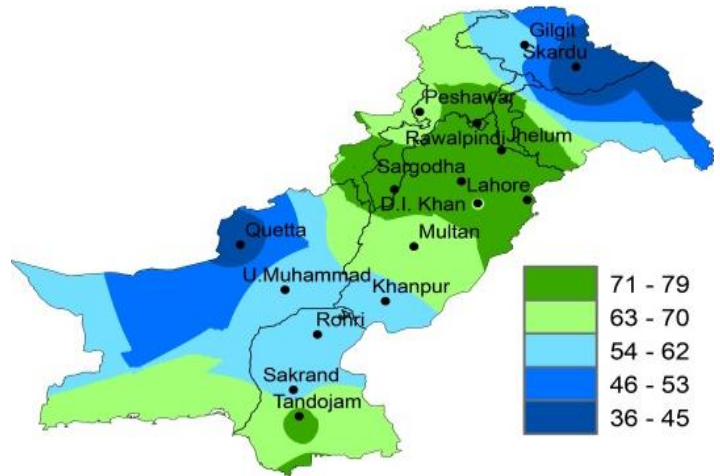


Figure.3: Relative Humidity in Percentage (%)

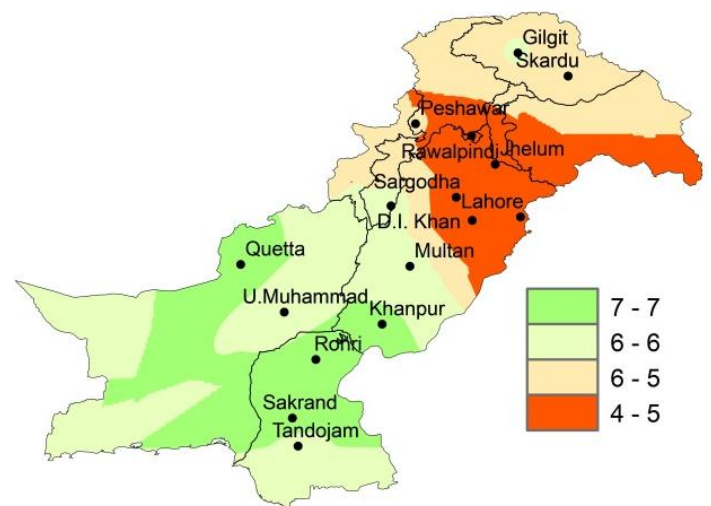


Figure.4: Reference Crop Evapotranspiration ETo (mm/day)

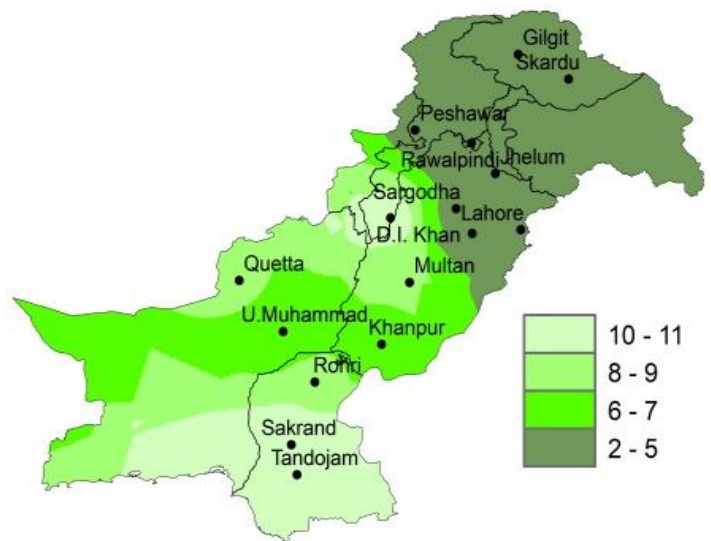


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Rainfall reported as 2.0 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 54%. Mean day temperature was 40.6°C. Wind speed recorded 7.8 km/hr with wind direction *South easterly*.

2.13 D.I. Khan

Rainfall reported as 33.0 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 73%. Mean day temperature was 36.5°C while night temperature recorded as 25.8°C with 63.5 hours bright sunshine duration. Wind speed recorded as 10.5 km/hr with mean wind direction *South easterly*.

2.14 Peshawar

Rainfall reported as 35.6 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 67%. Mean day temperature was 35.7°C while night temperature recorded as 25.4°C with 56.6 hours bright sunshine duration. Wind speed recorded as 3.9 km/hr with mean wind direction *North easterly*.

2.15 Skardu

Rainfall reported as Trace (Non measureable) during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 36%. Mean day temperature was 33.8 °C while night temperature recorded as 16.6 °C with 55.3 hours bright sunshine duration. Wind speed recorded as 4.3km/hr with mean wind direction *South south-easterly*.

2.16 Gilgit

Rainfall reported as 2.8 mm during the decade; however weather remained cloudy for 01 days during the decade. Average relative humidity recorded as 54%. Mean day temperature was 32.8°C while night temperature recorded as 25.8°C with 95.7 hours bright sunshine duration. Wind speed recorded as 3.3 km/hr with mean wind direction *Easterly*.

Five Days Weather Advisory for Farmers (16th to 20th August, 2019)

3.1 Temperature Forecast

Both day and night temperatures are likely to be slightly above normal in most of the agricultural plains of the country during the decade.

3.2 Wind Forecast

Generally, normal wind pattern may prevail in most of the agricultural plains of the country.

3.3 Rain Forecast

- ❖ **Punjab:** Widespread rains/wind-thunderstorms (with isolated heavy falls) are expected mainly over the northern as well as central parts of the province, particularly in the next couple of days.
- ❖ **Khyber Pakhtunkhwa:** Widespread rains/wind-thunderstorms (with isolated heavy falls) are expected mainly over the upper half of the province, particularly in the next couple of days.
- ❖ **Sindh:** Mainly hot and humid weather is expected in most of the areas however isolated rains/wind-thunderstorm are expected particularly over the lower half of the province.
- ❖ **Baluchistan:** Mainly hot and humid weather is expected in most of the areas however isolated rains/wind-thunderstorm are expected particularly over the northern parts of the province.
- ❖ **Gilgit-Baltistan:** Isolated rains/wind-thunderstorms are expected.
- ❖ **Kashmir:** Widespread rains/wind-thunderstorms (with isolated heavy falls) are expected, particularly in the next couple of days.

Advisory for Farmers

- ❖ Farmers of Potohar region are advised to remove the weeds from the Peanut fields.
- ❖ After the recent rainfall spell, measures may be taken to flush out the extra water from the fields of Cotton crops and vegetables.
- ❖ Due to higher temperature worm attack is expected on Cotton crop, so farmers are advised to take adoptive measures especially the use of PB ropes in consultancy with plant protection department.

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 (بذریعہ نئی 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)