

# Decadal Agromet Bulletin of Pakistan



## Highlights...

- ❖ Light to moderate amount of rainfall reported from Khyber Pakhtunkhwa, Baluchistan, Gilgit-Baltistan and Azad Jammu & Kashmir, whereas moderate to heavy amount of rainfall reported from Punjab and Sindh provinces.
- ❖ Highest amount of rainfall recorded as 123.8 mm at Thatta during the last decade.
- ❖ Highest maximum temperature recorded as 47.0 °C at Nokundi during the last decade.
- ❖ Mainly hot and humid weather is expected in most parts of the country. However, rain/wind-thunderstorm is expected at isolated places in Malakand, Hazara, Peshawar, Kohat, Rawalpindi, Gujranwala, Lahore divisions, Islamabad and Kashmir during the current decade.
- ❖ Accumulation of stagnant water in the fields due to heavy rains is fatal for standing crops like cotton etc. Farmers may take suitable measures to resolve the issue.
- ❖ Removing weeds from the standing crops is very important as weeds utilize moisture and food which are to be utilized by the crop. As a result considerable loss in yield occurs every year.
- ❖ Farmers are advised to schedule the irrigation plans in accordance with the expected weather, mentioned during the decade.
- ❖ Measures may be taken to preserve the standing crops and vegetables from the damaging effects of varying weather pattern due to monsoon systems.
- ❖ Farmers of rainfed areas may take measures to preserve rain water for crops and livestock.

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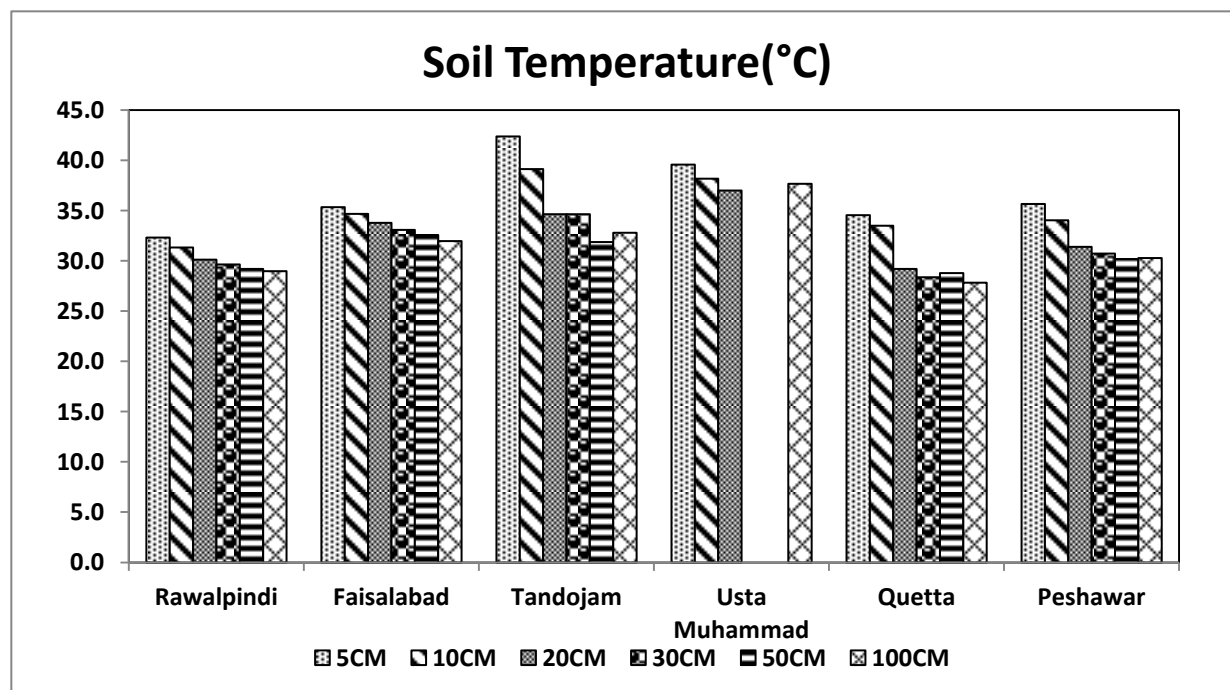
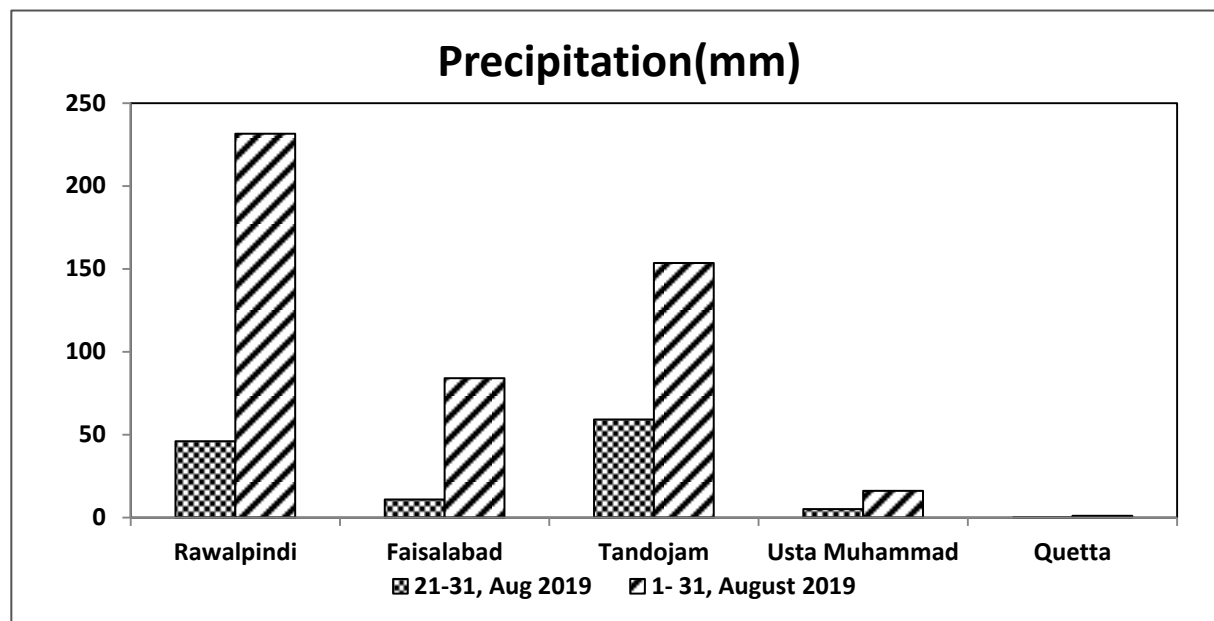
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**Meteorological Conditions during 3<sup>rd</sup> Decade of August, 2019**

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	5.9	46.0	40.1	2.1	4.4	31.1	32.4	31.4	30.2	29.7	29.2	29.0	68	84.9	0.6	6.2
2	Faisalabad	2.9	10.8	7.9	2.2	0.6	32.7	35.4	34.7	33.8	33.1	32.6	32.0	60	81.4	2.2	8.1
3	Jhelum	4.4	20.2	15.8	1.8	0.6	31.6	35.6	34.1	32.3	31.2	31.4	***	64	97.6	3.5	7.9
4	Lahore	3.7	5.3	1.6	1.3	0.9	32.1	33.3	33.2	32.3	32.5	***	30.5	70	60.6	1.6	5.5
5	Sargodha	2.3	0.8	-1.5	1.9	2.2	33.7	38.7	36.9	34.1	32.9	***	30.6	62	82.1	2.8	7.9
6	Multan	0.7	35.0	34.3	1.6	1.5	33.8	***	***	***	***	***	***	54	72.2	6.9	8.8
7	Khanpur	0.0	40.0	40.0	1.5	0.6	33.2	***	37.5	37.6	37.7	37.4	36.2	60	89.1	3.2	8.6
8	Tandojam	1.5	59.0	57.5	0.5	0.4	30.6	42.4	39.2	34.7	34.7	31.9	32.8	70	91.0	8.8	6.8
9	Sakrand ☆	0.7	11.0	10.3	-0.1	-0.2	30.6	42.2	***	***	***	***	35.7	60	97.2	8.9	8.6
11	Rohri ☆	0.7	17.0	16.3	0.3	***	38.6	***	***	***	***	***	***	54	106.0	4.4	10.4
12	D.I Khan	1.8	0.0	-1.8	2.5	1.1	33.1	***	33.4	***	32.4	21.7	***	61	97.7	8.3	9.3
13	Peshawar	0.8	0.0	-0.8	1.4	-0.1	31.3	35.7	34.1	31.4	30.8	30.2	30.3	60	83.4	3.8	7.9
14	Usta M.	0.1	5.0	4.9	-0.4	1.7	33.5	39.6	38.2	37.0	***	***	37.7	60	***	4.1	5.1
15	Quetta	0.4	0.0	-0.4	-1.4	1.0	26.1	34.6	33.5	29.2	28.4	28.8	27.9	30	102.3	5.1	11.3
16	Skardu	0.4	0.3	-0.1	0.8	-1.7	20.7	***	***	***	***	***	***	51	44.9	1.1	5.1
17	Gilgit	0.4	0.0	-0.4	-1.0	2.1	25.3	***	***	***	***	***	***	50	84.9	1.4	8.1

**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 (21<sup>st</sup> to 31<sup>st</sup> August, 2019)**

Light to moderate amount of rainfall reported from Khyber Pakhtunkhwa, Baluchistan, Gilgit-Baltistan and Azad Jammu & Kashmir, whereas moderate to heavy amount of rainfall reported from Punjab and Sindh provinces.

**1.1 Punjab**

Moderate to heavy amount of rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Islamabad (Zero-point), Sialkot Air Port & Attock. Decadal maximum & minimum both raised above the normal by 1.8°C & 1.5°C respectively in the province. Whereas values of relative humidity, sunshine hour, wind speed & ETo were recorded as 63%, 81.1 hrs, 3.0 km/hr and 7.6 mm/day respectively.

**1.2 Sindh**

Moderate to heavy amount of rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Thatta, Mirpur khas & Tandojam. Decadal maximum & minimum both raised above the normal by 0.2°C & 1.2°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 61%, 98.1 hrs, 7.4 km/hr 8.6 mm/day respectively.

**1.3 Khyber Pakhtunkhwa**

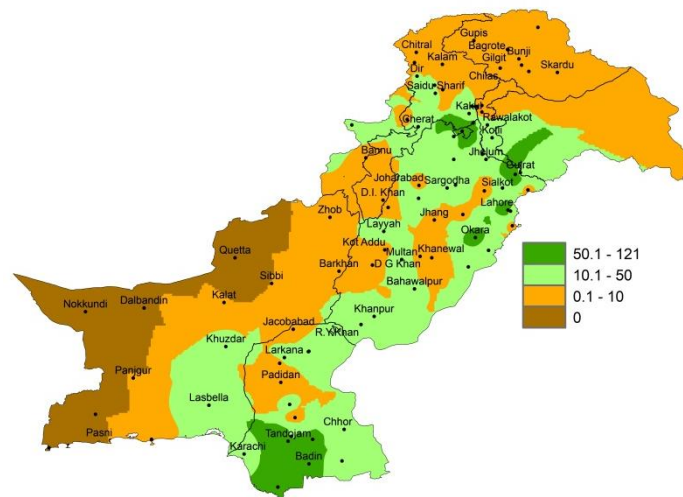
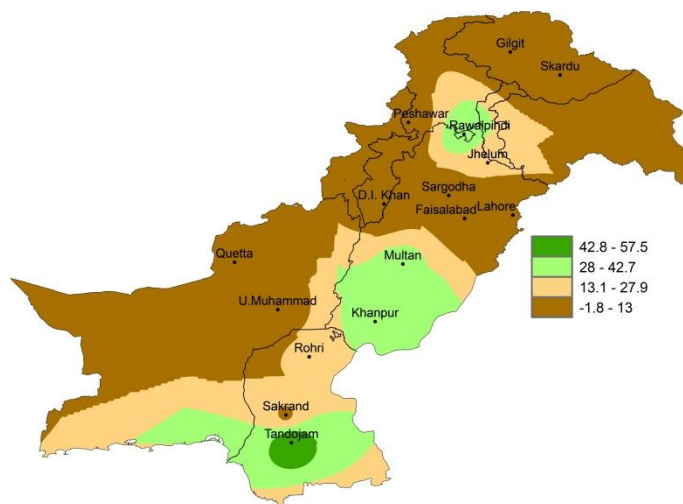
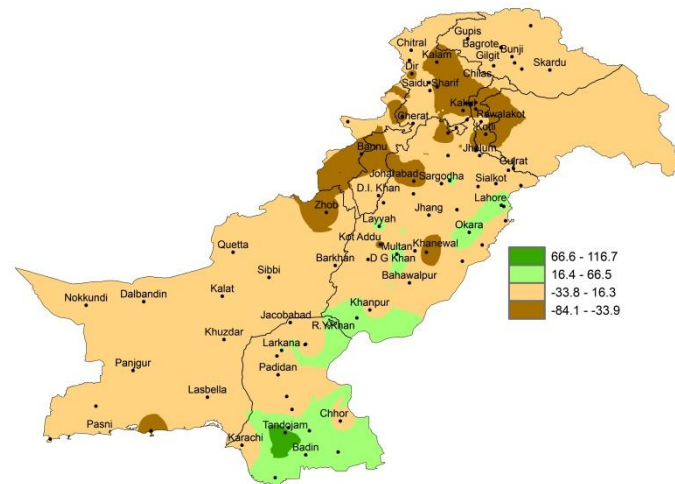
Light to moderate amount of rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Risalpur, Parachinar & Chirat. Decadal maximum & minimum both raised above the normal by 2.0°C & 0.5°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 61%, 90.6 hrs, 6.1 km/hr and 8.6 mm/day respectively.

**1.4 Baluchistan**

Light to moderate amount of rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Lasbela, Khuzdar & Ormara. Decadal maximum dropped below the normal by 0.9°C while minimum raised above normal by 1.4°C in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 45%, 102.3 hrs, 4.6 km/hr and 8.2 mm/day respectively.

**1.5 Gilgit-Baltistan and Azad Jammu & Kashmir**

Light to moderate amount of rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Kotli, Muzaffarabad & Rawalakot. Decadal maximum dropped below the normal by 0.1°C while minimum raised above normal by 0.2°C in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 51%, 64.9 hrs, 1.3 km/hr and 6.6 mm/day respective.

**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** **(21<sup>st</sup> to 31<sup>st</sup> August, 2019)**

### 2.1 **RAMC, Rawalpindi (Potohar region)**

Rainfall reported as 46.0 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 68%. Mean day temperature was 34.7°C while night temperature recorded as 27.4°C with 84.9 hours bright sunshine duration. Wind speed recorded as 0.6 km/hr with mean wind direction *North Westerly*.

### 2.2 **RAMC, Faisalabad (Central Punjab)**

Rainfall reported as 10.8 mm during the decade; however weather remained cloudy for 11 days during the decade. Average relative humidity recorded as 60%. Mean day temperature was 38.5°C while night temperature recorded as 26.9°C with 81.4 hours bright sunshine duration. Wind speed recorded as 2.2 km/hr with mean wind direction *south south-easterly*.

**Cotton:** *V.Good, Boll Opening.*

### 2.3 **RAMC, Tandojam (Lower Sindh)**

Rainfall reported as 59.0 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 70%. Mean day temperature was 35.6°C while night temperature recorded as 25.5°C with 91.0 hours bright sunshine duration. Wind speed recorded as 8.8 km/h with mean wind direction *south westerly*.

**Cotton (Shahbaz-95):** *Bad condition due to rain, Boll Opening.*

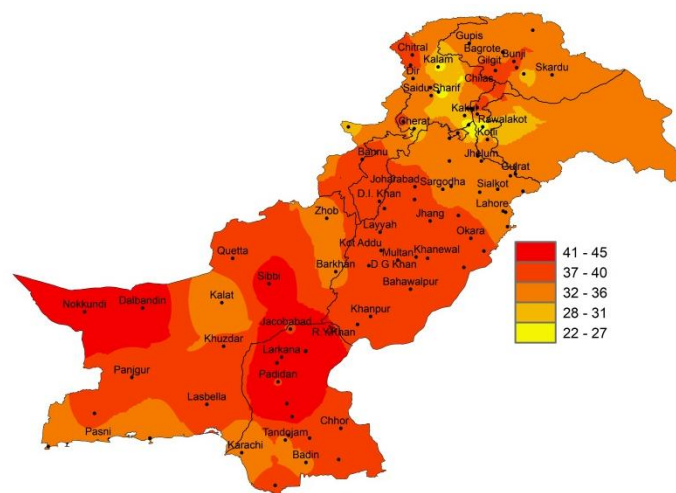
### 2.4 **RAMC, Usta Muhammad (Eastern Baluchistan)**

Rainfall reported 5.0 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 60%. Mean day temperature was 38.7°C while night temperature recorded as 28.3°C & Wind speed recorded as 4.1 km/h with mean wind direction *south easterly*.

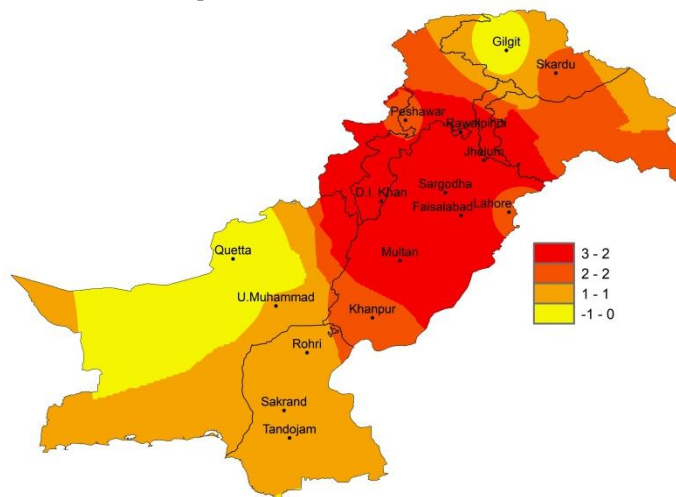
**Rice:** *Good, Shooting stage.*

### 2.5 **RAMC, Quetta (Northern Baluchistan)**

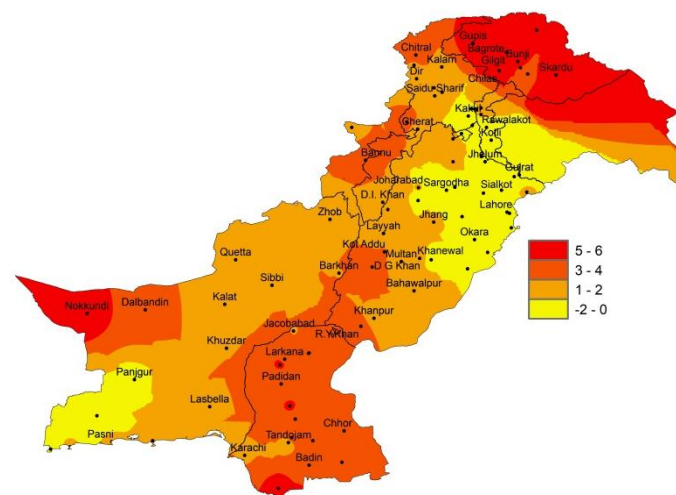
Rainfall reported as Trace (Non measureable) during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 30%. Mean day temperature was 33.0°C while night temperature recorded as 19.1°C with 102.3 hours bright sunshine duration. Wind speed recorded as 5.1 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 (21<sup>st</sup> to 31<sup>st</sup> August, 2019)

### 2.6 Jhelum

Rainfall reported as 20.2 mm during the decade; however weather remained cloudy for 11 days during the decade. Average relative humidity recorded as 64%. Mean day temperature was 36.9°C while night temperature recorded as 36.9°C with 26.2 hours bright sunshine duration. Wind speed recorded as 3.5 km/hr with mean wind direction *Southerly*.

### 2.7 Lahore

Rainfall reported as 5.3 mm during the decade; however weather remained cloudy for 11 days during the decade. Average relative humidity recorded as 70%. Mean day temperature was 36.2°C while night temperature recorded as 28.0°C with 60.6 hours bright sunshine duration. Wind speed recorded as 1.6 km/hr with mean wind direction *South Easterly*.

### 2.8 Sargodha

Rainfall reported as 0.8 mm during the decade; however weather remained cloudy for 11 days during the decade. Average relative humidity recorded as 62%. Mean day temperature was 38.4°C while night temperature recorded as 28.9°C with 82.1 hours bright sunshine duration. Wind speed recorded 1.5 km/hr with mean wind direction *Easterly*.

### 2.9 Multan

Rainfall reported as 35.0 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 54%. Mean day temperature was 38.5°C while night temperature recorded as 29.1°C with 72.2 hours bright sunshine duration. Wind speed recorded 6.9 km/hr with mean wind direction *South Westerly*.

### 2.10 Khanpur

Rainfall reported as 40.0 mm during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 60%. Mean day temperature was 38.6°C while night temperature recorded as 27.7°C with 89.1 hours bright sunshine duration. Wind speed recorded 3.2 km/hr with mean wind direction *south westerly*.

### 2.11 Sakrand

Rainfall reported as 11.0 mm during the decade; however weather remained cloudy for 05 days during the decade. Average humidity recorded as 56%. Mean day temperature was 36.3°C while night temperature recorded as 24.9°C with 97.2 hours bright sunshine duration. Wind speed recorded 4.8 km/hr with wind direction *southerly*.

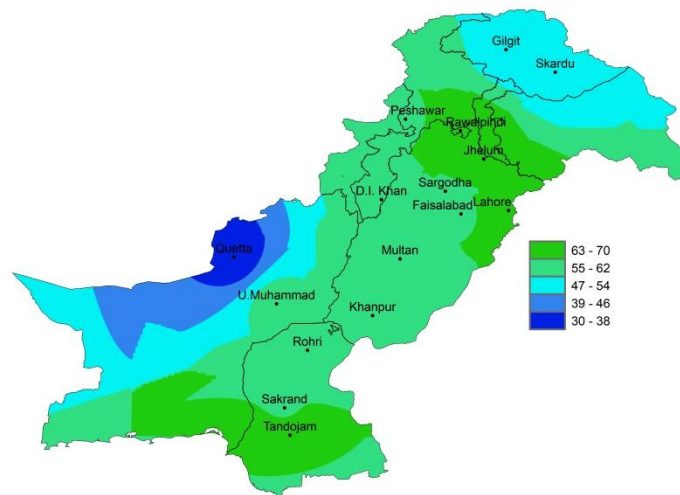


Figure.3: Relative Humidity in Percentage (%)

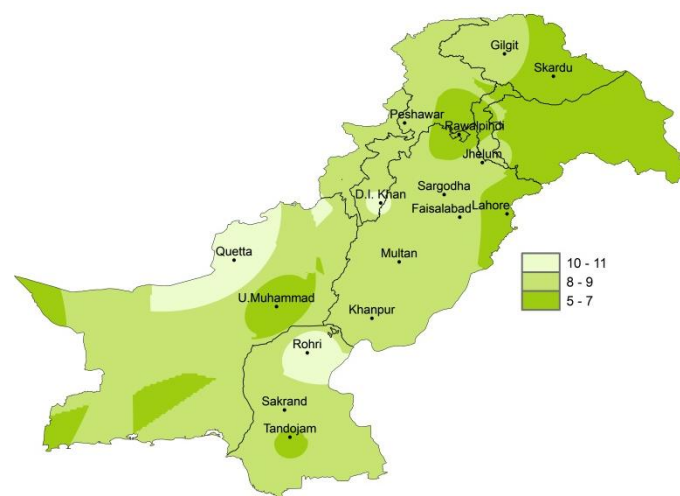


Figure.4: Reference Crop Evapotranspiration ET0 (mm/day)

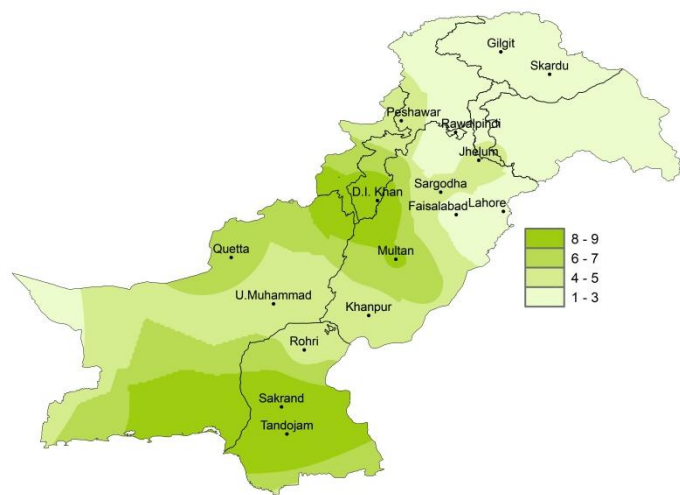


Figure 5: Wind Speed in kilometer per hour (km/h)

**2.12 Rohri**

Rainfall reported as 17.0 mm during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 54%. Mean day temperature was 38.6°C. Wind speed recorded 4.4 km/hr with wind direction *North Easterly*.

**2.13 D.I. Khan**

Rainfall reported as Trace (Not measureable) during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 61%. Mean day temperature was 39.5°C while night temperature recorded as 26.6°C with 97.7 hours bright sunshine duration. Wind speed recorded as 8.3 km/hr with mean wind direction *Easterly*.

**2.14 Peshawar**

Dry weather reported as during the last decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 60%. Mean day temperature was 36.9 °C while night temperature recorded as 25.7 °C with 83.4 hours bright sunshine duration. Wind speed recorded as 3.8 km/hr with mean wind direction *North easterly*.

**2.15 Skardu**

Rainfall reported as 0.3 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 51%. Mean day temperature was 28.5 °C while night temperature recorded as 12.8 °C with 44.94 hours bright sunshine duration. Wind speed recorded as 1.1 km/hr with mean wind direction *East-north-easterly*.

**2.16 Gilgit**

Dry weather reported as during the last decade; however weather remained cloudy for 03 days during the decade. Average relative humidity recorded as 50%. Mean day temperature was 33.4°C while night temperature recorded as 17.2°C with 84.9 hours bright sunshine duration. Wind speed recorded as 1.4 km/hr with mean wind direction *Variable*.

### **Nine Days Weather Advisory for Farmers (2<sup>nd</sup> to 10<sup>th</sup> September, 2019)**

**3.1 Temperature Forecast**

Day time temperatures are likely to be below normal whereas night time 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:** Mainly hot and humid weather is expected. However, rain/wind-thunderstorm is expected at isolated places in Rawalpindi, Gujranwala and Lahore divisions for few days during the current decade.
- ❖ **Khyber Pakhtunkhwa:** Mainly hot and humid weather is expected. However, rain/wind-thunderstorm is expected at isolated places in Malakand and Hazara divisions for few days during the current decade.
- ❖ **Sindh:** Mainly hot and humid weather is expected in most of the province during the decade.
- ❖ **Baluchistan:** Mainly hot and humid weather is expected in most of the province during the decade.
- ❖ **Gilgit-Baltistan:** Rain/wind-thunderstorm is expected at isolated places in the province in the evening/night during the current decade.
- ❖ **Kashmir:** Rain/wind-thunderstorm is expected at isolated places in the province in the evening/night during the current decade.

**3.4 Advisory for Farmers**

- ❖ Accumulation of stagnant water in the fields due to heavy rains is fatal for standing crops like cotton etc. Farmers may take suitable measures to resolve the issue.
- ❖ Removing weeds from the standing crops is very important as weeds utilize moisture and food which are to be utilized by the crop. As a result considerable loss in yield occurs every year.
- ❖ Farmers are advised to schedule the irrigation plans in accordance with the expected weather, mentioned during the decade.
- ❖ Measures may be taken to preserve the standing crops and vegetables from the damaging effects of varying weather pattern due to monsoon systems.
- ❖ Farmers of rainfed areas may take measures to preserve rain water for crops and livestock.

## 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)