

# Decadal Agromet Bulletin of Pakistan



## Highlights...

- ❖ Light to moderate rainfall reported from Punjab, Khyber Pakhtunkhwa, Baluchistan, Gilgit-Baltistan and Azad Jammu & Kashmir, whereas light rainfall reported from Sindh province.
- ❖ Highest amount of rainfall recorded as 48.0 mm at Barkhan during the last decade.
- ❖ Highest maximum temperature recorded as 48.5°C at Sibbi during the last decade.
- ❖ Mainly hot and dry weather is expected in most of the agricultural plains of the country, especially in plains of Punjab and Sindh. However, dust-thundershower/rain with gusty winds is expected at isolated places in Punjab (Rawalpindi, Gujranwala, Lahore, Sargodha, Faisalabad, Multan, and Sahiwal divisions), Islamabad, Khyber Pakhtunkhwa, Gilgit Baltistan and Kashmir during the current decade.
- ❖ The farmers may regularly irrigate their Kharif crops by keeping in view the ongoing hot weather conditions.
- ❖ Rice growers are advised to sow the crop's PANERI in accordance with the recommendation by the agricultural experts.
- ❖ Measures may be taken to remove the weeds from the standing crops especially Peanut etc.

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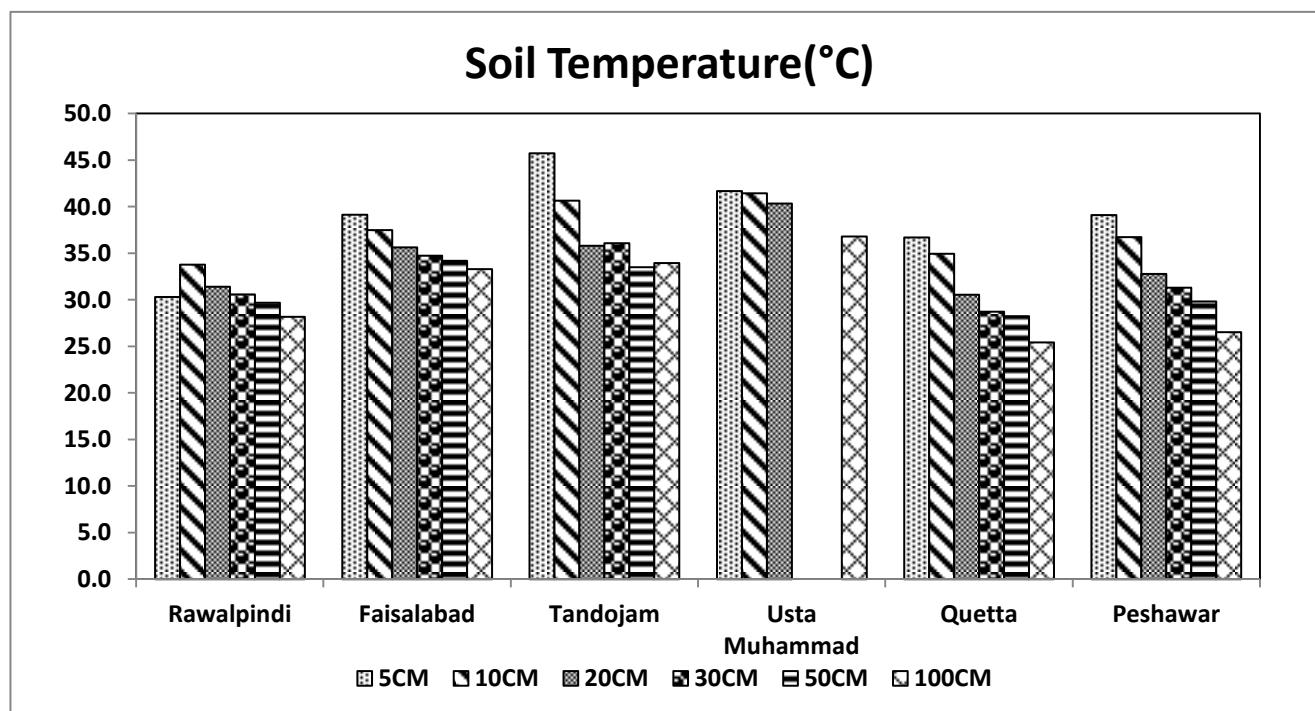
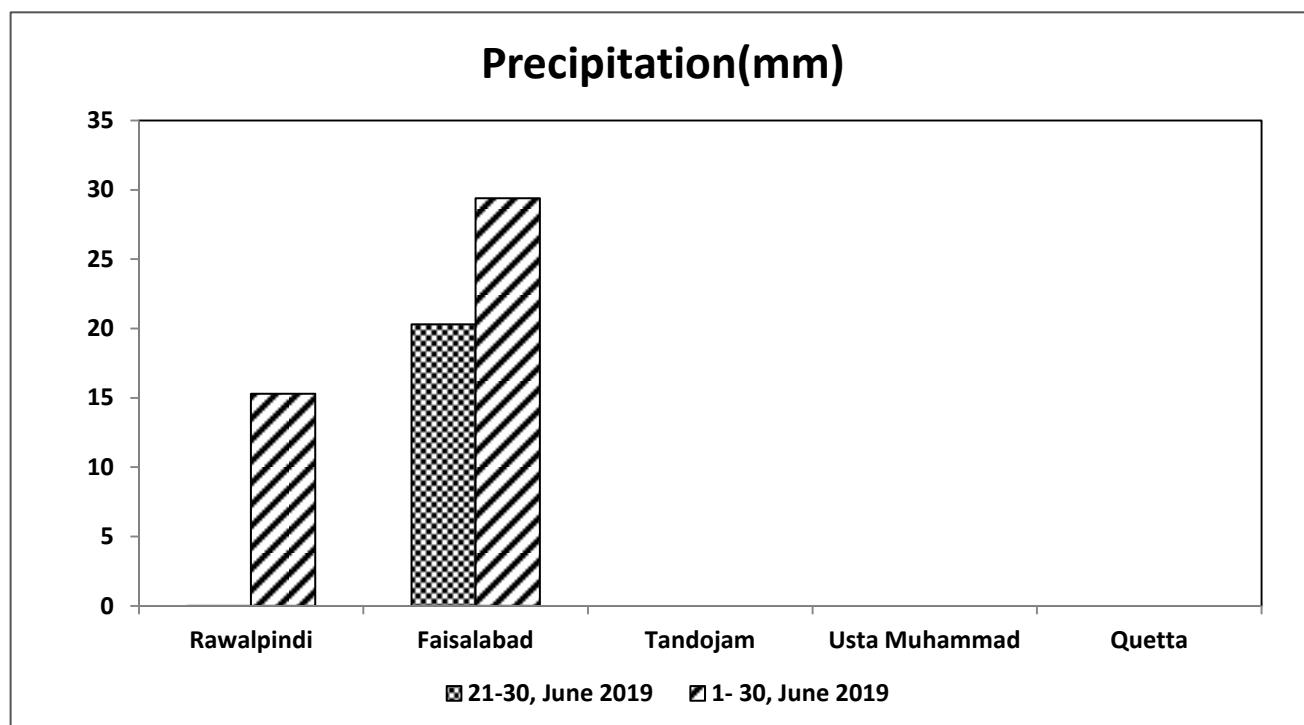
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### Meteorological Conditions during 3<sup>rd</sup> Decade of June, 2019

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	Tmax Dep	Tmin Dep	Mean	5cm	10cm	20cm	30cm	50cm	100cm				
1	Rawalpindi	5.4	0.0	-5.4	2.1	-1.2	31.3	30.3	33.8	31.4	30.6	29.7	28.2	43	101.0	3.6	6.2
2	Faisalabad	1.9	20.3	18.4	0.8	-1.2	32.8	39.2	37.5	35.7	34.8	34.2	33.3	46	93.9	3.1	6.0
3	Jhelum	4.2	0.0	-4.2	2.4	0.2	34.0	41.1	38.7	35.7	34.1	34.1	***	36	92.0	3.6	6.3
4	Lahore	2.2	17.6	15.4	1.4	-0.5	33.3	36.9	35.9	33.3	32.7	***	30.3	48	80.7	1.9	5.2
5	Sargodha	3.3	6.2	2.9	0.8	-0.8	34.1	40.7	37.9	33.5	33.4	***	30.1	46	81.7	3.9	6.1
6	Multan	1.0	32.8	31.8	-2.0	-2.6	33.2	***	***	***	***	***	***	52	76.1	6.4	6.5
7	Khanpur	0.5	0.0	-0.5	-0.2	-0.5	34.9	***	38.7	38.5	38.4	38.4	36.2	50	85.3	5.3	6.7
8	Tandojam	0.7	0.0	-0.7	1.6	0.0	33.4	45.8	40.7	35.8	36.1	33.5	34.0	57	101.5	14.1	8.6
9	Sakrand ☆	1.7	0.0	-1.7	0.9	0.7	34.6	45.2	***	***	***	***	35.4	48	111.8	13.0	9.5
11	Rohri ☆	0.0	0.0	0.0	1.9	***	43.8	***	***	***	***	***	***	42	103.5	3.8	7.0
12	D.I Khan	0.8	24.0	23.2	0.2	-1.1	32.8	35.6	33.4	32.2	32.8	22.0	***	54	89.5	9.0	7.5
13	Peshawar	1.3	0.0	-1.3	1.1	-3.4	32.2	39.1	36.8	32.8	31.3	29.9	26.6	55	85.4	4.2	6.1
14	Usta M.	1.8	0.0	-1.8	0.0	2.6	37.3	41.7	41.5	40.4	***	***	36.8	43	***	6.0	6.7
15	Quetta	0.0	0.0	0.0	-1.7	-0.9	26.9	36.7	35.0	30.6	28.8	28.3	25.5	28	106.7	6.1	6.8
16	Skardu	0.4	4.7	4.3	-4.5	-2.3	19.0	***	***	***	***	***	***	44	78.0	3.6	4.6
17	Gilgit	0.7	3.3	2.6	-4.3	-0.9	22.5	***	***	***	***	***	***	45	61.1	3.6	4.5

**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 June, 2019



**Past Weather (21<sup>st</sup> to 30<sup>th</sup> June, 2019)**

Light to moderate rainfall reported from Punjab, Khyber Pakhtunkhwa, Baluchistan, Gilgit-Baltistan and Azad Jammu & Kashmir, whereas light rainfall reported from Sindh province.

**1.1 Punjab**

Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Lahore airport, Noorpur Thal, Kot Addu & Township. Decadal maximum raised above normal by 0.8°C and minimum dropped below the normal by 0.9°C respectively in the province. Whereas values of relative humidity, sunshine hour, wind speed & ETo were recorded as 46%, 87.2 hrs, 4.0 km/hr and 6.1 mm/day respectively.

**1.2 Sindh**

Light rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Badin and Karachi Airport. Decadal maximum & minimum both raised above the normal by 1.5°C & 0.5°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 49%, 105.6 hrs, 10.3 km/hr and 8.4 mm/day respectively.

**1.3 Khyber Pakhtunkhwa**

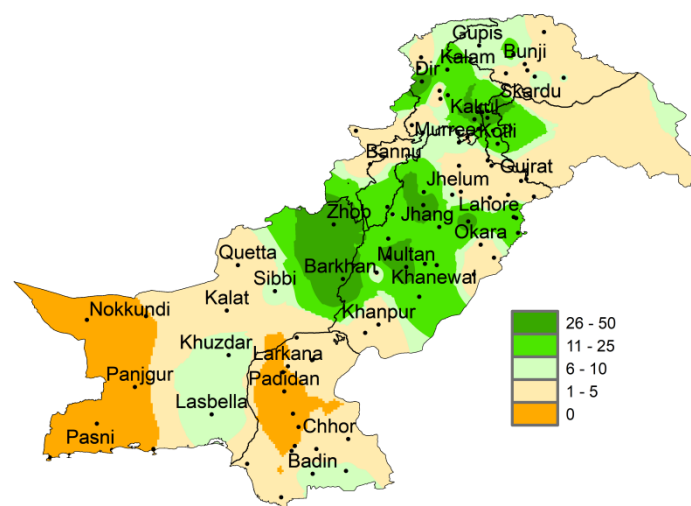
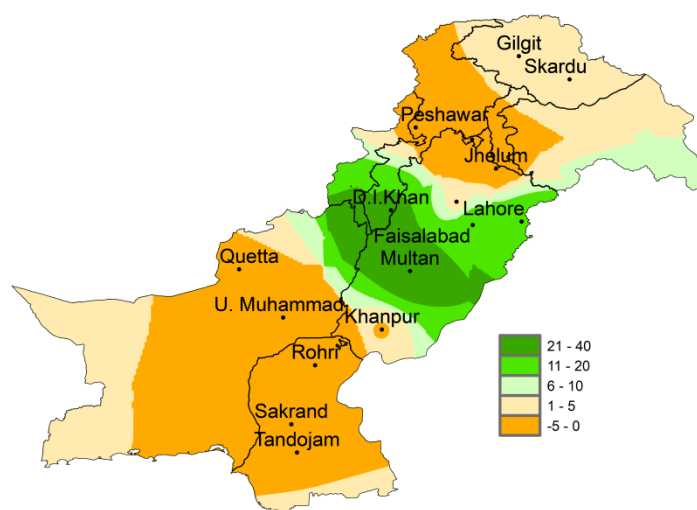
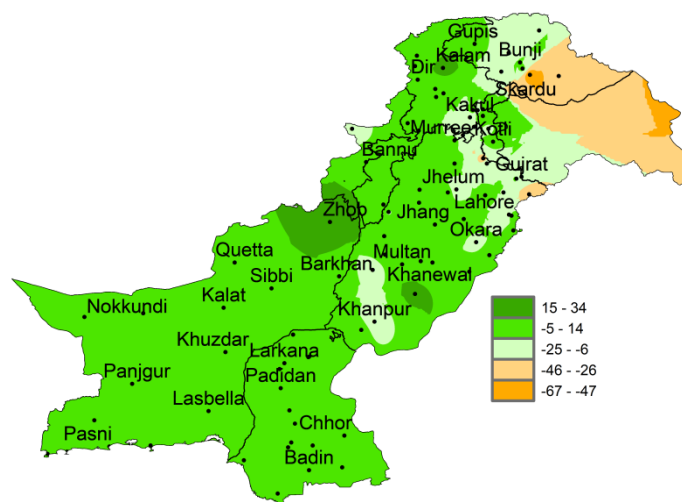
Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Kakul, Malamjabba & Dir. Decadal maximum raised above normal by 0.7°C and minimum dropped below the normal by 2.3°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 55%, 87.5 hrs, 6.6 km/hr and 6.8 mm/day respectively.

**1.4 Baluchistan**

Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Barkhan, Lasbela, Zhob. Decadal maximum dropped below the normal by 0.8°C and minimum raised above the normal by 0.9°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 36%, 106.7 hrs, 6.1 km/hr and 6.8 mm/day respectively.

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

Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Garhi Dupatta, Bagrote & Muzaffarabad. Decadal maximum & minimum both dropped below the normal by 4.4°C & 1.6°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 45%, 69.6 hrs, 3.6 km/hr and 4.6 mm/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 (21<sup>st</sup> to 30<sup>th</sup> June, 2019)

### 2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as Trace (Not measurable) during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 43%. Mean day temperature was 39.5°C while night temperature recorded as 23.0°C with 101.0 hours bright sunshine duration. Wind speed recorded as 3.6 km/hr with mean wind direction *Westerly*.

### 2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as 20.3 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 46%. Mean day temperature was 39.8°C while night temperature recorded as 28.8°C with 79.2 hours bright sunshine duration. Wind speed recorded as 3.1 km/hr with mean wind direction *south westerly*.

**Cotton:** *Good, Budding stage.*

### 2.3 RAMC, Tandojam (Lower Sindh)

Dry weather reported during the decade; however weather remained cleared throughout the decade. Average relative humidity recorded as 57%. Mean day temperature was 39.8°C while night temperature recorded as 26.9°C with 101.5 hours bright sunshine duration. Wind speed recorded as 14.1 km/h with mean wind direction *south westerly*.

**Cotton (Shahbaz-95):** *Good, Flowering.*

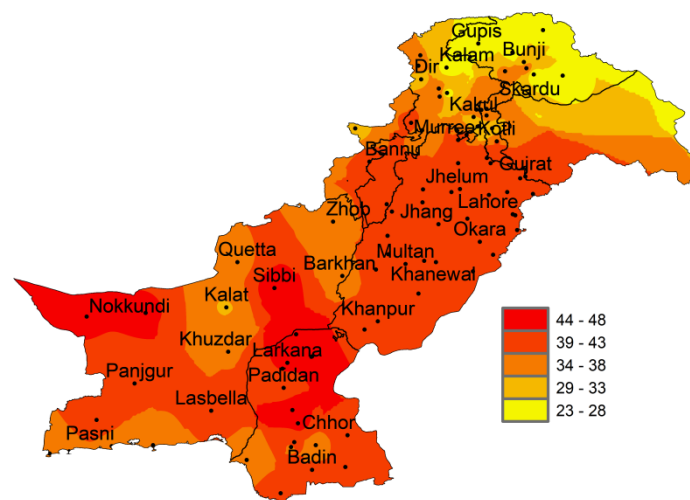
### 2.4 RAMC, Usta Muhammad (Eastern Baluchistan)

Dry weather reported during the decade; however weather remained cleared throughout the decade. Average relative humidity recorded as 43%. Mean day temperature was 43.0°C while night temperature recorded as 31.6°C & Wind speed recorded as 6.0 km/h with mean wind direction *south westerly*.

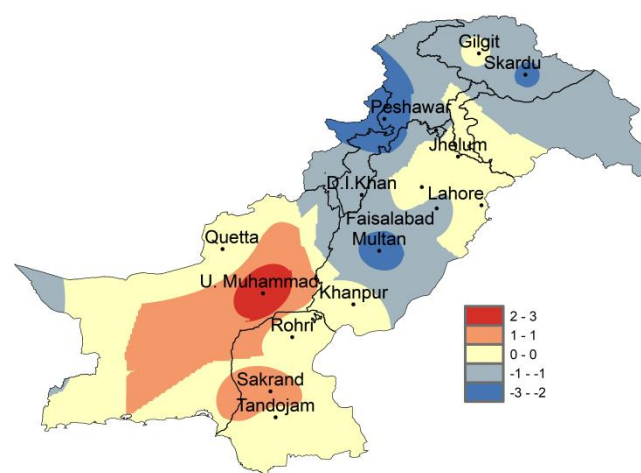
**Rice:** *Good, Germination emergence.*

### 2.5 RAMC, Quetta (Northern Baluchistan)

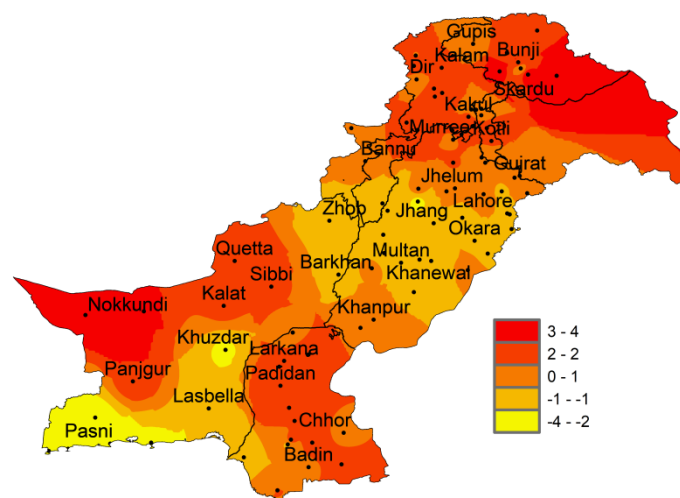
Dry weather reported during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 28%. Mean day temperature was 34.1°C while night temperature recorded as 17.4°C with 106.7 hours bright sunshine duration. Wind speed recorded as 6.1 km/hr with mean wind direction *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 (21<sup>st</sup> to 30<sup>th</sup> June, 2019)

### 2.6 Jhelum

Rainfall reported as Trace (Not measurable) during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 36%. Mean day temperature was 40.8°C while night temperature recorded as 27.2°C with 92.0 hours bright sunshine duration. Wind speed recorded as 3.6 km/hr with mean wind direction *South Westerly*.

### 2.7 Lahore

Rainfall reported as 10.9 mm during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 48%. Mean day temperature was 38.7°C while night temperature recorded as 27.9°C with 80.7 hours bright sunshine duration. Wind speed recorded as 1.9 km/hr with mean wind direction *S South Westerly*.

### 2.8 Sargodha

Rainfall reported as 6.2 mm during the decade; however weather remained cloudy for 06 day during the decade. Average relative humidity recorded as 46%. Mean day temperature was 41.0°C while night temperature recorded as 27.2°C with 81.7 hours bright sunshine duration. Wind speed recorded 2.1 km/hr with mean wind direction *Variable*.

### 2.9 Multan

Rainfall reported as 32.8 mm during the decade; however weather remained cloudy for 09 days during the decade. Average relative humidity recorded as 52%. Mean day temperature was 39.0°C while night temperature recorded as 27.3°C with 76.1 hours bright sunshine duration. Wind speed recorded 6.4 km/hr with mean wind direction *southerly*.

### 2.10 Khanpur

Rainfall reported as Trace (Not measurable) during the decade; however weather remained cloudy for 03 days during the decade. Average relative humidity recorded as 50%. Mean day temperature was 41.3°C while night temperature recorded as 28.5°C with 85.3 hours bright sunshine duration. Wind speed recorded 5.3 km/hr with mean wind direction *south westerly*.

### 2.11 Sakrand

Dry weather reported during the decade; however weather remained cleared throughout the decade. Average humidity recorded as 48%. Mean day temperature was 41.3°C while night temperature recorded as 27.9°C with 111.8 hours bright sunshine duration. Wind speed recorded 7.0 km/hr with wind direction *southerly*.

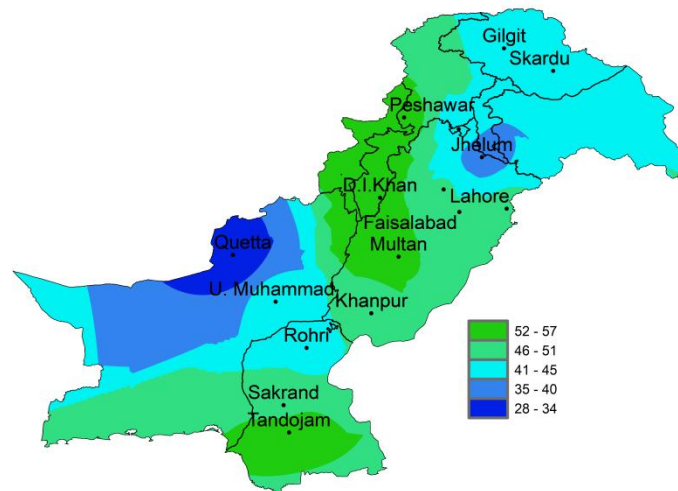


Figure.3: Relative Humidity in Percentage (%)

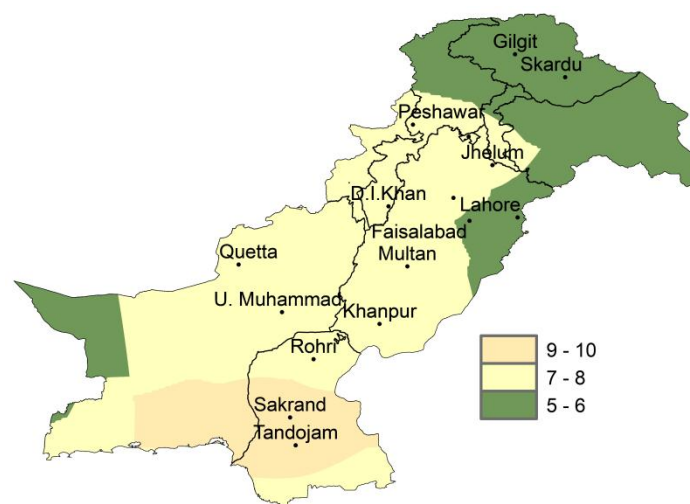


Figure.4: Reference Crop Evapotranspiration ETo (mm/day)

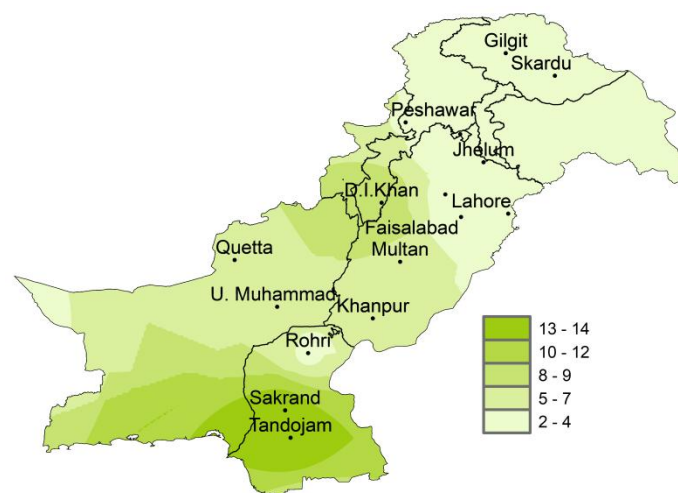


Figure 5: Wind Speed in kilometer per hour (km/h)

**2.12 Rohri**

Dry weather reported during the decade; however weather remained cloudy for 02 days during the decade. Average relative humidity recorded as 42%. Mean day temperature was 43.8°C with 103.5 hours bright sunshine duration. Wind speed recorded 3.6 km/hr with wind direction *North easterly*.

**2.13 D.I. Khan**

Rainfall reported as 24.0 mm during the decade; however weather remained cloudy for 04 day during the decade. Average relative humidity recorded as 54%. Mean day temperature was 40.6°C while night temperature recorded as 25.0°C with 89.5 hours bright sunshine duration. Wind speed recorded as 9.0 km/hr with mean wind direction *south westerly*.

**2.14 Peshawar**

Dry weather reported during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 55%. Mean day temperature was 40.6°C while night temperature recorded as 23.7°C with 85.4 hours bright sunshine duration. Wind speed recorded as 4.2 km/hr with mean wind direction *North Westerly*.

**2.15 Skardu**

Rainfall reported as 4.7 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 44%. Mean day temperature was 26.5°C while night temperature recorded as 11.5°C with 78.0 hours bright sunshine duration. Wind speed recorded as 3.6 km/hr with mean wind direction *southerly*.

**2.16 Gilgit**

Rainfall reported as 3.3 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 45%. Mean day temperature was 30.3°C while night temperature recorded as 14.7°C with 61.1 hours bright sunshine duration. Wind speed recorded as 3.6 km/hr with mean wind direction *Variable*.

**3.3 Rain Forecast**

- ❖ **Punjab:** Mainly hot and dry weather is expected in most parts of the country. However, rain/thunderstorm is expected at isolated places in Rawalpindi, Sargodha, Faisalabad, Lahore, Sahiwal divisions, Islamabad the first half of the current decade.
- ❖ **Khyber Pakhtunkhwa:** Rain/thunderstorm is expected at scattered places of the provinces during the first half of the current decade.
- ❖ **Sindh:** Mainly hot and dry weather is expected during the current decade.
- ❖ **Baluchistan:** Mainly hot and dry weather is expected during the current decade.
- ❖ **Gilgit-Baltistan:** Dust-thundershower/rain is expected at isolated places in the province during the first half of the current decade.
- ❖ **Kashmir:** Dust-thundershower/rain is expected at isolated places in the province during the first half of the current decade.

**3.4 Advisory for Farmers**

- ❖ Mainly hot and dry weather is expected in most of the agricultural plains of the country, especially in plains of Punjab and Sindh. However, dust-thundershower/rain with gusty winds is expected at isolated places in Punjab (Rawalpindi, Gujranwala, Lahore, Sargodha, Faisalabad, Multan, and Sahiwal divisions), Islamabad, Khyber Pakhtunkhwa, Gilgit Baltistan and Kashmir during the current decade.
- ❖ The farmers may regularly irrigate their Kharif crops by keeping in view the ongoing hot weather conditions.
- ❖ Rice growers are advised to sow the crop's PANERI in accordance with the recommendation by the agricultural experts.
- ❖ Measures may be taken to remove the weeds from the standing crops especially Peanut etc.

### **Ten Days Weather Advisory for Farmers (1<sup>st</sup> to 10<sup>th</sup> July, 2019)**

**3.1 Temperature Forecast**

Both day and night temperatures are likely to be above 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 in Baluchistan, Sindh and southern Punjab during the start of the decade.

## 4.1

**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)