

Decadal Agromet Bulletin of Pakistan



Highlights...

- ❖ Moderate to heavy amount of rainfall reported from Gilgit-Baltistan, Azad Jammu & Kashmir. Light to moderate rainfall reported from Punjab, Khyber Pakhtunkhwa and Sindh, while light amount of rainfall reported from Baluchistan.
- ❖ Highest amount of rainfall recorded as 132.9 mm at Rawalakot during the last decade.
- ❖ Lowest minimum temperature recorded as 3.6°C at Skardu during the last decade.
- ❖ Scattered rain/wind-thunderstorm (with light snowfall over hills) is expected in most districts of Sindh, Balochistan, Southern Punjab while at isolated places in Upper Khyber Pakhtunkhwa, Kashmir and Gilgit Baltistan. Hailstorm is also expected in few plain areas. Cloudy weather is expected elsewhere in the country during the current decade.
- ❖ Farmers of cotton crop are advised to prepare fields for incoming Rabi crops and complete sowing in time.
- ❖ Farmers are advised to schedule the irrigation plans in accordance with the expected weather, mentioned 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 crop. As a result considerable loss in yield occurs every year.

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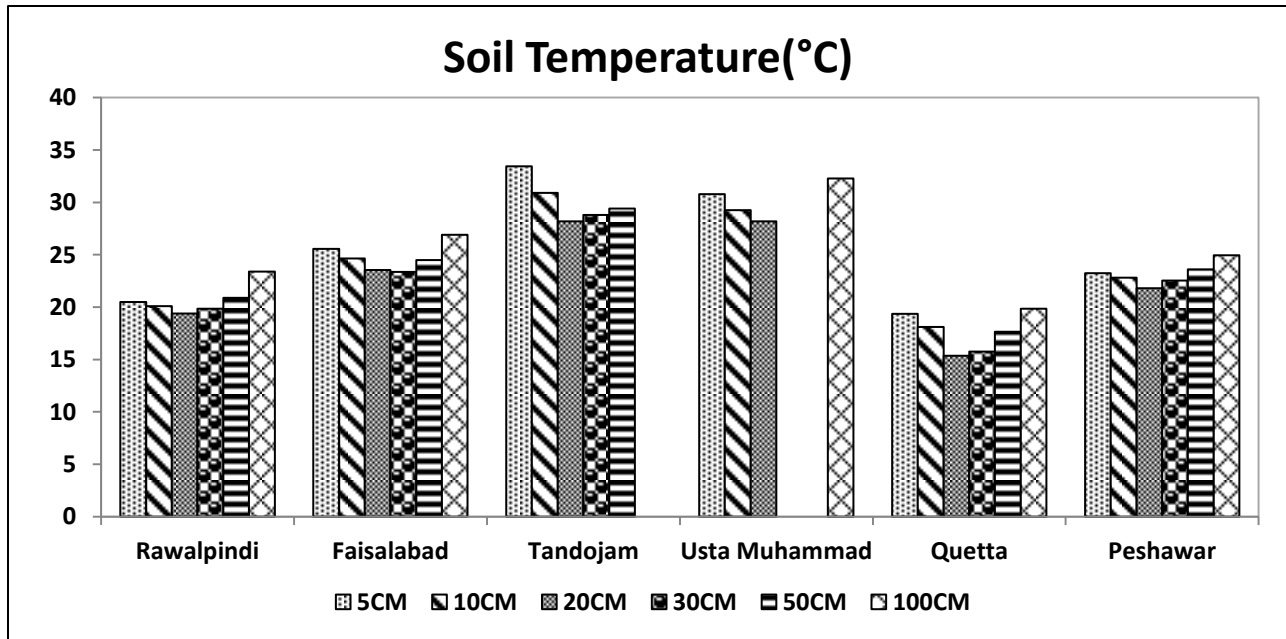
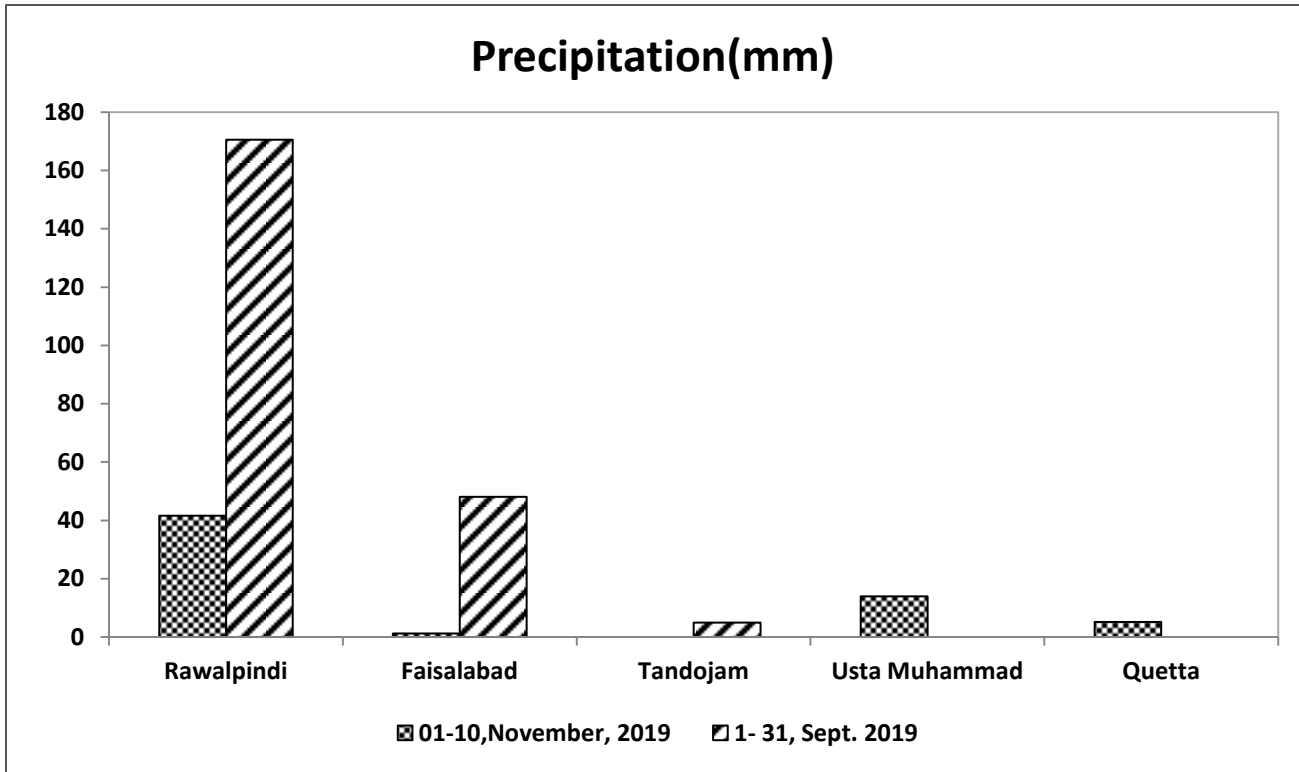
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Meteorological Conditions during 1st Decade of November, 2019

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	0.3	41.6	41.3	-3.4	2.9	18.9	20.5	20.1	19.4	19.9	20.9	23.4	69	64.0	0.8	3.5
2	Faisalabad	0.0	1.2	1.2	-1.3	1.1	21.6	25.6	24.7	23.6	23.4	24.5	26.9	56	61.0	1.6	5.3
3	Jhelum	0.1	13.7	13.6	-2.4	1.1	21.0	22.4	21.9	21.8	22.2	23.5	***	64	62.4	4.8	4.4
4	Lahore	0.0	1.7	1.7	-2.0	0.7	22.5	23.1	22.9	22.9	23.1	***	26.0	68	64.0	1.8	4.1
5	Sargodha	0.0	0.0	0.0	-1.3	1.0	22.0	25.3	24.7	23.8	24.1	***	25.9	66	52.8	1.7	4.0
6	Multan	0.0	0.0	0.0	-3.1	1.8	22.2	***	***	***	***	***	***	55	79.8	4.0	6.0
7	Khanpur	0.0	9.0	9.0	-2.9	0.7	22.6	***	25.2	25.8	26.5	27.6	29.2	61	90.4	0.5	5.9
8	Tandojam	0.0	0.0	0.0	-2.5	1.4	24.7	33.5	30.9	28.2	28.8	29.4	.	55	81.3	4.9	7.0
9	Sakrand ☆	0.0	0.0	0.0	-1.9	2.0	24.7	32.0	***	***	***	***	32.1	54	89.9	5.0	7.3
11	Rohri ☆	0.0	2.0	2.0	-3.1	***	24.2	***	***	***	***	***	***	53	96.6	3.0	7.3
12	D.I Khan	0.0	3.0	3.0	-1.1	1.4	22.0	***	23.5	***	24.3	15.1	***	57	78.3	7.5	6.2
13	Peshawar	0.4	6.6	6.2	-0.7	-1.2	19.1	23.3	22.8	21.8	22.6	23.6	25.0	59	55.4	1.5	4.3
14	Usta M.	0.0	14.0	14.0	-1.4	-0.6	23.9	30.8	29.3	28.2	***	***	32.3	54	***	1.5	2.4
15	Quetta	0.1	5.2	5.1	-4.5	1.7	12.1	19.4	18.1	15.4	15.8	17.7	19.9	39	88.9	5.2	5.2
16	Skardu	0.1	2.1	2.0	-3.3	2.2	7.8	***	***	***	***	***	***	58	44.2	1.6	2.4
17	Gilgit	0.2	16.6	16.4	-4.6	3.5	11.8	***	***	***	***	***	***	64	34.2	1.6	2.3

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 November, 2019



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

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

1.1 Punjab

Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Murree, Chaklala Airbase & Sialkot (AP). Decadal maximum dropped below the normal by 2.3°C & minimum raised above the normal by 1.3°C respectively in the province. Whereas values of relative humidity, sunshine hour, wind speed & ETo were recorded as 63%, 67.8 hrs, 2.2 km/hr and 4.7 mm/day respectively.

1.2 Sindh

Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Padidan, Dadu & Thatta. Decadal maximum dropped below the normal by 2.5°C & minimum raised above the normal by 1.2°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 54%, 89.3 hrs, 4.3 km/hr and 7.2 mm/day respectively.

1.3 Khyber Pakhtunkhwa

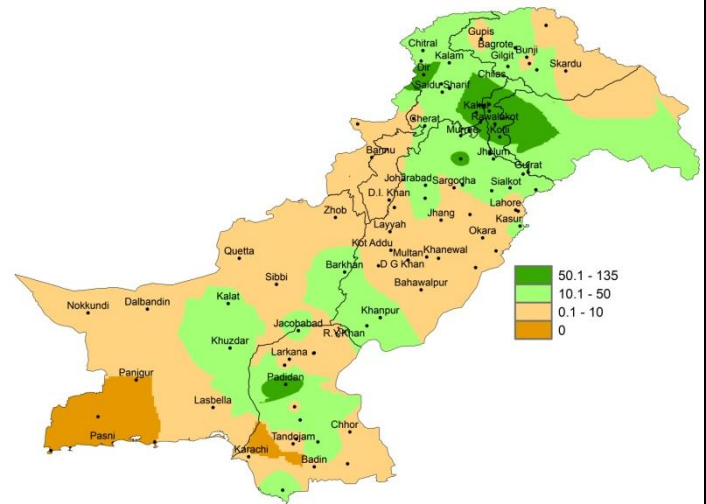
Light to moderate rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Dir, Kakul & Balakot. Decadal maximum dropped below the normal by 0.9°C & minimum raised above the normal by 0.1°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 58%, 66.9 hrs, 4.5 km/hr and 5.3 mm/day respectively.

1.4 Baluchistan

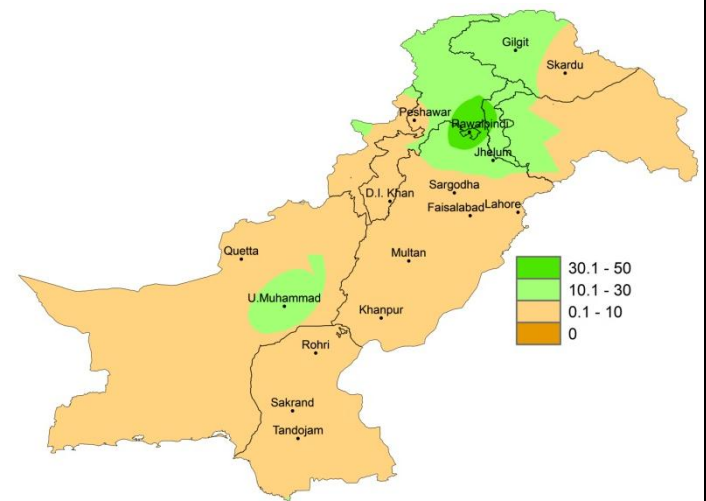
Light rainfall reported from of the agricultural plains of the province. Highest rainfall reported from Barkhan, Khuzdar & Kalat. Decadal maximum dropped below the normal by 3.0°C & minimum raised above the normal by 0.6°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 47%, 88.9 hrs, 3.4 km/hr and 3.8 mm/day respectively.

1.5 Gilgit-Baltistan and Azad Jammu & Kashmir

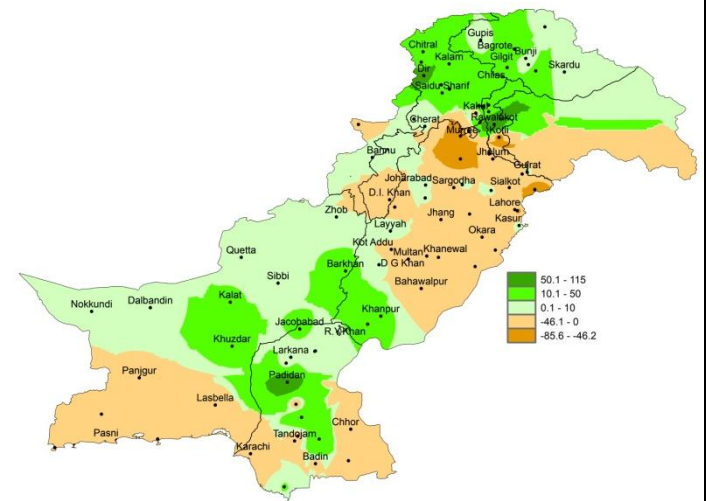
Moderate to heavy rainfall reported from most of the agricultural plains of the province. Highest rainfall reported from Rawalakot, Garhi Dupatta & Muzaffarabad. Decadal maximum dropped below the normal by 4.0°C & minimum raised above the normal by 2.9°C respectively in the province. Whereas mean values of relative humidity, sunshine hour, wind speed & ETo were recorded as 61%, 39.2 hrs, 1.6 km/hr and 2.4 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 (1st to 10th November, 2019)

2.1 RAMC, Rawalpindi (Potohar region)

Rainfall reported as 41.6 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 69%. Mean day temperature was 24.3°C while night temperature recorded as 13.4°C with 64.0 hours bright sunshine duration. Wind speed recorded as 0.8 km/hr with mean wind direction *southerly*.

2.2 RAMC, Faisalabad (Central Punjab)

Rainfall reported as 1.2 mm during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 56%. Mean day temperature was 28.5°C while night temperature recorded as 14.6°C with 60.75 hours bright sunshine duration. Wind speed recorded as 1.6 km/hr with mean wind direction *south-southwesterly*.

Cotton: Crop has been harvested on 11-11-2019.

2.3 RAMC, Tandojam (Lower Sindh)

Dry weather reported during the decade; however clear weather was observed during the decade. Average relative humidity recorded as 55%. Mean day temperature was 31.6°C while night temperature recorded as 17.8°C with 81.3 hours bright sunshine duration. Wind speed recorded as 4.9 km/h with mean wind direction *north easterly*.

Wheat: Sowing is in progress.

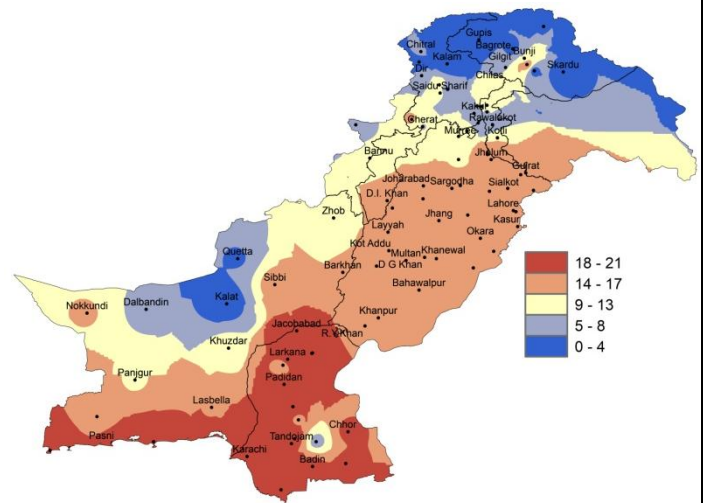
2.4 RAMC, Usta Muhammad (Eastern Baluchistan)

Rainfall reported as 14.0 mm during the decade; however weather remained cloudy for 05 day during the decade. Average relative humidity recorded as 54%. Mean day temperature was 30.4°C while night temperature recorded as 17.3°C & Wind speed recorded as 1.5 km/h with mean wind direction *north easterly*.

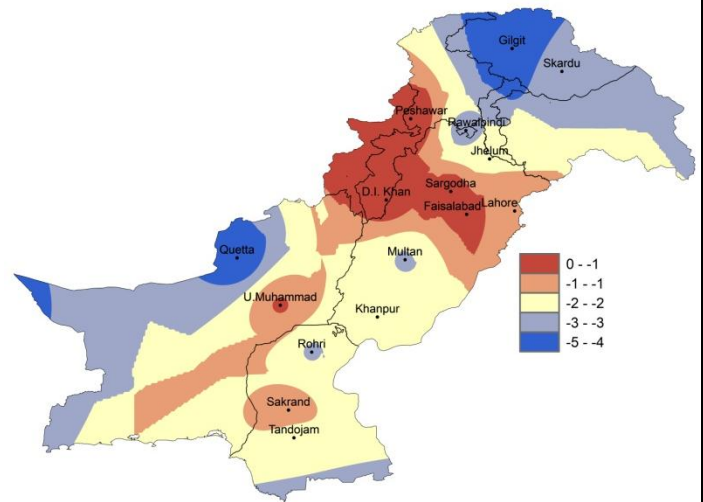
Rice: Good, Wax maturity.

2.5 RAMC, Quetta (Northern Baluchistan)

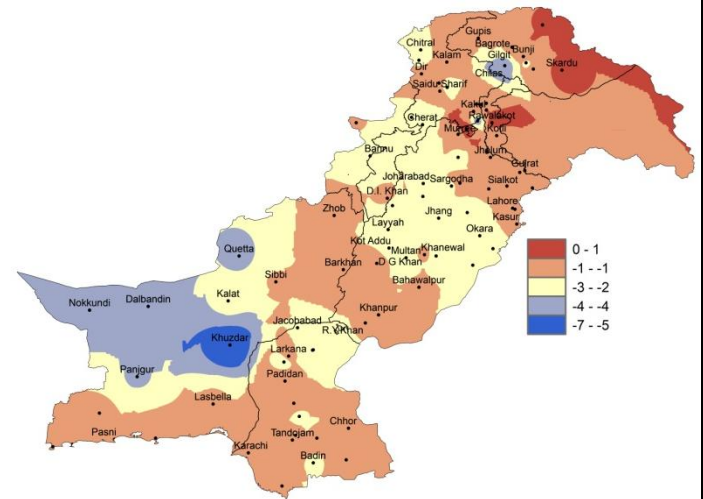
Rainfall reported as 5.2 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 39%. Mean day temperature was 20.5°C while night temperature recorded as 0.5°C with 88.9 hours bright sunshine duration. Wind speed recorded as 5.2 km/hr with mean wind direction *north westerly*.



I. Actual min-temp



II. Departure of min-temp from Normal



III. Departure of min-temp from Previous Decade

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

2(b) Past Weather for Sub-Regional Agricultural Plains (1st to 10th November, 2019)

2.6 Jhelum

Rainfall reported as 13.7 mm during the decade; however weather remained cloudy for 08 days during the decade. Average relative humidity recorded as 64%. Mean day temperature was 27.2°C while night temperature recorded as 14.8°C with 62.4 hours bright sunshine duration. Wind speed recorded as 4.8 km/hr with mean wind direction *north westerly*.

2.7 Lahore

Rainfall reported as 1.7 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 68%. Mean day temperature was 27.3°C while night temperature recorded as 17.6°C with 64.0 hours bright sunshine duration. Wind speed recorded as 1.8 km/hr with mean wind direction *north easterly*.

2.8 Sargodha

Rainfall reported as Trace (not measurable) during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 66%. Mean day temperature was 28.2°C while night temperature recorded as 15.8°C with 52.8 hours bright sunshine duration. Wind speed recorded 0.9 km/hr with mean wind direction *easterly*.

2.9 Multan

Rainfall reported as Trace (not measurable) during the decade; however weather remained cloudy for 06 days during the decade. Average relative humidity recorded as 55%. Mean day temperature was 27.8°C while night temperature recorded as 16.5°C with 79.8 hours bright sunshine duration. Wind speed recorded 4.0 km/hr with mean wind direction *north easterly*.

2.10 Khanpur

Rainfall reported as 9.0 mm during the decade; however weather remained cloudy for 02 days during the decade. Average relative humidity recorded as 61%. Mean day temperature was 15.9°C with 90.4 hours bright sunshine duration. Wind speed recorded 1.5 km/hr with mean wind direction *north easterly*.

2.11 Sakrand

Dry weather reported during the decade; however weather remained cloudy for 03 days during the decade. Average humidity recorded as 54%. Mean day temperature was 31.2°C while night temperature recorded as 18.2°C with 89.9 hours bright sunshine duration. Wind speed recorded 2.7 km/hr with wind direction *northerly*.

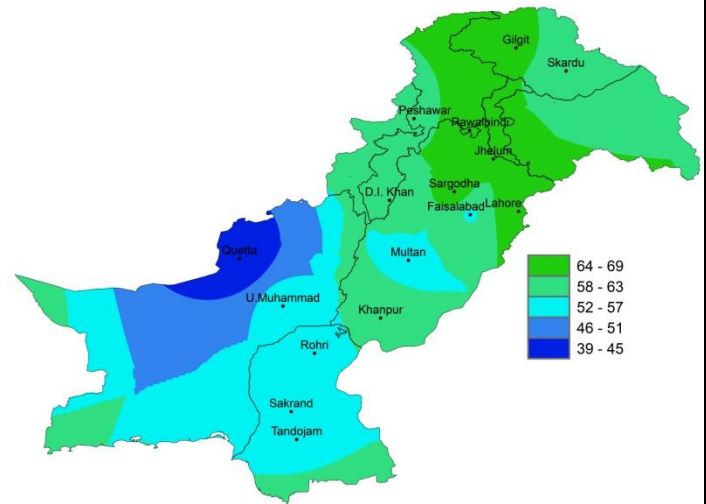


Figure.3: Relative Humidity in Percentage (%)

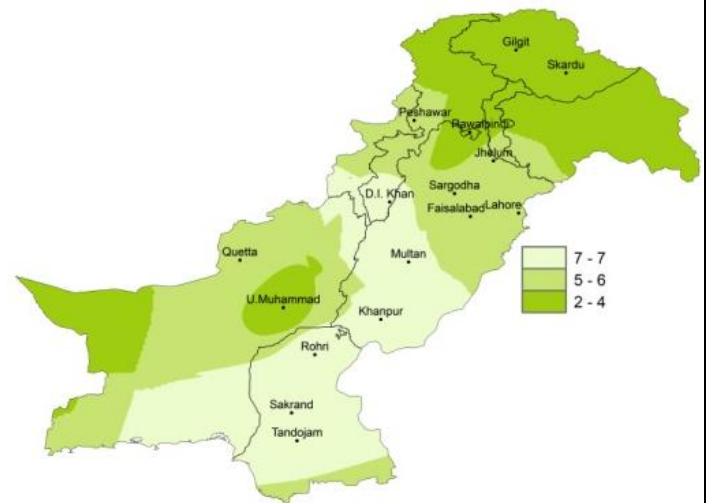


Figure.4: Reference Crop Evapotranspiration ETo (mm/day)

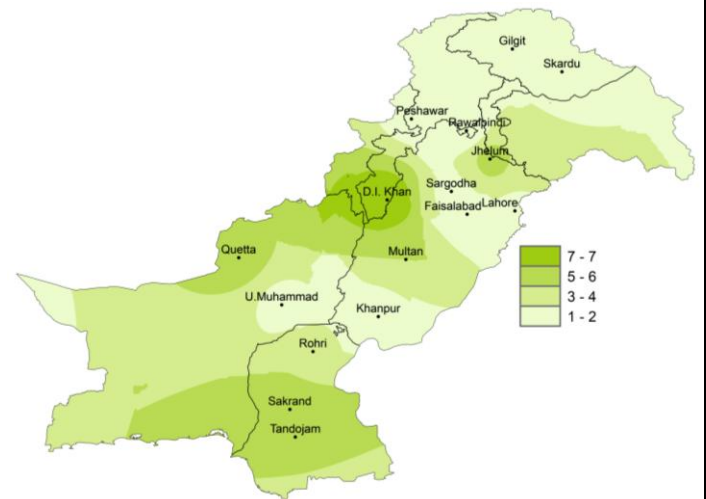


Figure 5: Wind Speed in kilometer per hour (km/h)

2.12 Rohri

Rainfall reported as 2.0 mm during the decade; however weather remained cloudy for 05 days during the decade. Average relative humidity recorded as 53%. Mean day temperature was 30.0°C while night temperature recorded as 18.3°C with 96.6 hours bright sunshine duration. Wind speed recorded 3.0 km/hr with wind direction *northerly*.

2.13 D.I. Khan

Rainfall reported as 3.0 mm during the decade; however weather remained cloudy for 04 days during the decade. Average relative humidity recorded as 57%. Mean day temperature was 28.9°C while night temperature recorded as 15.0°C with 78.3 hours bright sunshine duration. Wind speed recorded as 7.5 km/hr with mean wind direction *northerly*.

2.14 Peshawar

Rainfall reported as 6.6 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 59%. Mean day temperature was 26.2°C while night temperature recorded as 12.0°C with 55.4 hours bright sunshine duration. Wind speed recorded as 1.5 km/hr with mean wind direction *north westerly*.

2.15 Skardu

Rainfall reported as 2.1 mm during the decade; however weather remained cloudy for 07 days during the decade. Average relative humidity recorded as 58%. Mean day temperature was 14.0°C while night temperature recorded as 1.5°C with 1.6 hours bright sunshine duration. Wind speed recorded as 3.1 km/hr with mean wind direction *south easterly*.

2.16 Gilgit

Rainfall reported as 16.6 mm during the decade; however weather remained cloudy for 10 days during the decade. Average relative humidity recorded as 64%. Mean day temperature was 18.0°C while night temperature recorded as 5.5°C with 34.2 hours bright sunshine duration. Wind speed recorded as 1.6 km/hr with mean wind direction *easterly*.

Ten Days Weather Advisory for Farmers (11th to 20th November, 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:** Cloudy weather is expected. However, scattered rain/wind-thunderstorm (with light snowfall over hills) is expected in most districts of southern Punjab during the 2nd half of the current decade. Dust storm/hailstorm is also expected in few plain areas.
- ❖ **Khyber Pakhtunkhwa:** Cloudy weather is expected. However, isolated rain/wind-thunderstorm (with light snowfall over hills) is expected in most districts of upper Khyber Pakhtunkhwa during the current decade.
- ❖ **Sindh:** Cloudy weather is expected. However, scattered rain/wind-thunderstorm is expected in northeast Balochistan (Quetta, Zhob, Kalat, Sibbi, Khuzdar, Ziarat districts) during the current decade.
- ❖ **Baluchistan:** Cloudy weather is expected. However, scattered rain/wind-thunderstorm is expected in upper Sindh (Sukkur, Larakana, Jacobabad and Ghotki districts) during the 1st half of the current decade.
- ❖ **Gilgit-Baltistan:** Cloudy weather is expected. However, isolated rain/wind-thunderstorm is expected during the 2nd half of the current decade.
- ❖ **Kashmir:** Cloudy weather is expected. However, isolated rain/wind-thunderstorm is expected during the 2nd half of the current decade.

3.4 Advisory for Farmers

- ❖ Farmers of cotton crop are advised to prepare fields for incoming Rabi crops and complete sowing in time.
- ❖ Farmers are advised to schedule the irrigation plans in accordance with the expected weather, mentioned 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 crop. As a result considerable loss in yield occurs every year.

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)