

Monthly Bulletin

National Agromet Centre

Pakistan Meteorological Department



Vol: 06-2019

June, 2019

Highlights...

- ❖ Below normal rains were observed in most of the agricultural plains of the country. Whereas above normal rainfall reported in GB and Multan in central Punjab.
- ❖ Thermal regime in this month showed mostly normal to slightly above normal trend in most of the agricultural plains of the country.
- ❖ ETo observed mostly normal to below normal in the agricultural plains of the country except D.I.Khan and Tandojam where it was observed above normal.
- ❖ R.H. remained below normal in the country due to mostly below normal rainfall and clear skies observed during the month.
- ❖ Agricultural soils showed cooler trend in most of the agricultural soils in the country, more significant in upper parts of the country as compared to lower parts of the country. However values of soil temperature at different depths observed above normal in Tandojam.
- ❖ Harvesting/threshing of wheat and other Rabi crops and sowing of kharif crops especially cotton and maize, were the major field activities during the month. Operations of weeds removing and chemical spraying against pest attacks on fruit orchards and irrigation practices as per requirement were also in progress during the month.
- ❖ Crop water requirement of sugarcane crop reaches its peak in June. 8-9 times irrigation with suitable gaps is suggested by experts during June. In case of water shortage the crop completes its maturity early and results significant drop in yield.
- ❖ The outlook for the month of July 2019 shows that normal to above normal rainfall is expected in the upper half of the country with maximum positive anomaly in Kashmir and its adjoining areas. However, below normal rainfall is expected in lower areas of Balochistan and Sindh.

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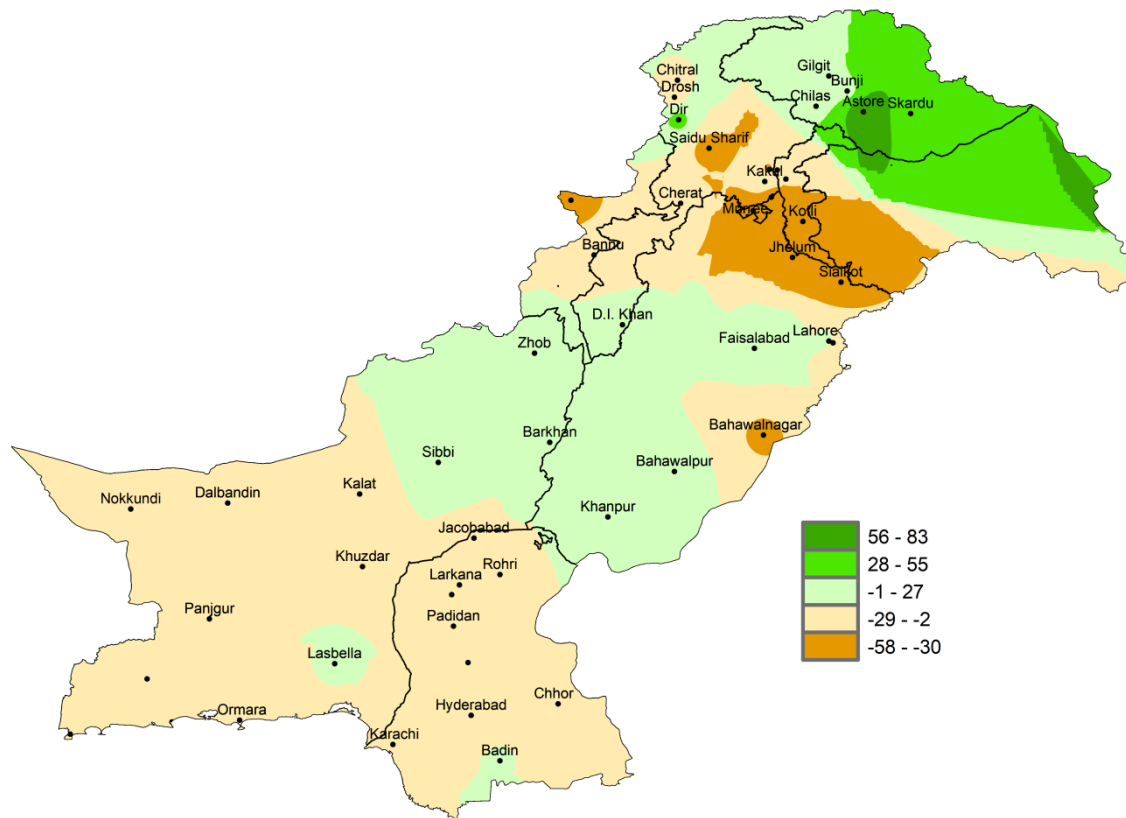
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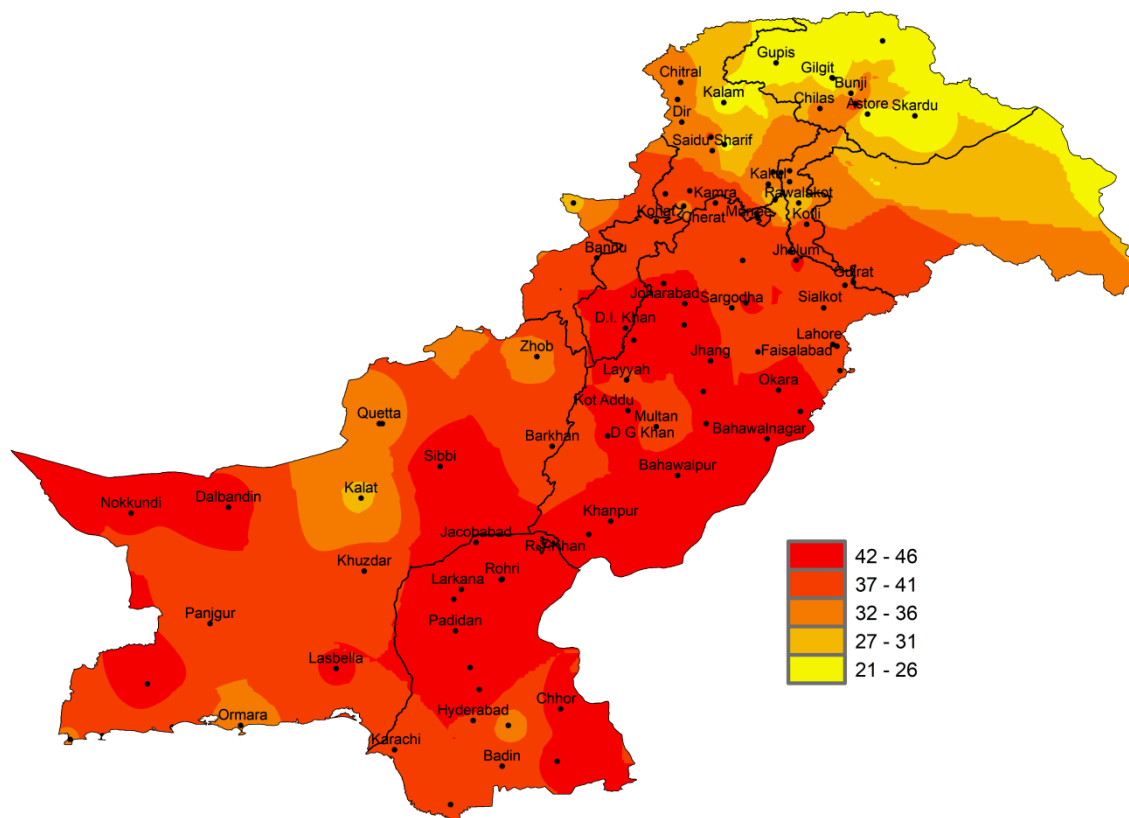
EXPLANATORY NOTE

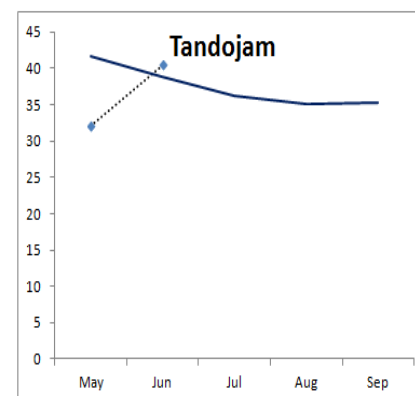
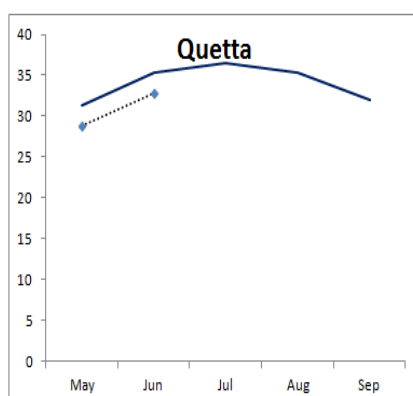
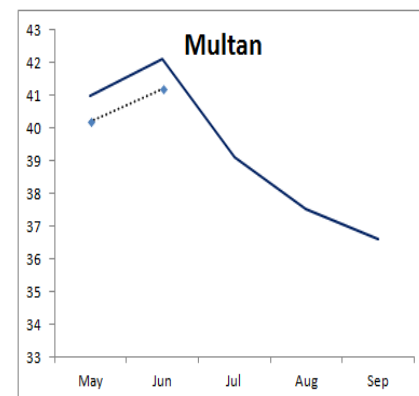
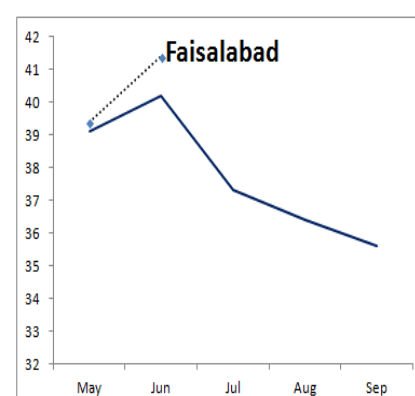
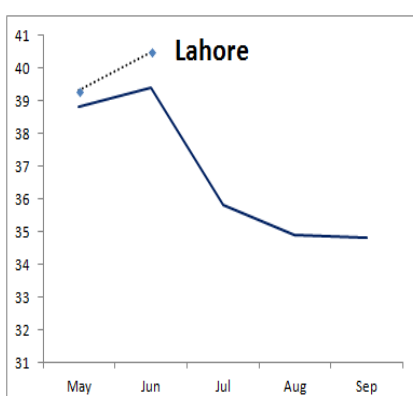
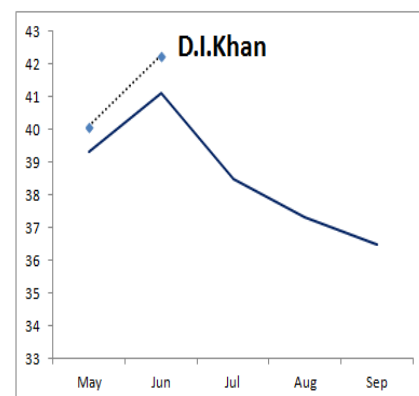
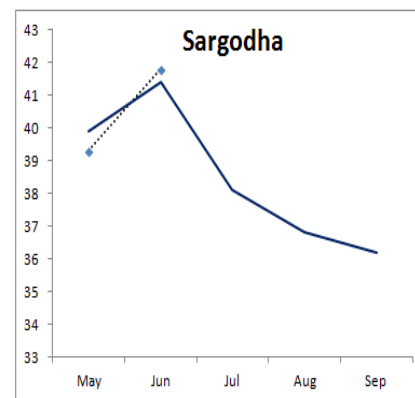
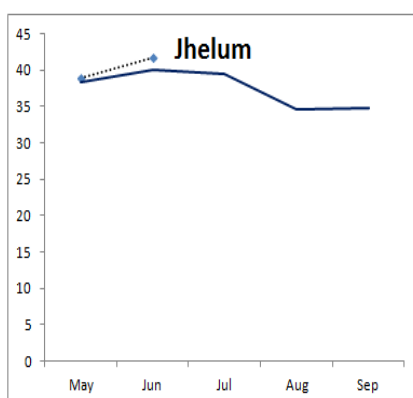
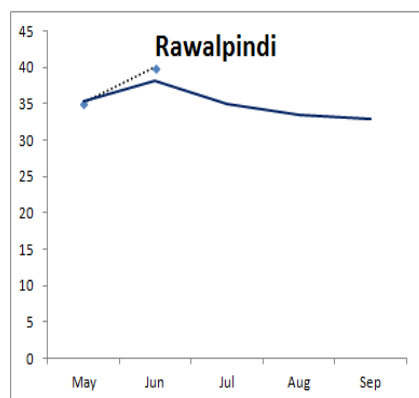
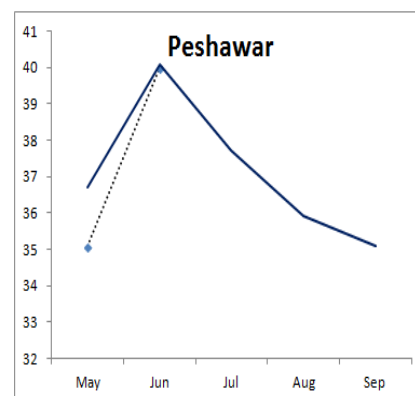
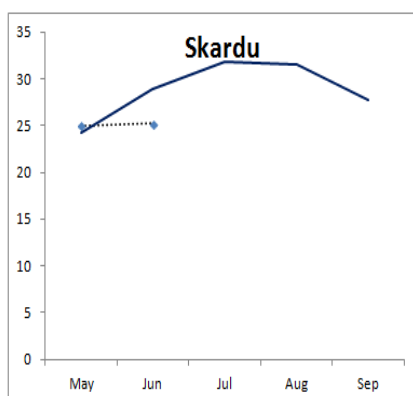
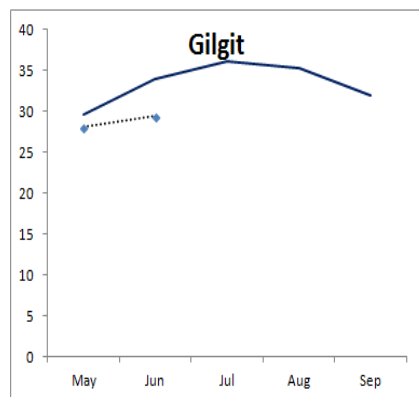
1. This Agrometeorological bulletin is prepared on the basis of data from 15 stations of Pakistan Meteorological Department (PMD). These stations, selected in consultation with the agricultural authorities, represent major agricultural areas of the country. There are still important agricultural areas which are not represented by the stations included in the bulletin. This is because there are no PMD stations in these areas.
2. Accordingly, all the inferences and conclusions hold true primarily for the above mentioned areas only, since the rest may not be very important from the agricultural point of view.
3. The normally expected weather of next month is prepared on the basis of premise of normal or near normal weather prevailing during the coming month. As such it should not be confused with predicted weather of the next month.
4. Kharif season extends from April/May to October/November and Rabi season from October to April. Mean Daily Maximum Temperature images are included during summer season and Mean Minimum Temperature images are included during winter in the Bulletin.
5. In the tables, the values in the parentheses are based on 1981 to 2010 normal. Normal values of Soil Temperatures are based upon last 10 years data. Dotted line (---) means missing data. Solar radiation intensities are computed from sunshine duration (recorded by PMD) using coefficients developed by Food and Agriculture Organization of the United Nations “FAO” (Irrigation and Drainage Paper 56; Crop Evapotranspiration: Guidelines for Computing Crop Water Requirements).

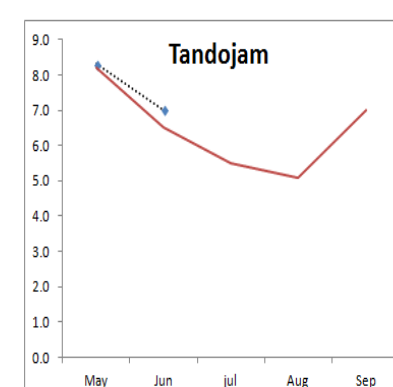
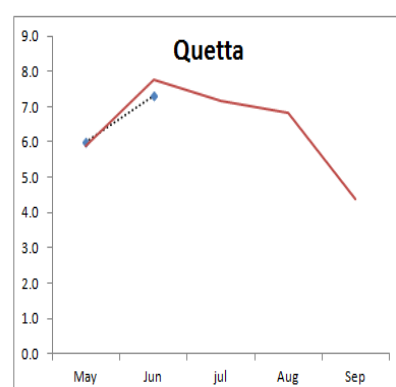
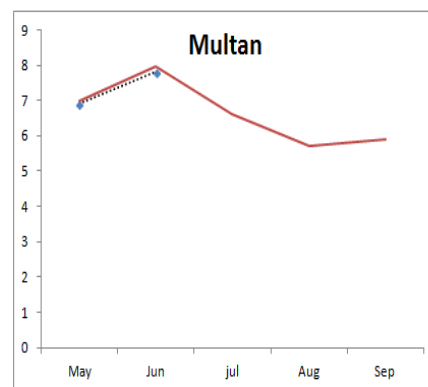
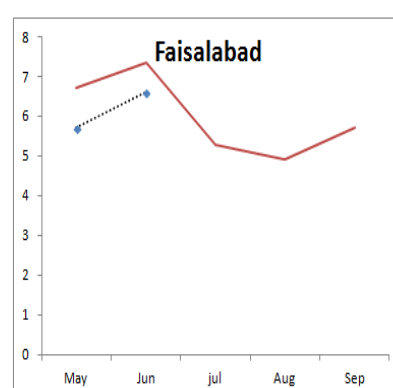
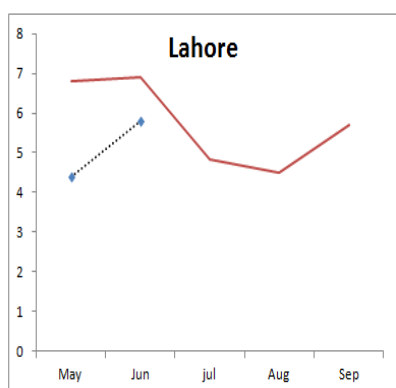
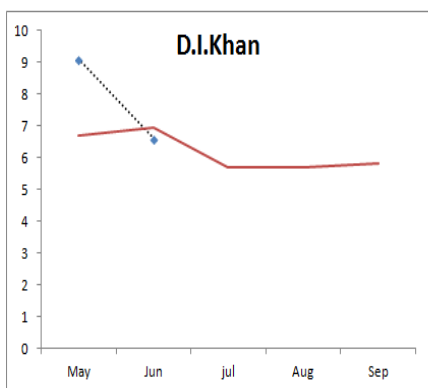
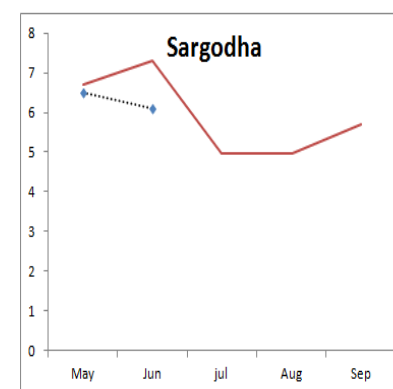
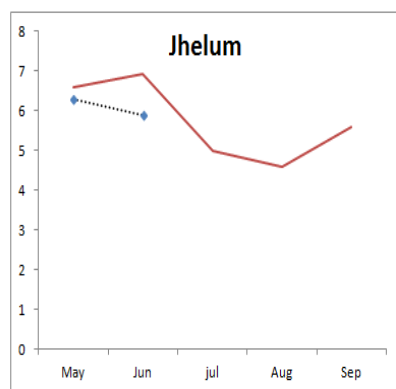
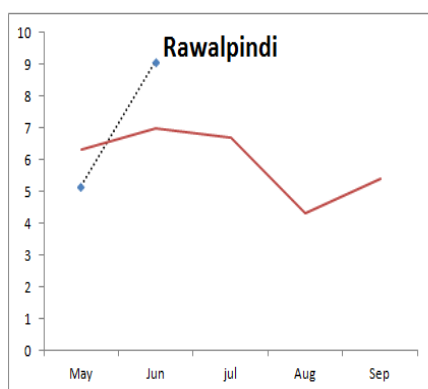
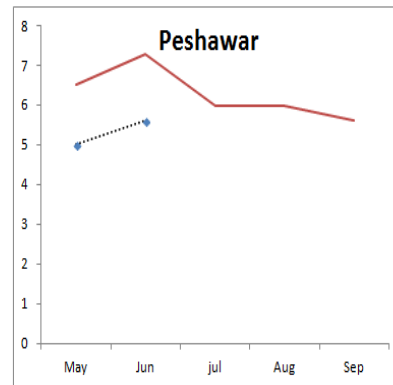
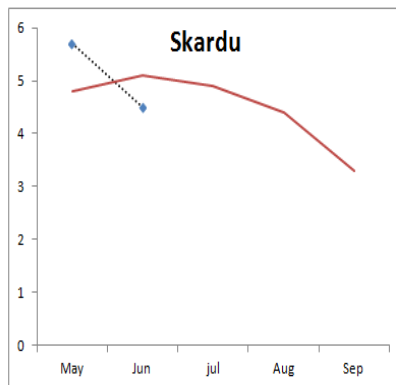
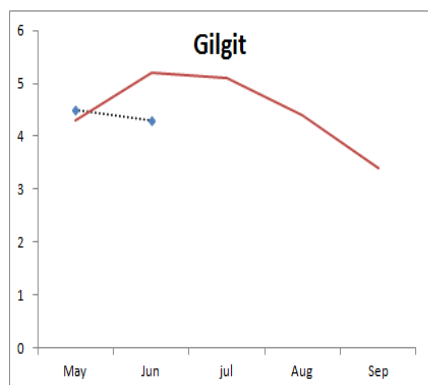
Rainfall Departure from Normal (mm) during June 2019



Maximum Temperature (°C) during June, 2019



Maximum Temperature (°C) during Kharif Season (May-September)**Dotted Curve:** Current Season (May-June 2019) in °C**Smooth Curve:** Normal values of Kharif Season

Evapotranspiration (mm/day) during Kharif Season (May-September)**Dotted Curve:** Current Season (May-June 2019)**Smooth Curve:** Normal values of Kharif Season

Crop Report during June, 2019

Picking of seasonal vegetables and fruits, removal of weeds manually and through weedicides and application of pesticides were the major field activities in most of the agricultural plains of the country.

In **Punjab:** The germination and early growth of cotton crop is reported satisfactory. Early sown varieties are at fruiting/boll maturing stage. In time and proper use of pesticides by the farmers may protect the crops from these attacks at this important stage of crop's life cycle. Transplantation of rice coarse varieties is in progress. Transplantation of Basmati reported at final stage. The condition of standing sugarcane crop has been reported satisfactory and is growing well. However, good rains to maintain crop water requirement are required for a well healthier growth of the crop in central and lower parts. The standing spring maize crop is reported at maturity stage. Harvesting/threshing of sunflower is started at some places. Sowing of autumn maize has started and germination of the crop is reported satisfactory. Overall condition of standing fruits and vegetables is reported satisfactory in the province due to favorable soil and atmospheric conditions observed during the month.

In **Sindh:** Cotton crop is in flowering/ boll formation stage and is growing in a satisfactory condition. Sugarcane crop is also growing satisfactory. Transplantation of rice crop is almost done and general conditions of the crop are reported satisfactory. The harvesting/threshing of sunflower/safflower/linseed/castor is completed. Sowing of Sesame is completed and its germination reported as normal. Picking of mango is going to be completed soon and good production reported this year due to favorable conditions. Condition and production of seasonal vegetables is also reported satisfactory.

In **Khyber Pakhtunkhwa:** Sowing of Hybrid varieties of maize crop has been completed and sowing of open pollinated varieties in progress. Early growing maize varieties are growing satisfactory. Condition of sugarcane is reported satisfactory and normal growth is reported. Seasonal fruits have ripened and are available in the market. All vegetables are growing in normal condition and farmers are obtaining normal production. Harvesting of potato crop in plain areas is completed and normal production is expected. Harvesting of onion is almost completed and production remained satisfactory. Harvesting of sunflower is in progress in the plain areas of the province. Picking of other seasonal vegetables and some fruit orchids remained in progress during the month.

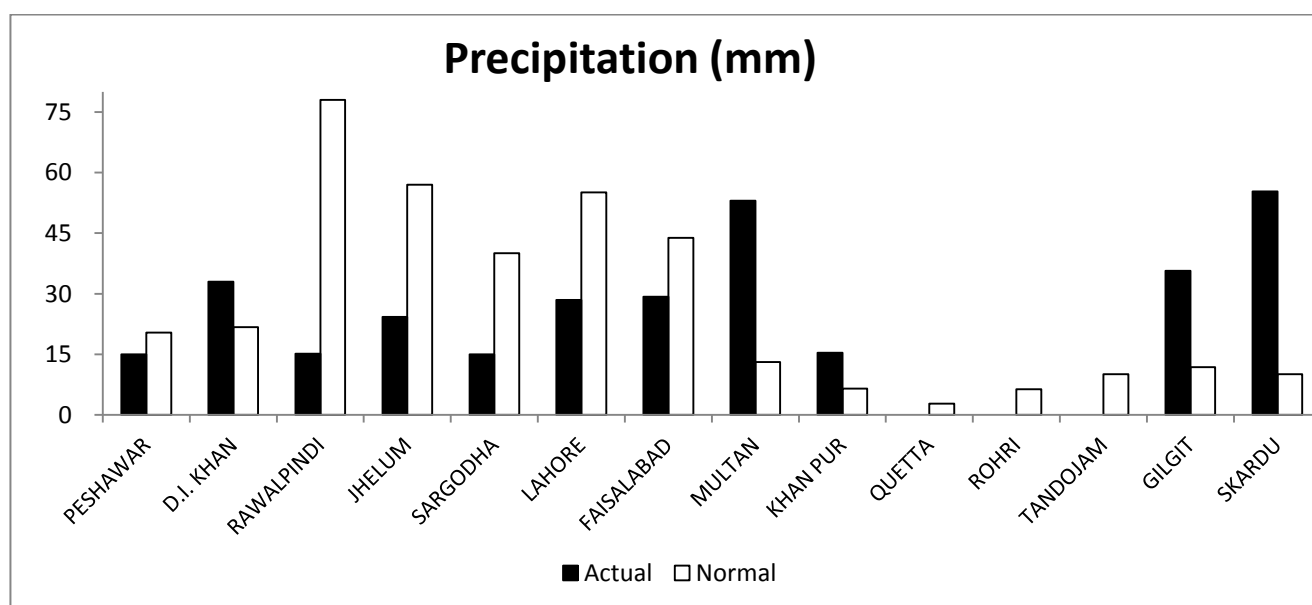
In **Baluchistan:** Apple/almond orchards are growing normal. Harvesting/growth of seasonal fruits and vegetables are reported satisfactory. Harvesting of musk melon has been started in northern parts of the province. Sowing/germination of cotton is reported satisfactory.

In **Gilgit Baltistan:** Harvesting of wheat crop is completed and normal yield is expected. Sowing of maize is in progress. Growing / picking of summer vegetables and seasonal fruits are satisfactory. Harvesting of Potato crop is in progress and normal production is expected.

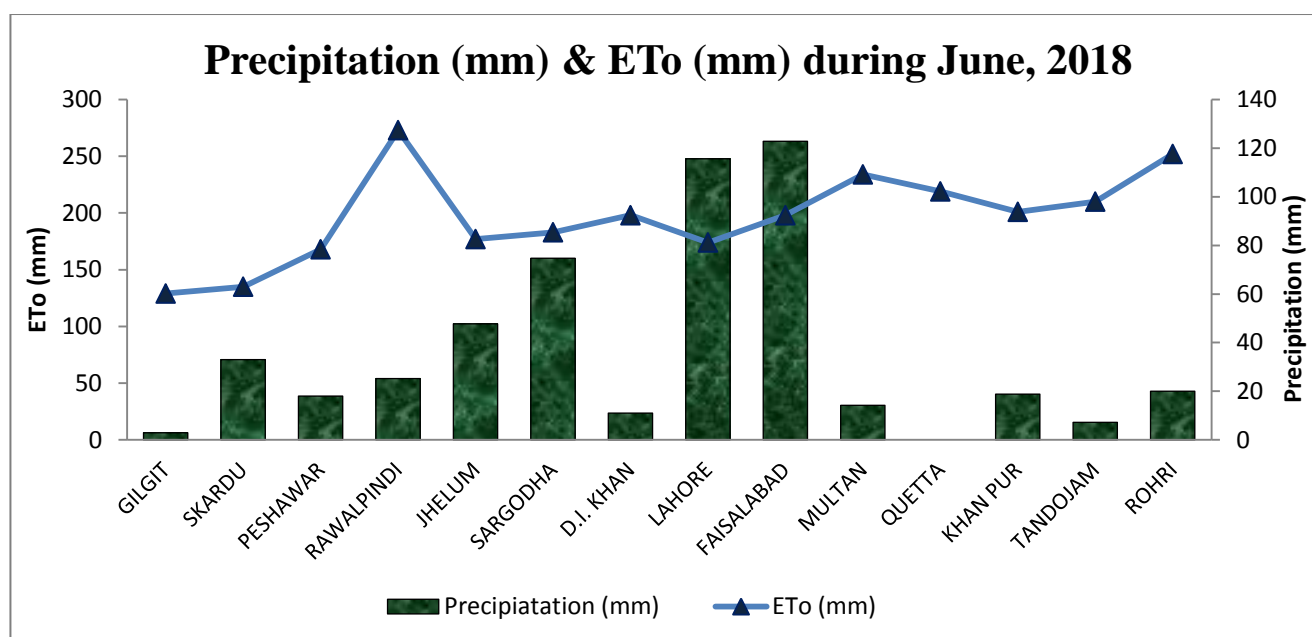
Moisture Regime during June, 2019

Generally June is the hottest and one of the driest months in Pakistan. During this June below normal rains were observed in most of the agricultural plains of the country. Whereas above normal rainfall reported in GB and Multan in central Punjab.

The highest amount of rainfall reported in the month was 112.03 mm at Astore followed by 106.21 mm at Muzaffarabad, 93.82 mm at Kakul, 91.00 mm at Dir and 83.74 mm at Murree. Maximum number of rainy days was reported 20 at Bagrote followed by 18 days at Gilgit, 17 days at Skardu, 16 days at Garhi Dopatta and 15 days at Bunji each.

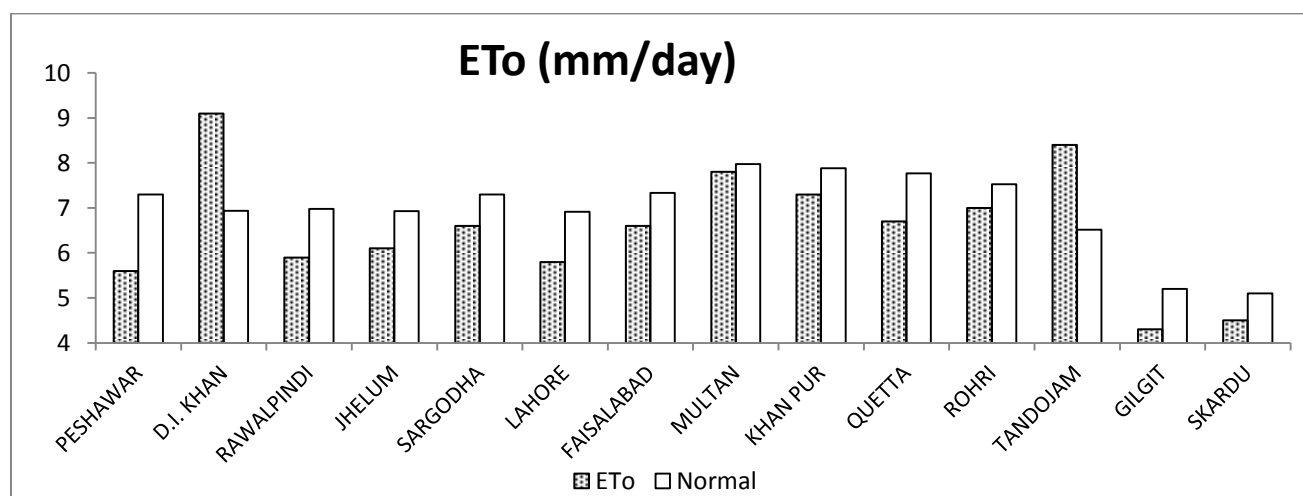


Comparison of Actual Precipitation (mm) during the month of June, 2019 with Normal values



Precipitation (mm) & ETo (mm) during the month of June, 2019

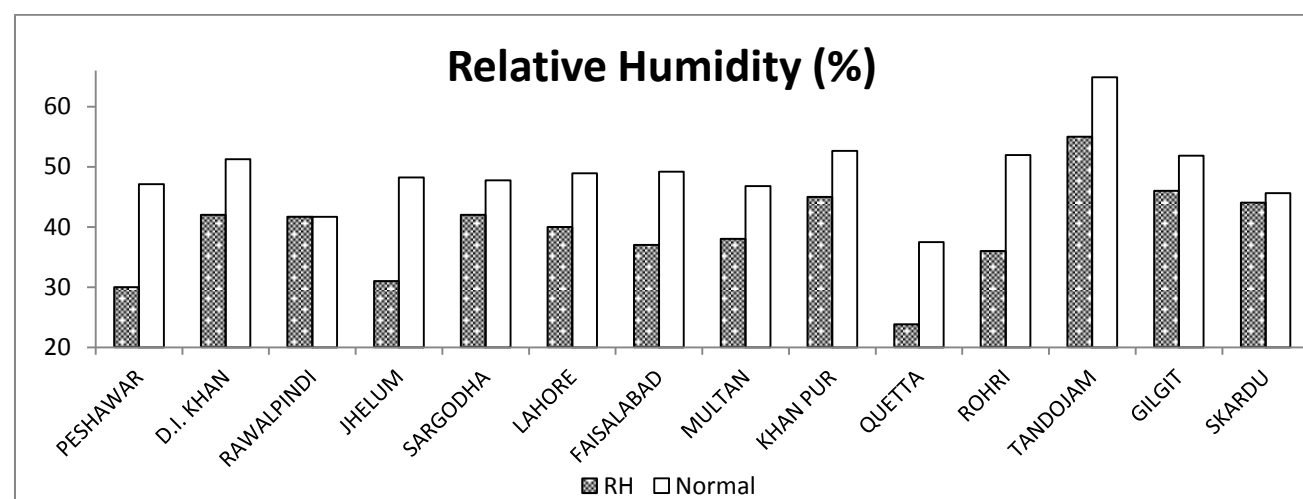
The evaporative demand of the atmosphere represented by reference crop evapotranspiration (ET_o) was mostly observed normal to below normal in the agricultural plains of the country except D.I.Khan and Tandojam where it was observed above normal. The highest value of ET_o was observed at D.I.Khan and lowest value was observed at Gilgit.



Comparison of Actual ET_o (mm/day) during the month of June, 2019 with Normal values

The mean daily Relative Humidity (R.H) remained below normal in the country due to mostly below normal rainfall and clear skies observed during the month.

Maximum value of mean Relative Humidity was observed 55% at Tandojam, followed by 46% at Gilgit while the minimum value was observed at Quetta (24%). Number of days with mean R.H greater or equal to 80% was observed for 01 day at Skardu.



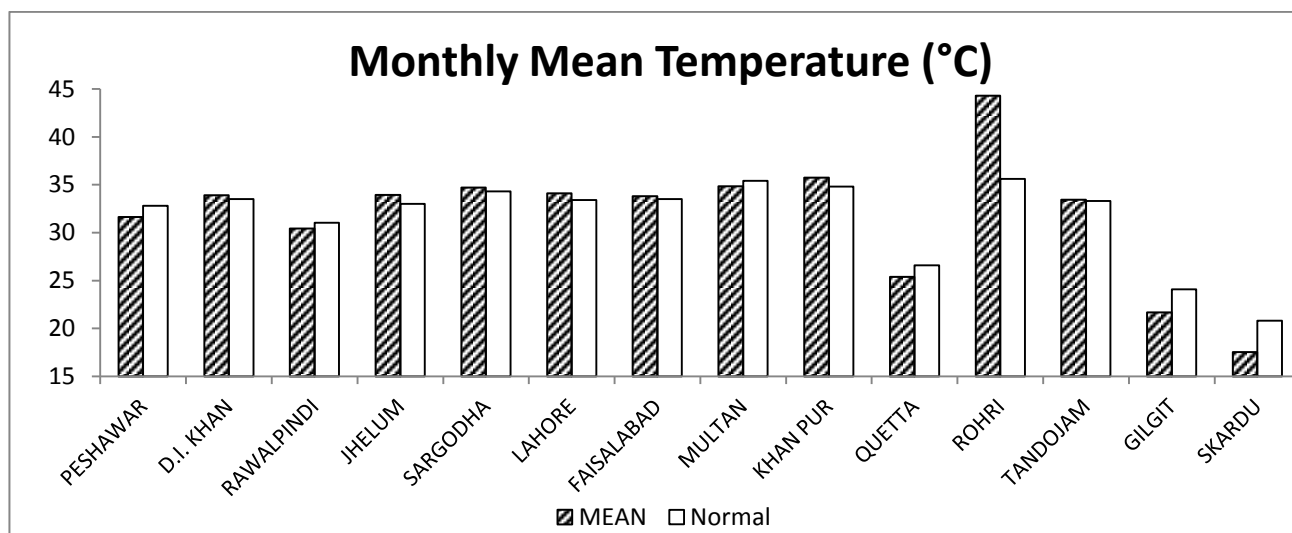
Comparison of RH (%) during the month of June, 2019 with Normal values

The combined impact of below normal relative humidity and below normal ET_o along with satisfactory rainfall in most of the agricultural plains of the country indicates satisfactory moisture conditions. But below normal R.H and rainfall shows some moisture stress in the country. However monsoon rains may help to bring normal moisture condition for standing crops. However hot and wet conditions sometime favor pests attack on standing crops, especially in sugarcane and cotton growing areas. Therefore farmers must be careful about timely and proper use of pesticides to avoid/minimize such losses during monsoon season.

Temperature Regime during June, 2019

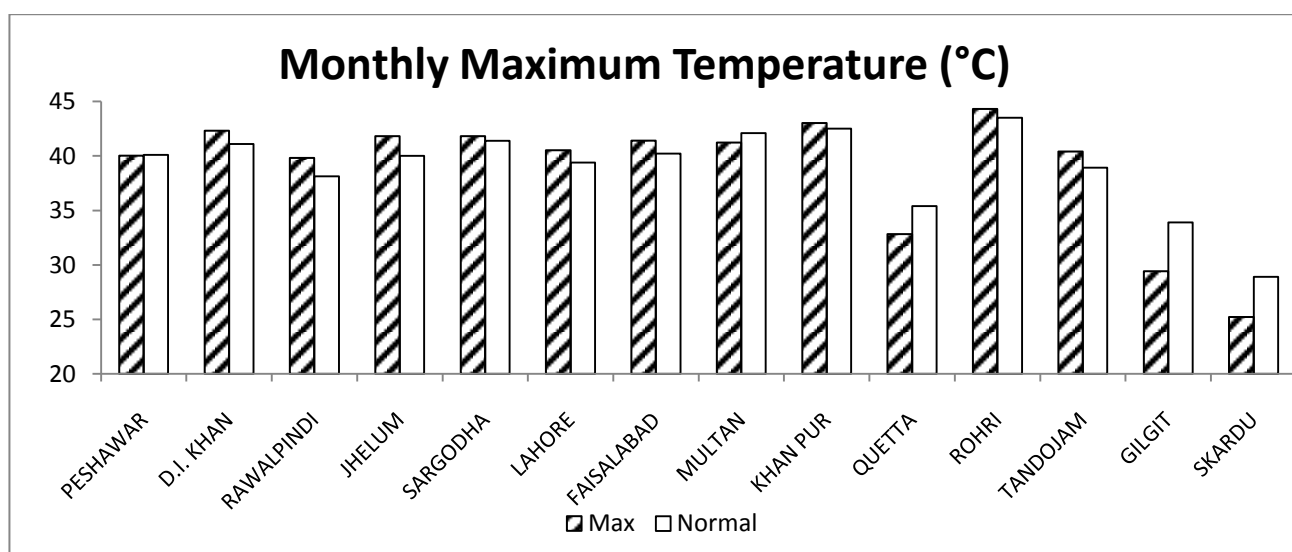
Temperature plays vital role in the growth and development of crops. Thermal regime in this month showed mostly normal to slightly above normal trend in most of the agricultural plains of the country.

Mean daily temperature remained above normal (by 1-2°C) in most of the agricultural plains of the country. Mean daily temperature ranged between 32 to 34°C in Khyber Pakhtunkhwa, 31 to 34°C in Potohar plateau, in remaining parts of Punjab it ranged from 34 – 36°C, 34 to 44°C in Sindh, 18 to 22°C in Gilgit-Baltistan region and it was observed 25°C in the high elevated agricultural plains of Baluchistan represented by Quetta valley.



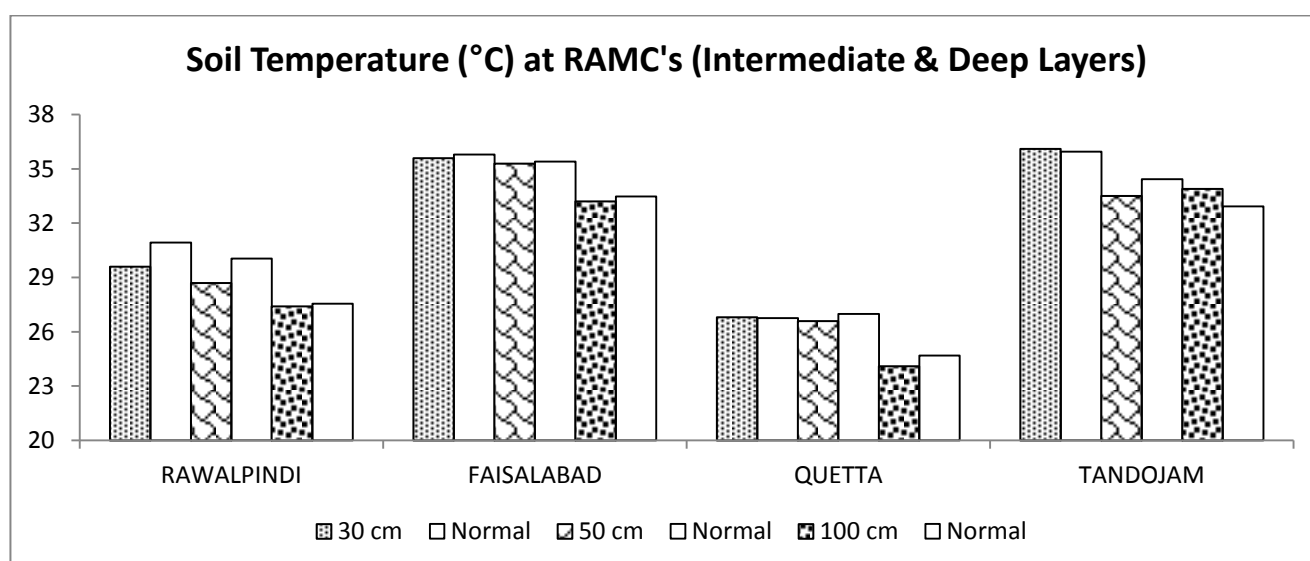
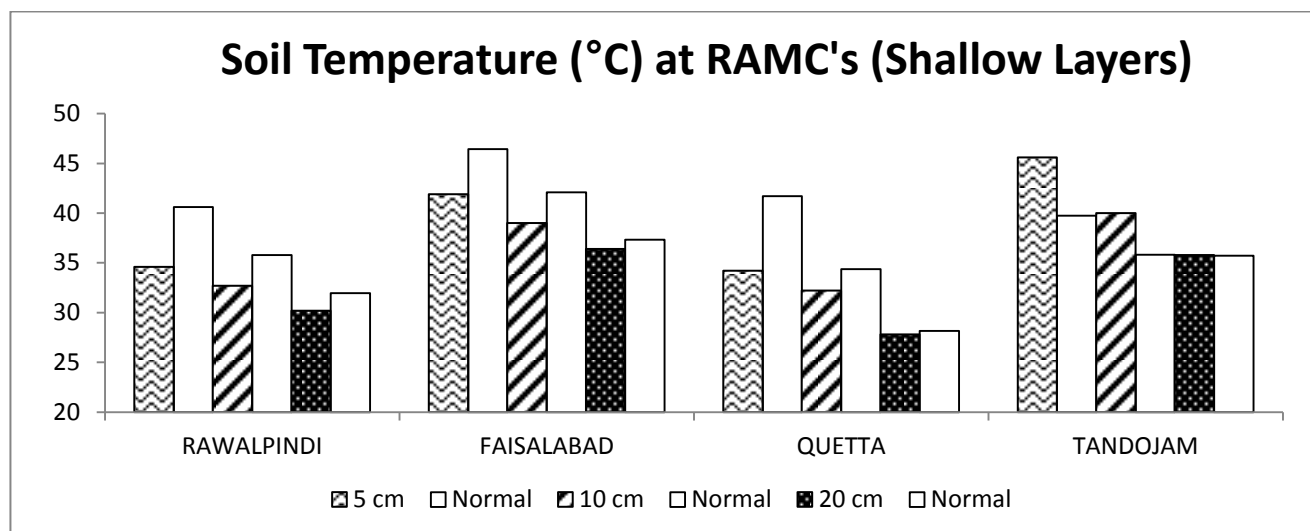
The day time temperature represented by mean maximum also remained normal to above normal by 1-2°C in most of the agricultural plains of the country except GB and Quetta where it was observed below normal. The highest maximum temperature in the agricultural plains of the country was recorded 51°C at Jacobabad. The lowest minimum was recorded at 4.5°C at Bagrote.

Maximum number of stress days with maximum temperature greater or equal to 40°C and R.H less than or equal to 30% was observed 15 days at Rohri, 13 days at Peshawar, 11 days at Faisalabad, Rawalpindi and Jhelum each, 10 days at Multan, 09 days at Khanpur and Lahore and 06 days at D.I.Khan.



Agricultural soils showed cooler trend in most of the agricultural soils in the country, more significant in upper parts of the country as compared to lower parts of the country. However values of soil temperature at different depths observed above normal in Tandojam.

At intermediate and deep layers the soil temperature remained normal to below normal in Potohar region represented by Rawalpindi and central Punjab represented by Faisalabad whereas it showed warmer trend in Sindh represented by Tandojam and in Northern Baluchistan represented by Quetta Valley.



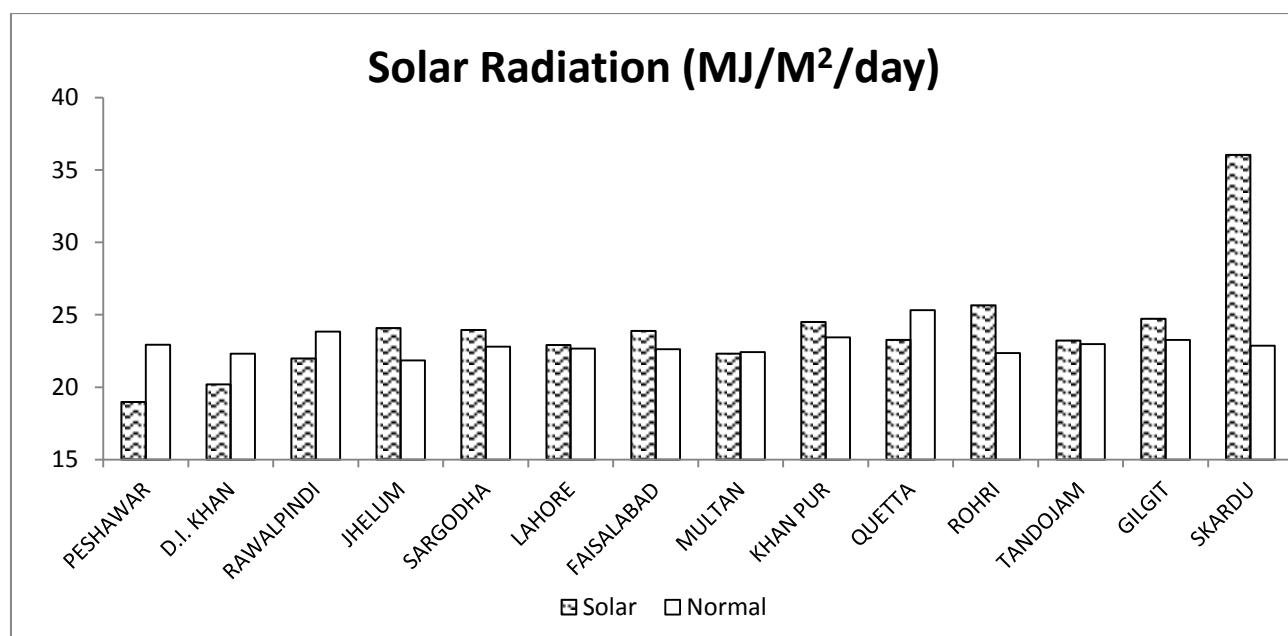
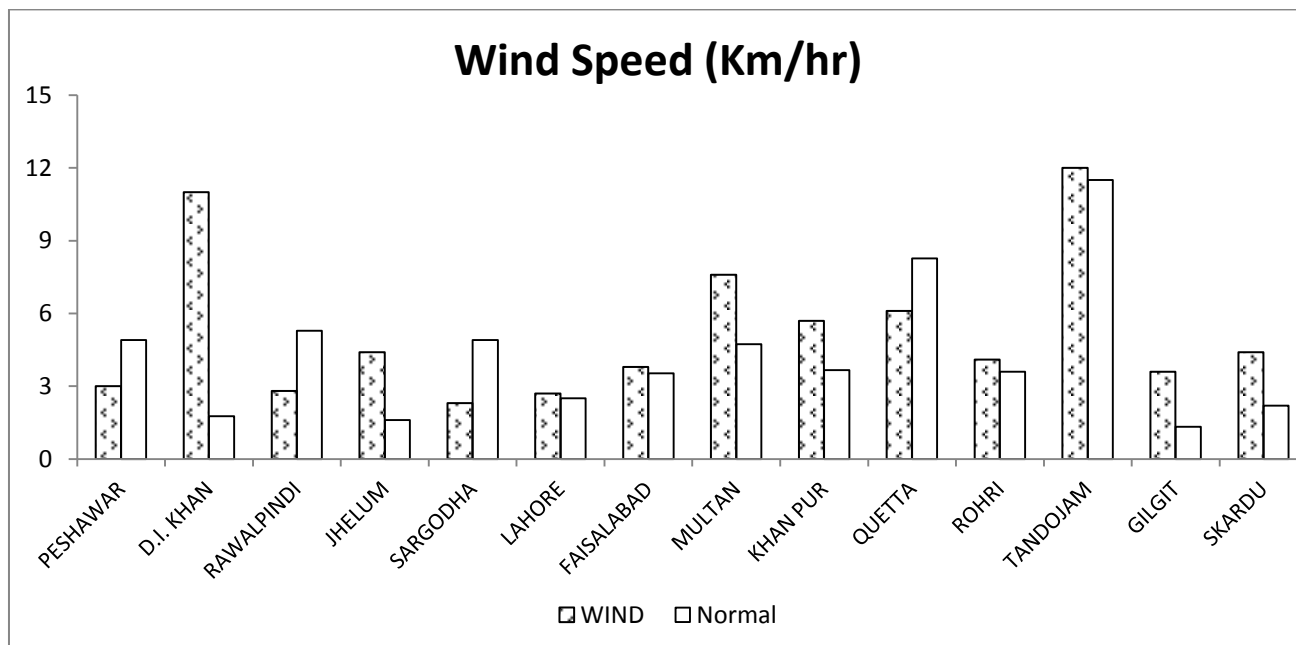
Monthly Mean of Soil Temperature (°C) at RAMCs during the month of June, 2019

From the general analysis of soil behavior it has been observed that this June remained comparatively cooler in upper and central parts of the country and observed warmer in lower parts represented by Tandojam. Soil temperature data also reveal that soil moisture condition is in satisfactory range in most of the agricultural lands of the country, which may further improve during coming monsoon season.

Solar Radiation and Wind Regime during June, 2019

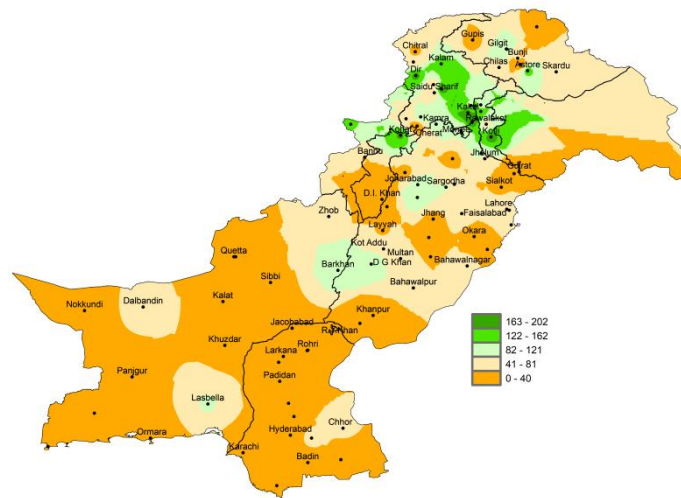
Total bright sunshine hours and solar radiation intensity remained normal to above normal in most of the agricultural plains of the country.

Mean wind speed ranged throughout agricultural plains of the country between 2 to 12 km/h with North-West and South to Southwest trend.

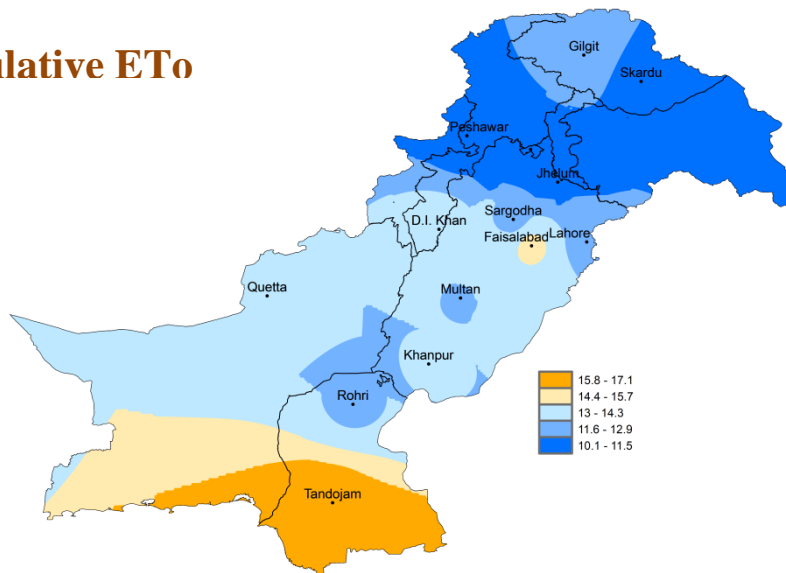


Cumulative Rainfall, ETo and Water Stress for Kharif Season (May-June, 2019)

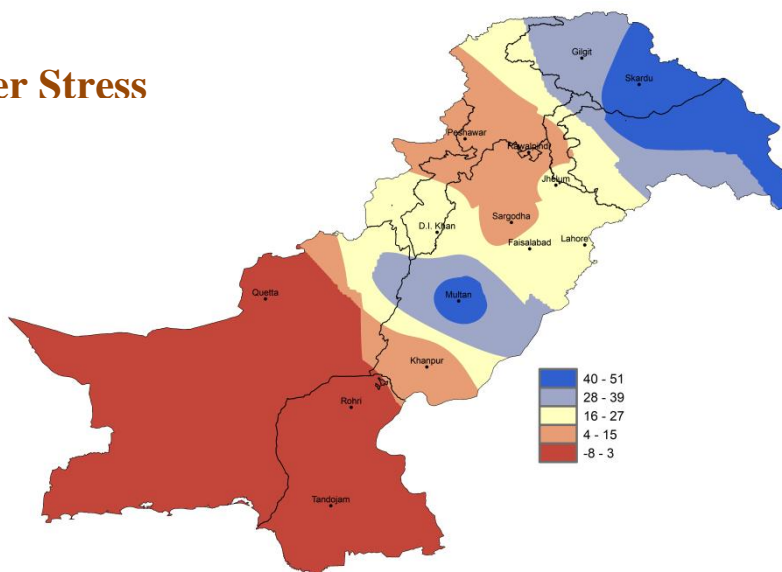
Cumulative Rainfall



Cumulative ETo



Water Stress



Normally Expected Weather during July, 2019

July is generally a rainy month over Pakistan. Monsoon currents invade the northeastern parts, along with southeasterly winds whereas southwesterly flow prevails across the coastal belt. Existence of heat low over Baluchistan and adjoining areas of Sindh and Punjab provides the driving force to monsoon which is now attaining full swing. Monsoon rains is normally during the first week of July. All Pakistan seasonal prediction of Monsoon (July-September) is expected to be +05-15% of the long term average. The probability of occurrence of rainfall on pentade basis over Potohar plains during July is as given below:-

AMOUNT DATES	PERCENTAGE PROBABILITY OF OCCURRENCE OF DIFFERENT AMOUNT OFF RAINFALL IN JULY					
	1-5	6-10	11-16	17-20	21-25	26-31
10 mm	53	53	66	66	75	83
15 mm	49	45	58	65	73	80
25 mm	38	39	47	56	60	75

This year Northern parts of Punjab which forms the monsoon belt are expected to receive 250 mm precipitation, Central Punjab about 200 mm and southern Punjab as well as KPK around 150 mm. Sindh and Baluchistan may get significant amount of precipitation from Agrometeorological point of view during the month. However, areas adjoining the coast would experience July precipitation ranging between 100 mm and 200 mm.

Evaporative demand of the atmosphere is likely to maintain the level of June, which was close to normal. ETo values may range between 5 and 8 mm/day throughout the country with an increasing trend toward south. The mean daily R.H% is also expected to range from 60% to 70% except arid zone where it may be around 40%.

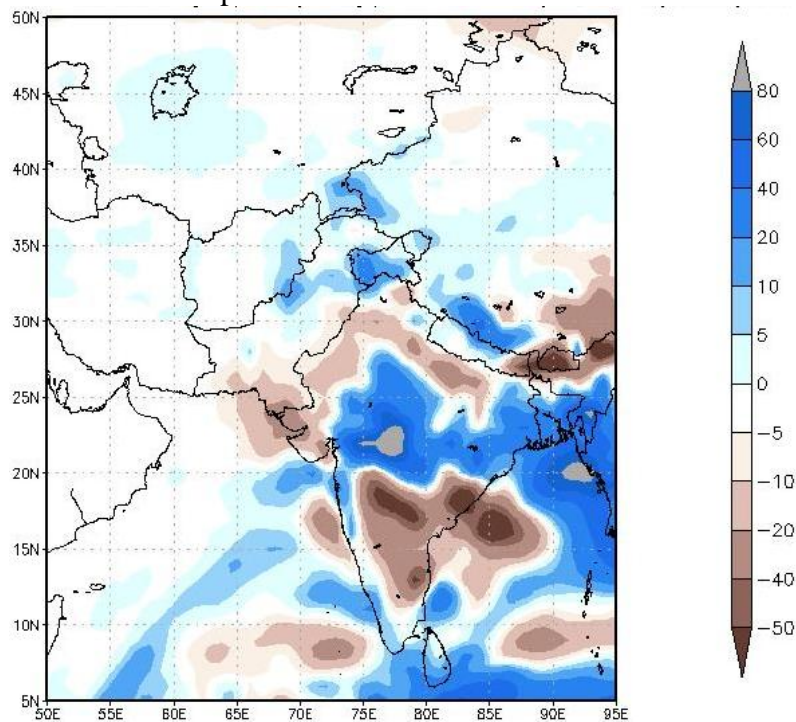
The mean daily temperature is likely to vary from 30 to 34°C over low elevation plains whereas in and around Quetta valley, it may be about 28°C. The mean daily maximum temperatures may range between 35°C and 40°C and minimum temperature 24 to 28°C. The minimum temperature averaged over the month of July may be around 20°C. The occurrence of moderate or severe hygrothermal stress is not expected anywhere in the country because of increasing level of relative humidity due to monsoon air mass.

The water requirement of full-canopied crop is given as under:

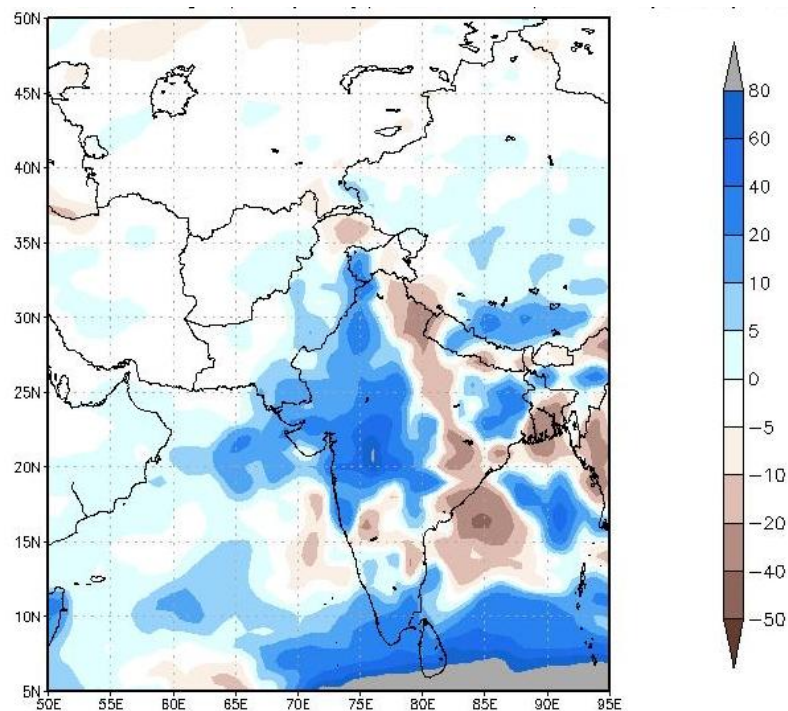
S. No.	Region	Water Requirement	
		(mm)	Cubic Meter/ Hectare
1.	Northern and Central Punjab and Lower KPK	300-330	3000-3300
2.	Southern Punjab and Baluchistan	365-370	3650-3700
3.	Upper KPK	380-385	3800-3850

Monthly Weather Outlook for July, 2019

The outlook for the month of July 2019 shows that normal to above normal rainfall is expected in the upper half of the country with maximum positive anomaly in Kashmir and its adjoining areas. However, below normal rainfall is expected in lower areas of Balochistan and Sindh.



The outlook for the month of August 2019 shows that above normal rainfall is expected in the country with maximum positive anomaly in Potohar region and central Punjab and its adjoining areas. However, normal to below normal rainfall is expected in rest of the country.



Research Findings of AgMIP Pakistan, University of Agriculture Faisalabad

1. 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)
2. There would be significant variability in rainfall patterns (about 25% increase in summer & 12% decrease in winter during 2040-2069)
3. Climate Change will affect the crop yields negatively (about 17% for rice and 14 % for wheat)
4. If there will be no adaptation to Climate Change, majority of farmers would be the economic losers
5. 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 سد باب (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 2014-2012)

جولائی 2019ء میں کاشتکاروں کے لئے زرعی موسمیاتی مشورے

جولائی بھی جون کی طرح سال کا گرم ترین مہینہ ہوتا ہے۔ اس ماہ میں بارشیں زیادہ ہوتی ہیں جو زمینی کٹاؤ کا باعث بنتی ہیں۔ اس لحاظ سے کسانوں کیلئے یہ دشوار ترین مہینہ ہوتا ہے۔ ملک کے زیادہ تر حصوں میں اس مہینے وقفے وقفے سے مون سون کی بارشوں کا سلسلہ جاری رہنے کا امکان ہے۔ پوٹھوہار، بالائی اور وسطی پنجاب، خیبر پختونخوا اور سندھ کے علاقوں میں موسلا دھار بارشیں ہونے کی توقع ہے۔ جس سے پانی کے ذخائر بہتر ہو سکتے ہیں۔ اس صورت حال کو مد نظر رکھتے ہوئے مندرجہ ذیل تجاویز کاشتکار بھائیوں کیلئے پیش خدمت ہیں۔

- ۱۔ فصل کی بوائی سے پہلے زمین کو زیادہ سے زیادہ ہموار کرنے کی کوشش کریں کیونکہ ڈھلوان سطحوں سے پانی زیادہ تیزی سے بہتا ہے۔
- ۲۔ موسم برسات میں زمینوں میں ممکنہ حد تک بل نہ چلائیں اور کاشت شدہ کھیتوں میں کوڑی کرنے سے اجتناب کریں کیونکہ حل چلی زمین کی مٹی پانی سے با آسانی بہہ جاتی ہے۔ جس کی وجہ سے اوپر زرخیز مٹی کی تہ بہہ جاتی ہے جس سے پودے اپنی خوراک حاصل کرتے ہیں۔ اس کا یہ ہرگز مطلب نہیں کہ فصلوں سے جڑی بوٹیوں کو تلف نہ کیا جائے بلکہ زمین کی سطح کی کم سے کم چھدائی کی جائے۔
- ۳۔ اپنے کھیتوں کی وٹ بندی پر اُگی ہوئی گھاس کو اس موسم میں ہرگز نہ کاٹیں کیونکہ یہ پانی کے بہاؤ کے ساتھ مٹی کے بہاؤ کو روکنے میں مدد دیتی ہے۔
- ۴۔ مون سون کے مہینوں میں بارانی علاقوں کے کسان اپنی زمینوں کے بند کو مضبوط بنائیں تاکہ زیادہ سے زیادہ پانی زمین میں جذب ہو کر آئندہ فصل کے لئے استعمال میں لایا جاسکے اور اگر ممکن ہو سکے تو پانی کیلئے تالاب بنائے جائے تاکہ پانی کو موشیوں کیلئے استعمال کر سکیں۔
- ۵۔ کپاس کی کاشت والے علاقوں میں زمینوں سے بارش کے دوران اضافی پانی نکال لیں جو کہ فصل کیلئے نقصان دہ ثابت ہو سکتا ہے۔
- ۶۔ اپنی تمام تر کھیتی باڑی موسمی پیشگوئیوں کے مطابق کریں۔ موسمی پیشگوئیوں کے سلسلے میں اخبار، ریڈیو، ٹیلی ویژن سے مربوط رہیں اور اگر کوئی زرعی موسمیاتی مسئلہ درپیش ہو تو ہمارے مندرجہ ذیل دفاتر سے آپ بخوبی مدد حاصل کر سکتے ہیں۔

۱۔ محکمہ موسمیات، نیشنل ایگرو میٹ سنٹر، پی۔ او۔ بکس نمبر 1214، سیکٹر ایچ ایم ٹی، اسلام آباد۔ فون نمبر: 051-9250299

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۳۔ محکمہ موسمیات، ریجنل ایگرو میٹ سنٹر، نزد بارانی یونیورسٹی، مری روڈ، راولپنڈی فون نمبر: 051-9292149

۴۔ محکمہ موسمیات، ریجنل ایگرو میٹ سنٹر، ایوب ریسرچ انسٹیٹیوٹ، جھنگ روڈ، فیصل آباد فون نمبر: 041-9201803

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۶۔ محکمہ موسمیات، ریجنل ایگرو میٹ سنٹر، ایگریکلچر ریسرچ انسٹیٹیوٹ، ہریاب روڈ، کوئٹہ۔ فون نمبر: 081-9211211

تفصیلی موسمی معلومات کیلئے محکمہ موسمیات کی ویب سائٹ www.pmd.gov.pk ملا خطہ فرمائیں۔

دن بعد لگائیں۔ باقی پانی 15 تا 20 دن کے وقفے سے لگائیں اور وسط اکتوبر سے پہلے آخری آبپاشی کریں۔ آخری آبپاشی کپاس کی قسم اور موسمی حالات کو مد نظر رکھ کر کریں۔
۲: فصل کی کاشت کمپانی کھادوں، آبپاشی اور ہر قسم کمپانی اسپرے سے مثبت نتائج حاصل کرنے کیلئے موسمی معلومات انتہائی ضروری ہے ورنہ فصل کی کاشت، کمپانی کھادوں کے استعمال، آبپاشی اور اسپرے وغیرہ کے نوزاد بعد بارش نقصان کا باعث بنتی ہے۔ اس لئے کسان بھائیوں سے گزارش ہے کہ ہر وقت موسم سے باخبر رہے۔ مندرجہ ذیل فون نمبر پر آپ کو مفت موسمی مشورے مل سکتے ہیں۔

- ۱- محکمہ موسمیات، نیشنل ایگرو میٹ سینٹر پی۔ او۔ بکس نمبر 1214، بیکٹراج ایٹ ٹو، اسلام آباد۔ فون نمبر: 051-9250299
 - ۲- محکمہ موسمیات، نیشنل فور کاسٹنگ سینٹر برائے زراعت پی۔ او۔ بکس نمبر 1214، بیکٹراج ایٹ ٹو، اسلام آباد۔ فون نمبر: 051-9250363-4
- تفصیلی موسمی معلومات کیلئے محکمہ موسمیات کی ویب سائٹ "www.namc.pmd.gov.pk" ملاحظہ کریں

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