# Monthly Agromet Bulletin National Agromet Centre Pakistan Meteorological Department

## Vol: 12-2024

## Highlights...

- Below normal rainfall/dry weather was reported from most parts of the country.
- Thermal regime in this month remained mostly normal to above normal in the agricultural plains of the country.
- ETo remained mostly above normal and R.H observed below normal in most of the agricultural plains of the country.
- Agricultural soils showed mostly normal to warmer trend in the country due to dry weather and above normal air temperature.
- Picking/harvesting/crushing of potato, sugarcane were the major field operations in most of the agricultural areas of the country during the month. Weeds removing practices were also in progress in most of the standing crops especially wheat.
- The outlook for the month of January shows that above normal rainfall (snowfall over the mountain) is expected in upper parts, whereas normal/slightly below normal rainfall is also likely in western parts of Sindh and southern parts of Balochistan.
- During January 2025, above normal mean temperature is likely over all the country.
- Farmers are advised to take care of their nurseries and orchards to maintain the moisture availability and to avoid harmful impacts of freezing temperatures in the areas.

## December, 2024

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## EXPLANATORY NOTE

- 1. This Agrometeorological bulletin is prepared on the basis of data from 14 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 may be (a) because there are no PMD stations in these areas and /or (b) the fact that we had to limit the number of stations due to the requirement of speedy data communication and processing (both of which are important for producing and dispatching timely Agrometeorological bulletins).
- 2. Due to the above, all inferences and conclusions hold true primarily for the above areas and not for Pakistan territory which include areas that may not be very important from the agricultural point of view and the climate of which may not bear directly on agriculture in the major producing areas.
- **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 synoptic weather of the next month.
- 4. Summer Season/ Kharif remains from April/May to October/November and Rabi season from November to April. Mean Monthly Maximum Temperature images are included in summer and Mean Monthly Minimum Temperature images are included in winter in the Bulletin.
- 5. In the tables, the values in the parentheses are based on 1991 to 2020 climate normal. Normal values (in parenthesis) of Soil Temperatures are based upon 10 years data. Dotted line (---) means missing data. Solar radiation intensities are computed from sunshine duration using coefficients developed by Dr. Qamar-Uz-Zaman Chaudhry of Pakistan Meteorological Department.

## Moisture Regime during December, 2024

During this month of December, mostly below normal rains reported from most parts of the country (Fig.1b).

Extreme dry conditions observed over central and southern Punjab, upper parts of KP, Kashmir and south-western and central parts of Baluchistan. (Fig.1a). Maximum number of rainy days were recorded as 03 days at Lahore, Kasur, Sargodha, Sahiwal, D.G Khan, Mianwali, Kalam, 02 days at Dir, Drosh, Gari Dopatta, Kotli, Rawalakot, each. 01 day at Quetta and 02 days at Khuzdar.

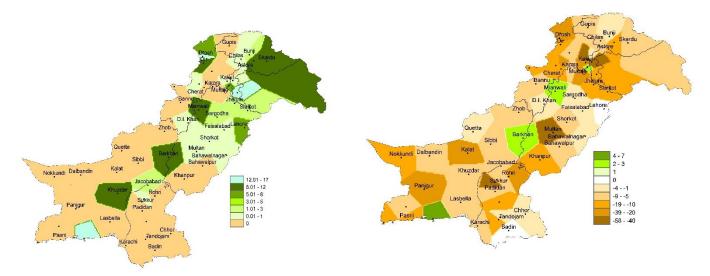


Figure 1(a): Actual Rainfall (mm) during December, 2024

Figure 1(b): Departure of Rainfall (mm) during December, 2024

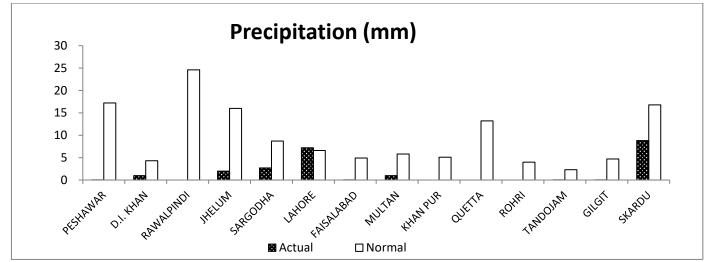


Figure 1(c): Comparison of Actual Precipitation (mm) with Normal values (1991-2020) for selected locations (December, 2024)

S.No	Station	Total Rainfall (mm)
1.	Kalam	33.0
2.	Mirkhani	29.6
3.	Narowal	21.9
4.	Drosh	16.2
5.	Kasur	15.6
6.	Kotli	13.0
7.	Ormara	13.0
8.	Lahore	12.0
9.	Astore	11.1
10.	Sialkot	9.1

Table 1(a): Monthly Total Rainfall Recorded during December 2023

## Moisture Regime during the current months of Rabi Season (October– December, 2024)

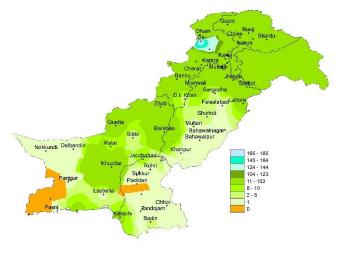


Figure 1(d): Actual Cumulative Rainfall (mm)

December is one of the coldest months of Rabi season. All the seasonal crops including wheat, mustard, grams etc. and vegetables experienced moisture stress due to dry weather especially in rainfed areas. At present, the major agricultural lands hold no considerable reserves of the moisture contents based on the weather conditions in the recent months. Accordingly, the standing crops and vegetable/orchards are growing with moisture stress in most parts of the country (Fig.1d).

\*\*\* Cumulative Rainfall = Sum of the rainfall recorded during Kharif Season i.e. October-December

## **Temperature Regime during December, 2024**

Temperature plays a vital role in the growth and development of crops. Thermal regime particularly the night time temperatures remained normal to below normal in most parts of the country particularly over southern parts of Baluchistan, upper parts of Punjab, upper KP, GB and Kashmir. (Fig.2b). The Lowest temperatures observed over the northeastern parts of the country including Gilgit Baltistan and Kashmir (Fig.2a).

The night time temperature remained mixed trend (at selected locations) with maximum departure of 1.4°C in Punjab, below normal 2.5°C at Rohri in Sindh , 3.0°C at Peshawar in Khyber Pakhtunkhwa, 2.4°C at Gilgit in Gilgit-Baltistan and 1.4°C in Potohar region (Fig.2b).

Mean monthly temperature (at selected locations) ranged between 14 to 15°C in Punjab, 12 to 13°C in Potohar plateau, 15 to 17°C in agricultural plains of Sindh, 12 to 14°C in Khyber Pakhtunkhwa, -1 to 4°C in Gilgit-Baltistan region and it was observed 6.0°C in the high elevated agricultural plains of Baluchistan represented by Quetta valley (Fig.2d).

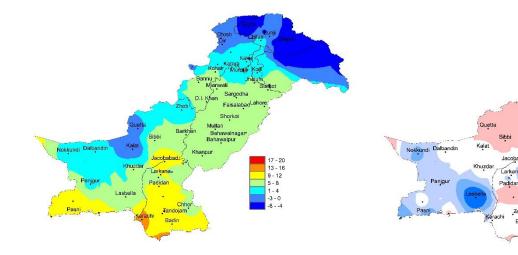


Figure 2(a): Minimum Temperature (°C) during December, 2024

Figure 2(b): Departure of Min Temperature (°C) during December, 2024

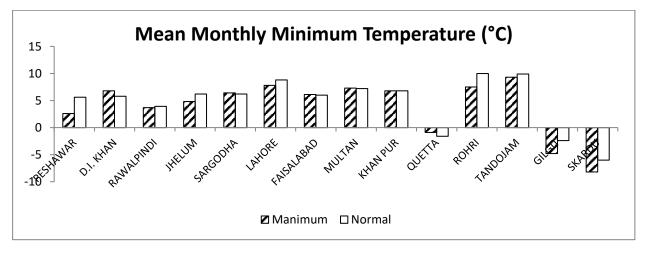


Figure 2(c): Comparison of Actual Minimum Temperature (°C) with Normal values (1991-2020) for selected locations (December, 2024)

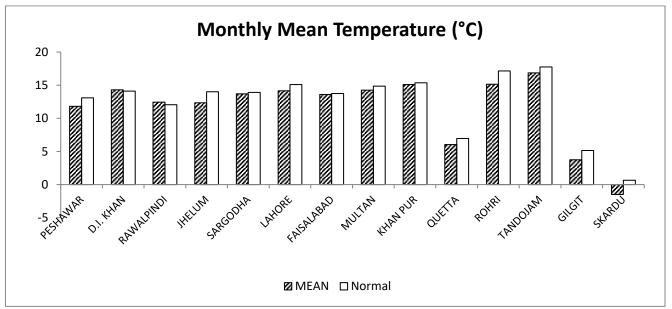


Figure 2(d): Comparison of Monthly mean Temperature (°C) with Normal values (1991-2020) for selected locations (December, 2024)

#### Mean Monthly Minimum Temperature (°C) during Rabi Season (Oct 2024 – April 2025) Dotted Curve: Current months (Oct - Dec, 2024) Plain Curve: Normal values

Plain Curve: Normal values

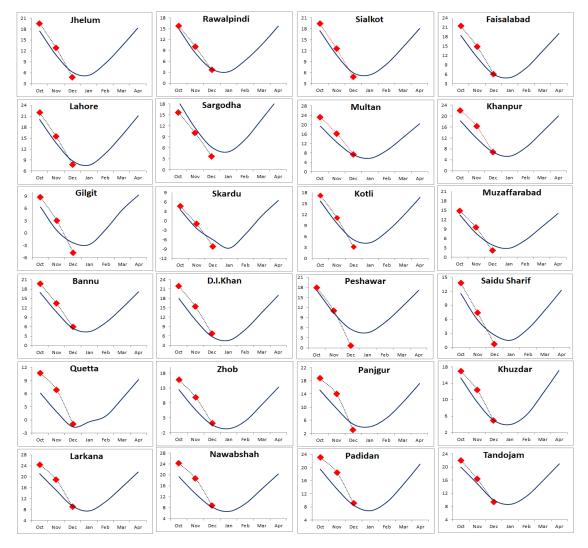


Figure 2(e): Comparison of mean monthly Temperature (°C) with Normal values (1991-2020) for selected locations.

## **Relative Humidity Regime during December, 2024**

The mean daily Relative Humidity (RH) remained below normal over most parts (Selected locations) of the country particularly. Maximum value of mean RH observed as 64% at Jhelum and Sargodha each (Fig.3a). None of the station observed mean RH greater than or equal to 80%.

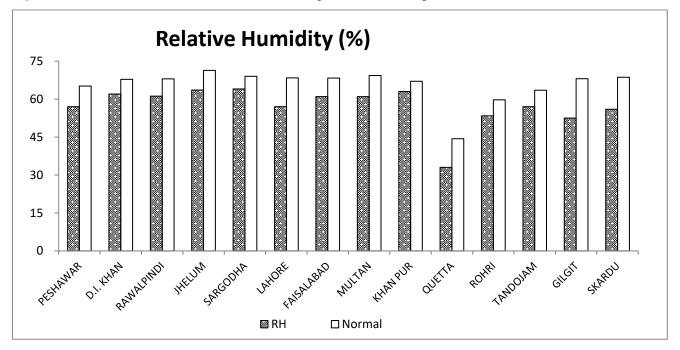


Figure 3(a): Comparison of Actual Relative Humidity (%) with Normal values (1991-2020) for selected locations (December, 2024)

## Wind Regime and Solar Radiation during December, 2024

Mean wind speed at selected locations of the country ranged between 0.2 - 4.7 km/h with southeastern trend. Maximum wind speed recorded as 4.7 km/h at Quetta in Baluchistan (Fig.4a). Total bright sunshine hours and solar radiation intensity remained below normal over the selected locations of lower Khyber Pakhtunkhwa, Potohar region, central & southern Punjab and Sindh. While slightly above normal in Quetta valley and Gilgit Baltistan (Fig.4b).

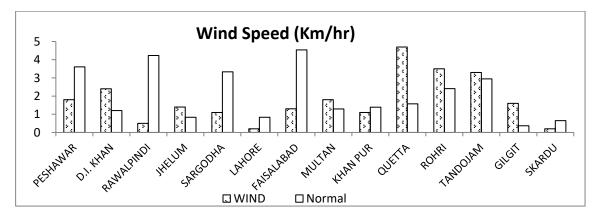


Figure 4(a): Comparison of Mean Wind speed (Km/hrs.) with Normal values (1991-2020) for selected locations (December, 2024)

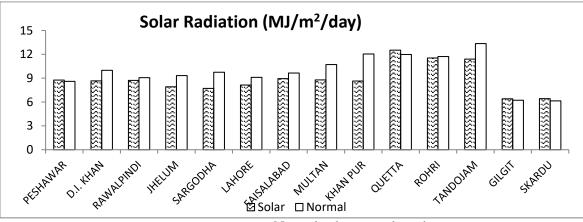


Figure 4(b): Comparison of Sunshine hours with Normal values for selected locations (December, 2024)

## **Reference Evapotranspiration Regime during December, 2024**

The evaporative demand of the atmosphere represented by reference crop evapotranspiration (ETo) remained mixed trend over the country. whereas above normal in Sindh, Balochistan. (Fig.5a). The highest value of daily based ETo (2.9 mm/day) has been estimated for Tandojam in lower Sindh.

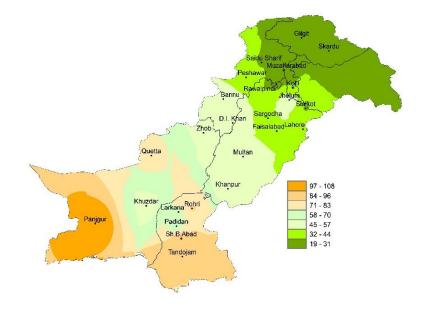


Figure 5(a): Reference ETo (mm) during December, 2024

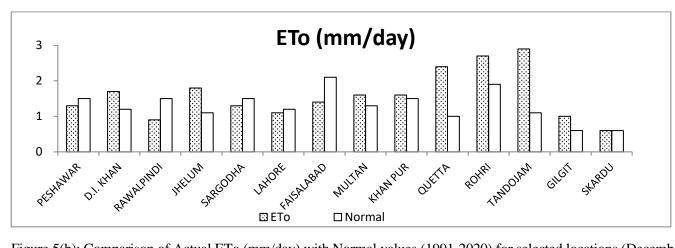


Figure 5(b): Comparison of Actual ETo (mm/day) with Normal values (1991-2020) for selected locations (December, 2024)

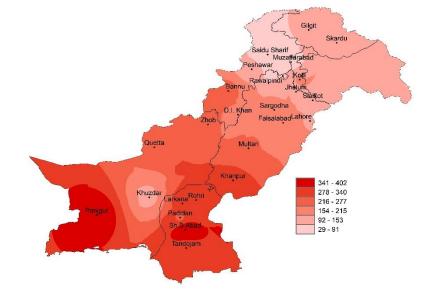


Figure 5(c): Cumulative Water Stress (ETo - Rain) during (Oct 2023- December 2024)

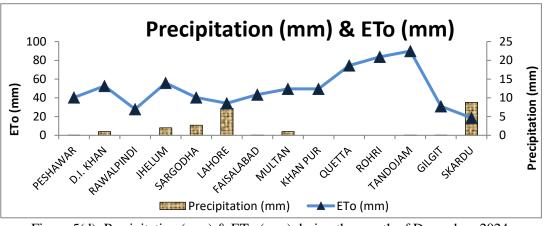


Figure 5(d): Precipitation (mm) & ETo (mm) during the month of December, 2024

It has been observed that water demand through evapotranspiration exceeds the available water supply from precipitation due to which the most parts (selected locations) of country particularly Khyber Pakhtunkhwa, central & southern parts of Punjab, Potohar region, Quetta valley, Sindh and Gilgit

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Baltistan have experienced persistent water deficit during the recent months till December, resulting in deficit soil moisture (Fig.5d).

A water deficit can have significant implications for these regions, including challenges for agriculture, decreased water availability for ecosystems and potential impacts on water resources for human consumption and industrial use. Accordingly, appropriate water management practices should be followed to ensure efficient use and conservation of water resources during such limited water supply conditions. However, it's essential to consider long-term trends and fluctuations to understand the region's overall water balance and potential impacts on the local ecosystem.

#### Reference Crop Evapotranspiration (mm/day) during Rabi Season (Oct 2024 – April 2025) Dotted Curve: Current months (Oct-Dec, 2024) Plain Curve: Normal values

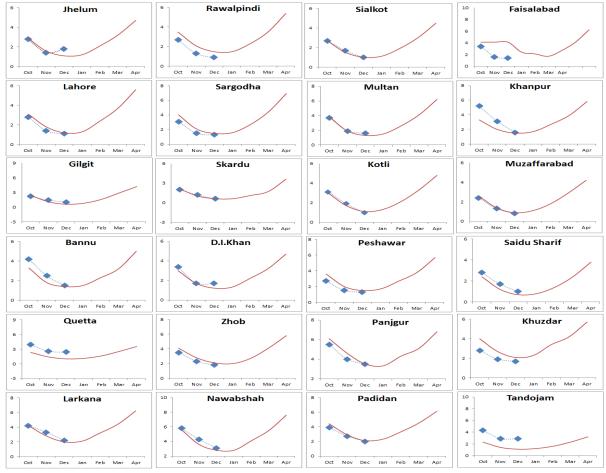


Figure 5(e): Comparison of Actual ETo (mm/day) with Normal values (1991-2020) for selected locations.

## Soil Temperatures during December, 2024

Soil temperature plays a crucial role in agriculture as it directly influences the soil and crop life including the soil health and overall agricultural productivity including seed germination, root development, nutrient availability, water use efficiency, growth and development of plant etc.

Generally, agricultural soils have shown almost above normal pattern in terms of temperatures in most parts (selected locations) particularly in Rawalpindi, Faisalabad, Quetta, Khanpur and Peshawar except the shallow layers of Tandojam where slightly below normal values were recorded. (Fig.6a & 6b).

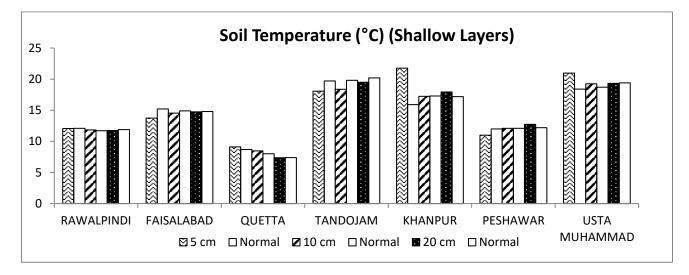


Figure 6(a): Comparison of Actual Soil Temperature (°C) with Normal values (2011-2020) for particular locations (December, 2024)

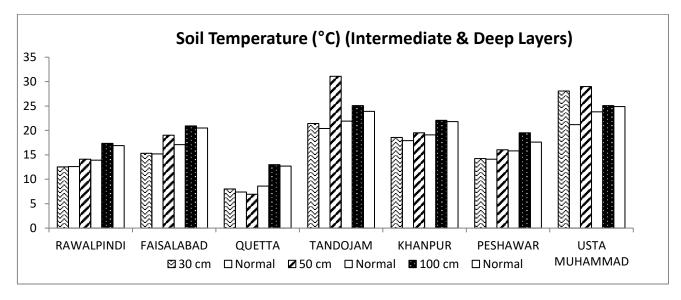


Figure 6(b): Comparison of Actual Soil Temperature (°C) with Normal values (2011-2020) for particular locations (December, 2024)

From the general analysis of soil behavior in this month, it is concluded that most of the agricultural soils (selected locations) have shown warmer trend in recorded soil temperatures. The major Rabi crops and vegetables/orchards have been sown across the country. Farmers are therefore advised to arrange appropriate irrigation for healthier growth of their crops at initial levels.

### **Crops Condition during December, 2024**

Harvesting of sugarcane, seasonal vegetables and picking of seasonal fruits were the major field operations in major agricultural plains of the country including Punjab and Sindh.

In **Punjab:** Major crops in Punjab are wheat, sugarcane, sesame, grams and pulses in particular parts. The growth and development of wheat crop has been observed/reported satisfactory so far in irrigated plains. The condition of sugarcane crop is reported satisfactory and its harvesting is under process. Growth and production of orchards including oranges are satisfactory. Growth of pulses and winter vegetables is reported satisfactory. However, moisture stress is observed due to consistent dry weather conditions, which has affected the growth of standing crops and orchards especially in rainfed areas of the province.

In **Sindh:** The major crops in Sindh are wheat, sugarcane, seasonal vegetables and orchards. The condition of sugarcane crop is reported satisfactory and its harvesting is under process. The growth of wheat, pulses and winter vegetables has been reported satisfactory so far.

In **Khyber Pakhtunkhwa:** Growth and development of all the standing crops reported satisfactory. The major crops in the province are wheat, sugarcane etc. The harvesting of sugarcane is continued. Moreover, condition of orchards including oranges is reported satisfactory in most parts of the province and sowing of winter vegetables is in progress. However, moisture stress is observed due to consistent dry weather conditions, which affected crop growth especially in rainfed areas of the province.

In **Baluchistan:** The growth of crops including wheat, orchards and vegetables has been reported satisfactory so far. The seasonal fruits are being produced and marketed with almost the same pace. However, moisture stress is observed due to consistent dry weather conditions, which affected crop growth in particular parts of the province.

In Gilgit Baltistan: The growth of crops including potato, orchards and vegetables has been reported satisfactory.

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#### Normally Expected Weather during January

As per climatic normal, winter weather systems commonly known "Western Disturbances" as become more active over the country during the month of January. Westerly waves generally weather systems produce (rain and snow) in Pakistan region especially over the upper half and western regions.

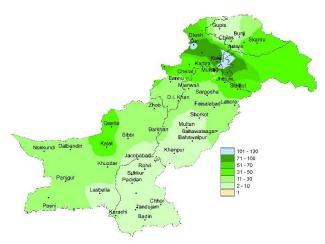


Figure 7(a): Climatic Normal of Rainfall (mm) for January

During January, the particular areas of upper Khyber Pakhtunkhwa along the adjoining areas of Kashmir would receive considerable amount of precipitation. However, fewer rains occur over some lower parts of Punjab and Sindh. (Fig.7a).

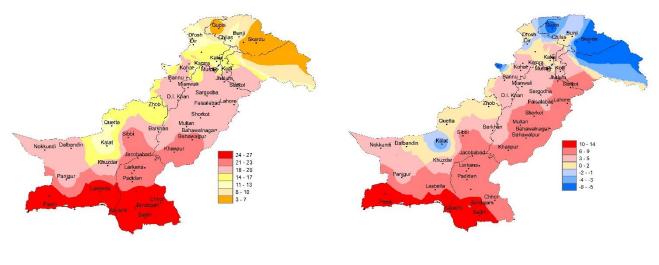


Figure 7(b): Climatic Normal of Maximum Temperature (°C) for January

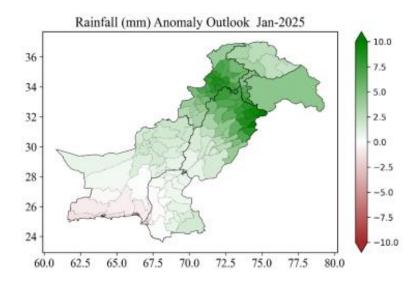
Figure 7(c): Climatic Normal of Minimum Temperature (°C) for January

The air temperatures decrease in comparison to January over the whole country following the seasonal pattern. Both the day and night temperatures (Maximum and Minimum values) lower down in this month. The lowest temperatures are expected particularly over the Gilgit Baltistan and some parts of upper Khyber-Pakhtunkhwa and central Baluchistan especially in Kalat (Fig.7c). On the other hand, the highest temperatures are generally recorded in most of the central to lower parts of Sindh and coastal areas surrounding Baluchistan (Fig.7b). However, the expected situation may be different as per prevailing atmospheric conditions and is discussed in the following pages.

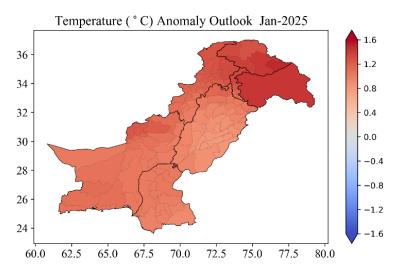
<sup>\*\*\*</sup> Climatic Normal = Average value of 30-years data (1991-2020).

## Weather Forecast for January 2025

During the month of January, above normal rainfall (snowfall over the mountain) is expected over most parts particularly in upper parts, whereas normal/slightly below normal rainfall is likely over the western parts of Sindh and southern parts of Balochistan.



During January 2024, slightly above normal mean temperature is likely over most parts of the country particularly over the northern parts of the country including upper Khyber Pakhtunkhwa and Gilgit Baltistan



# جنوری 2025ء کاشتکاروں کے لئے زرعی موسمیاتی مشورے

د سمبر کے دوران ملک کے زیادہ تر علاقوں میں معمول سے کم بارشیں ہوئیں۔ جنوری کے دوران پورے ملک میں معمول کے قریب بارشیں متوقع ہیں۔ جبکہ وسطی خیبر پختو نخواہ ، شالی اور مشرقی پنجاب میں معمول سے تھوڑی زیادہ بارشیں ہونے کا امکان ہے۔ ملک کے جنوبی علاقوں میں معمول کے قریب بارشوں کی توقع ہے۔

## ماہ جنوری کے دوران کسانوں سے مندرجہ ذیل گزار شات ملحوظ خاطر رکھنے کی گزارش ہے۔

ا – جنوری موسم سرماکا سر دترین مہینہ ہو تاہے اس کے دوران عموماً بالا کی علاقوں میں درجہ حرارت نقطہ ءانجماد سے پنچے چلا جاتا ہے اور بلند پہاڑوں پر بر فباری ہوتی رہتی ہے۔ ۲- کم ترین درجہ حرارت جہاں فصلوں کے لئے نقصان دہ ہو تاہے وہاں اس کے پچھ فوائد بھی ہوتے ہیں۔ جیسا کہ سیب کے لئے شدید سر دی جبکہ مالٹے اور کینووغیر ہ کے لئے بر فباری فائدہ مند ہوتی ہے۔

## الجنہ سی کسان حضرات موسمی حالات سے متعلق مزید معلومات کیلیے محکمہ موسمیات کے قریبی دفتر سے رابطہ کر سکتے ہیں۔

# چلدار بودوں اور زسر یوں کی کورے سے حفاظت

پھلدار پودوں کدمومی اثرات سے بچانے کے لیے احتیاطی تد امیر کاجانتا بہت لا زمی ہے۔ جب رات کوکورا پڑتا ہے تو شنڈک کی وجہ سے یا ٹی جم جاتا ہے تو وہ بلحاظ تجم پھیلنے کے عمل سے پتوں کے خطبے ٹوٹ جاتے ہیں اور بعد میں بیتے مشک ہوجاتے ہیں۔اگر کورے کی شدت بہت زیا دہ ہوتواس سے پودوں کی شہنیاں بھی مشک ہوجاتی ہیں اور پودوں کی، تال تلقی نقصان ہوتا ہے جس سے پیدا داریر می طرح متاثر ہوتی ہے۔سدا بھار پوروں میں آم، کیچی مدینا، کیلا اور لیمن وغیر دکورے سے بےصد متاثر ہوتے ہیں ۔کورا زیا دہتر دسمبر، جنوری اور فروری کے مینوں میں یہ تا ہے کورایٹ نے کاعمل اس وقت شروع ہوتا ہے جب دن کے وقت دھوب یہ نے سے زمین اور بود گرم ہو جاتے ہیں اور گردو پیش کی ہوا گرم ہوجاتی ہے۔ اس طرح با عامت کے اور ایک گرم ہوا کی تہر بن جاتی ہے۔ اور را متاکو بدسلسلہ الٹ ہوجاتا ہے۔ زمین این حرارت مدروتی شعاع کے زریع صاف اور شندے آسان کی طرف خارج کرتی ہے جس سے زیٹن کے قریب کی ہوا تھنڈی ہوجاتی ہے۔ پیشنڈی ہوا گرم ہوا کی نسبت بھاری ہوتی ہے۔اس لئے وہ زیٹن کی سطح کے قریب رہتی ہےاوررات کو بیہوا کورے یا کہر کی شکل افتیار کر لیتی ہے۔ باغبان حضرات کو دسمبر، جنوری اور فروری کے میزوں میں بزا مختلط دہنا جاہے۔ کم سے کم درجہ ترارت معلوم کرنے کیلیج مخصوص جكر جو با في خف بلند مو تحر ما ميثر لكام جائر - ايك تحرما ميثر جاد يكثر رقبه مح لت كافى ب- اكر درد جرارت 0.5 ذكر ك ينتى كريد سے فيجكر جائر تو كوراير ف كى توقع کی جائے ہے۔اگر تھرمامیٹر موجوذ بیں بے تو سادہ طریقے سے بھی کو دارز نے کے بارے معلوم کما جا سکتا ہے۔ اس طریقے میں ایک چوڑے برتن میں آ دھلائچ حکمہ انکی تک پانی ڈال کراہے کھلے کھیت یا باغ میں رکھیں اگر شام تک یا ٹی جمنے لگرتو کورا پڑنے کا اسکان ہوتا ہے۔ تر شادہ پیلوں اورآم کے چھوٹے درختوں کو مردی اور کھر سے بچانے کے لئے جنتر جسے یود کے چھڑیوں کا یود بے کی ٹا مت تک ڈھانچہ بنا کرا س کے اوپر پراٹی یو ٹی کھین سے دھانب دیٹا جاہتے یعض با غمان سلطی کرتے ہیں کہ ڈھانچہ بنا نے بغیر کھور کیا پرال ہے ڈھانب دیتے ہیں۔ پیطر یقد کھیک نہیں ہے۔ کچھ باغمان حضرات آم کے باغ کے گر دکیلا کاشت کردیتے ہیں ایہا کرنے سے بودا کورے کے نقصان سے تو یکی ایسا سے لیکن بودے کی خورا ک کابیشتر صبہ کیلا حاصل کر لیتا ہےاوراً م کے بودے کمز وربوجا تے ہیں۔بعض با غمان حضرات اکتوبر، نومبر میں جارے کی فصل یتنی با جر ہوغیر ہ کاشت کردیتے ہیں اس طرح یود کورے سے ذکاح ہاتے ہیں لیکن بہت سارے اجزاء خوراک جارے کی فصلات کی زرہوجاتے ہیں اور پھلدا ردرختوں کوفائد کی بجائے فتصان پانیتا ہے۔ یودوں کے نچلےصوں پرٹی 2 ٹھا کررکٹیں تا کہ ہا ٹی ننے کونہ لگ سکے اور رات کے وقت اخراج کے لئے یود بے زیا دہ حرارت جذب کرسکیں ۔اگر میانی ( inter cropping) فصل کی کا شت شروری ہوتو جوان یودوں کے پھیلا ڈ کیلیے معقول جگہ چھوڑ دی جائے اور اس میں اچھی طرح عل چلایا جائے۔اگر برسیم کی کا شت کی گڑیوتوا سے ان میٹوں میں زیٹن کے بالکل قریب سے کانا جائے۔ یودوں کے شوں کوسفید کی کی جائے۔ ایسے یود یے جن پر چنوں کی چھتر کی ندنی ہواور کم عمر ہوں ان کے گرد بور بوں، بھور يوں، برالى با پھر يول تھين لپيٹ دى جائے كورے يا كہركى متوقع را توں كوتھيتوں ميں يا فى ديا جائے اس سے امرود، آم اورتر شا ديچلوں كوكورے كم اثر الت ے با آسانی بیلا جاسکتا ہے۔ باغبان حضرات گندم کے بھو سے گھا می پھوس یا کسی ایک چیز پر بھٹی میں استعال شد دفرنس آئل کوجلا کر تخلف جنگہوں پر دھواں پیدا کریں کیکن دھواں معمولی طور پر کم کرتا ہے۔ ہوا تو ڑہا ژوں کا استعال نہ صرف مرد ہوا ڈی سے بچاتا ہے جگہ گرم اور شک ہوا ڈی سے بھی محفوظ رکھتا ہے۔ آم کے کا شتکا رآم کے باغات کو کورے سے بیانے کے لئے فاسلوری والی کھاروں سنگل سر فاسفیٹ جساب 4 تا 6 کلوگرام مارٹر پل سر فاسفیٹ 1 تا2 کلوگرام بلحا طاعر فی بودا ڈالیس اور بوماش والی کھاد ہماب 2 کلوگرام فی یودا ڈالیں میشم،آم، شہتوت اورزیتون کے لیے جلے درختوں کی با ژیں بہت ضروری ہیں۔ انہیں باغ لگانے ۔ دوتین سال پہلے لگا تمیں۔ زیا دہ شنڈک والے علاقوں يعنى يوضوا ريا راوليندى ڈويژن يس تر شاد تھلوں کے يودوں كو يہل ايك دوسال كورے سے بجان كيليج ڈھانيا شرورى بے باغبانوں كوچا بيخ كرديد يوافى وى نشر ہونے والی موسمیاتی رپورٹ سے آگا در ہیں تا کہ قبل از وقت کورے سے بیجا ذکیلیے حفاظتی اقد امات کتے جائمی شمر آور با خات میں میانی فصل (inter cropping) بالکل کا شت نیں کر ٹی چاہئے۔ کیونکہ دن کے وقت وہ زین کو ترارت جذب کر نے نیں دیتیں اور دوسرے کہر کی راتوں کونصائی رطوبت میں اضافہ کرتی ہیں۔ کہر کی متوقع راتوں یں آ بیاشی شرر کریں ۔ پھول نگلنے سے پہلے موسم ہما ریں یو دوں پر مردی ہے متاثر دہٹا خوں کو کاٹ دیا جائے اور زخموں پر بورڈ و پیپٹ لگائی جائے۔

# مضمون کے ماخذ:

" Monthly Zarat Nama, Agriculture Department Govt of Punjab for the period 15-31 Dec, 2012.