WEATHER FORECASTING

Weather forecasts for India are made in advance by the <u>Indian Metrological Department</u> (Pune) and broadcasted through mass media like Radio, Television, and Newspapers etc. **Weather forecasting** is the application of science and technology to predict the conditions of the atmosphere for a given location and time. Forecasting requires knowledge of the average and seasonal weather conditions of the locality and accurate information about the actual weather conditions of the locality with regard to all the weather elements at the time of forecasting.

Types of weather forecasting:

There are four types of weather forecast.

1. Short range forecast

2. Extended forecast

3. Long range forecast

4. Now casting

1. Short range forecast: The daily forecasts of weather are short-range forecasts and are based mainly on current weather data. The influences are based on pressure, and temperature changes and cyclonic tendencies. The short-range forecast of the day-to-day weather is very helpful to Irrigation Engineers, Mariners and aviators: it enables them to take timely precautions in times of storms, cyclones, heavy rains etc; precautionary measures against possible flood and storm damages by providing suitable embankments and drains where necessary. It is valid for <u>24-48 hours</u> with <u>70 -80% accuracy</u>.

Uses

- Scheduling of irrigation
- Adjusting time of agricultural operations.
- Protection of plants from frost

2. Long range forecast:

This is helpful in forecasting weather for the next <u>1-2 months</u>. Long-range seasonal forecasts are useful to enable cropping to be adjusted to the anticipated climate.

Uses

- To decide on soil moisture management
- Decision on selection of crops

- Decision to manage irrigation with limited water supply
- Decide on cropping pattern

3. Extended forecast: It gives emphasis on type of weather, sequence of rainy days, normal weather hazards in farming such as strong winds, extended dry or wet spells and holds good for 5-7 days with an accuracy of 60-70%. It is useful for many agricultural operations such as sowing, spraying, etc.

Uses

- Useful to determine the sowing time
- Useful to adjudge the sowing depth
- Scheduling of harvesting
- Time of spraying of pesticides and foliar nutrition
- Farm management

4. Now casting: Weather forecasting is given 2 to 3 hours in advance. It will be useful for Aviation and Navigation. Now casting which predicts up to 6 hours ahead on the basis of radar and satellite surroundings can predict small and short term phenomena like lighting.

Important points:

- There are about 300 meteorological observation stations of different types distributed over India.

- IMD has six Regional **Meteorological** Centres. These are located in Chennai, Guwahati, Kolkata, Mumbai, Nagpur and New Delhi. There are also **Meteorological** Centres in every state capital (Punjab=Chandigarh).

  Parent: Ministry of Earth Sciences of the **Government** of India.

- **Synoptic chart:** The observations are plotted on a large outline map, which in popular term is called a **weather map** and technically called a **Synoptic chart.**

- When the plotting of synoptic chart is completed, the forecaster then proceeds to the analysis. The first stage of the analysis is to draw the isobars (lines along which the pressure is the same).

AGROCLIMATIC NORMALS FOR FIELD CROPS

Climatic normals means the degree of temperature, amount of rainfall, humidity, etc. which distinguish optimal conditions of growth from those defined as abnormal, both because of excess and insufficiency.

Uses of study of agroclimatic normals for field crops can be as follows:

1. Useful for Agricultural Planning

2. Useful in introduction of any crop. If the climate in which a crop is introduced matches to the requirements of the crops, then the benefit will be the maximum.

3. Useful to forecast the abnormal weather.

Climatic normals for crop plants:

- **TEMPERATURE**

Crop	Optimum temperature (℃)
Rice	21-37
Wheat	20-25
Maize	21
Potato	17-19

- **MOISTURE**

Water Requirement of Different Crops

Sl.No.	Crops	Water Requirement (cm)
1	Rice	90-250
2	Wheat, Sorghum, Soybean, Tobbaco	45-65
3	Maize, Groundnut	50-80
4	Sugarcane	150-250
5	Soybean	45-70
6	Cotton	70-130
7	Potato	60-80

Critical Stages of Crops for Irrigation

Cereals:

1. Rice : Tillering, Panicle Initiation, Heading and Flowering
2. Wheat : CRI, Tillering, Late jointing, Flowering, milking and dough stage
3. Maize : Tasseling and Silking to Dough Stage
4. Sorghum : Booting, Blooming, Milking and Dough Stage
5. Pearl millet : Heading and Flowering
6. Finger millet : Primordial Initiation and Flowering

Pulses:

1. Chickpea : Late vegetative phase and Pod development
2. Pea : Flowering and Early pod formation
3. Blackgram : Flowering and Pod setting
4. Greengram : Flowering and Pod setting
5. Lucern : After cutting and Flowering
6. Beans : Flowering and Pod setting

Oilseeds:

1. Groundnut : Flowering, Peg formation and Pod development
2. Soybean : Blooming and Seed formation
3. Sunflower : Buttoning, Knee high, Flowering and Early seed formation
4. Sesamum : Blooming to Maturity

....

CLIMATE

Rainfall(mm)	Name of the climatic region
Less than 500	Arid
500-750	Semi-arid
750-1000	Sub-arid
More than 1000	Humid

Scales of climate and their importance:

i) Microclimate

Microclimate deals with the climatic features specific to small areas and with the physical processes that take place in the layer of air very near to the ground. Soil-ground conditions, character of vegetation cover, aspect of slopes, and state of the soil surface,

relief forms – all these may create special local conditions of temperature, humidity, wind and radiation in the layer of air near the ground which differ sharply from general climatic conditions. One of the most important tasks of agricultural meteorology is to study the properties of air near the ground and surface layer of soil, which falls under the micro climate.

ii) Meso climate

The scale of meso climate falls between micro and macro climates. It is concerned with the study of climate over relatively smaller areas between 10 & 100 km across.

iii) Macro climate

Macro climate deals with the study of atmosphere over large areas of the earth and with the large scale atmospheric motions that cause weather.