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WMA 507: AGROMETEOROLOGY IV

THE NEED FOR QUANTITATIVE ASSESSMENT OF THE PLANTS ENVIRONMENT

Plants are relatively immobile but the environment about the plants changes markedly and frequently too. The plant environment is made up of the soil, physiography, and the biotic and climatic factors. The magnitudes of the variation of each of these components are not the same. For instance the variation in the climatic component is more marked both in terms of its variation, over time and space.

Generally, the climatic parameters involved in the assessment of the plants environment are rainfall, relative humidity, evaporation, evapotranspiration, radiation photoperiod and to a lesser extent wind and pressure and also depending on latitudinal location, snow, frost, hail and fog.

The verification of an area in terms of the climatic attributes rests on routine and accurate measurement of the climatic elements mentioned above. Different instruments are used for such measurements and for some parameters, requiring highly sophisticated equipment that may not be easily acquired. For use empirical formulae are used to derive estimates.

The various climatic elements and the instruments used can now be itemized

CLIMATIC ELEMENTS

- Rainfall
- Temperature
- Relative humidity
- Radiation
- Photoperiod
- Evaporation
- Evapotranspiration
- Potential evaporation
- Wind pressure

Method of analysis in agro meteorological research is statistical or in some cases mathematical – statistical.

Statistics have been divided into the following main types:

- Sampling statistics

- Descriptive statistics
- Inferential statistics

Each of these types has a different purpose but each is applicable to many different kinds of data. Some methods are suitable for data on the nominal or ordinal scales while others are applicable for data.

Dispersion and further moment measures describe the spread of the values in a sample.

SAMPLING

One of the objectives of sampling is to obtain a representative group of the total population often with the smallest group that will give the desired reliability in the results.

SAMPLING PLAN

The main principle of which sampling plans are set is that bias should not be allowed to enter the sampling procedures.

SAMPLING METHODS

The following sampling methods have been used extensively

- i. Probability or random sampling
 - Simple random sampling
 - Stratified random sampling
- ii. Systematic sampling
- iii. Nested or multistage sampling

NUMBER IN SAMPLE

We can calculate the number of values in a sample to give a specific confidence level from the results obtained by taking an experimental sample.

INFERENCE STATISTICS

Inferential statistics involves formulation of hypotheses concerning the data collected and testing the validity of the hypothesis by various statistical methods.

Two types of error can occur in this procedure. These are Type I Error and Type II Error. Type I Error occurs when the hypothesis is rejected when it is true.

Type II Error occurs when the hypotheses is accepted when It is false.

ASSESSMENT OF AGROMETEOROLOGICAL INDICES FOR AGRICULTURE

- Definition of the agro metrical indices
- Moisture – based indices
- Thermal – based indices