

- (4) By Duvdevani dew gauge,
- (5) By Sensitised paper,
- (6) By variation of electrical resistance,
- (7) By variation of electrical capacity.

Mr. Collins gave an account of the work being done at Apsendale on the estimation of dew and prediction of the time of onset of dew.

26 November 1959

The Problems of the Agriculturist in Requirements of
Meteorological Information

by H.C. Forster

Professor Forster of the School of Agriculture, University of Melbourne had originally intended to speak on "the Importance of the Meteorologist in Agricultural Research", but said he had decided to change the subject of his talk.

He stated that a wider field of meteorology besides micro-climatology was required by agriculturists. He said he would first discuss the common problems of agriculturists and then the tables and data they required from the meteorologists.

Professor Forster outlined the processes involved in plant development and the vital importance of rainfall in providing moisture round the roots of plants for these processes. The information required regarding rainfall was amount, distribution and variability. Incidence was important because heavy rain caused erosion while rain less than 0.05 inch was insufficient to wet the soil. Distribution was important because rain at the beginning and end of the growing seasons were crucial for crops. Droughts were an important feature of variability because of its effect on plants in various ways.

Humidity is more important for animals and humans but it affected plants only indirectly through evaporation. It is also important in consideration of certain plant diseases and in certain phases of the life cycle of some insects.

Temperature is also important for growth in plants because no growth takes place when the temperature is below approximately 42°F. However, maximum and minimum temperatures are not significant for the processes of plant growth. The duration of solar radiation and not its intensity is important for maximum plant growth.

The ratio of night to day temperatures controls growth through the production of hormones, provided they are within the critical range. The seasons of vegetative growth and reproductive growth vary in different plants and it is the ratio of length of day to length of night at these seasons, and not the intensity of sunlight, that controls growth.

Frosts, high temperatures and high winds cause damage to plants. Dew on the other hand is important, particularly in arid areas. A knowledge of the probability of rain at the time of hay-making is important because of the damage rain could cause to hay.

Professor Forster discussed the effect of high temperature on animals and humans. He next went on to the classification of climates and the type of data required for deciding the type of crops suitable for planting in different areas. The frequency of crises is more important than averages and modes. The duration of temperatures above 42 F, which controls growth, is more important than maximum and minimum temperatures.

Temperatures of the soil, for estimating root activity, and at crop height, for growth above ground, are required. Evaporation from actual crops and measurements of moisture in soil, are also required. This information is required in the search of homoclines for satisfactory cultivation of plants which could be introduced from the northern hemisphere.

Dr. Forster concluded by discussing the importance of forecasts to farmers, as farming was a gamble owing to the uncertainties in weather. Failure of rains in the growing season or long droughts could ruin crops. In this connection the rain making experiments of the C.S.I.R.O. are of interest to agriculturists.

The short term forecasts of the Bureau were good and useful for haymaking and other purposes, but long term forecasts were an urgent necessity for farmers. He commended work in the field of long range forecasts, particularly that of Cornish on periodicity.