

The Importance of Methods in Horticultural Research

S Eswara Reddy*

Professor (Former) of Horticulture, University of Gondar, Ethiopia

***Corresponding Author:** S Eswara Reddy, Professor (Former) of Horticulture, University of Gondar, Ethiopia.

Received: December 03, 2018; **Published:** December 18, 2018

Abstract

There is a need for appropriate methods of research in Horticulture. The researchers need to be skilled in techniques employed and instruments used to make the data error free. Better statistical tools need to be employed to make the data acceptable for publication.

Keywords: Horticultural; Research

Introduction

Horticulture is the science and technology of farming certain groups of crops. It includes production and utilisation of these crops. The crops themselves are diverse comprising perennial trees, shrubs and annual vegetable and flower crops. The aspects of research are even more varied involving agronomy, plant protection, breeding, marketing, processing and exporting. Higher research in horticulture probing into the basic features of these crops and their response to changes in the environment involves knowledge of many basic disciplines like cytogenetics, crop physiology, biochemistry, mycology, entomology, engineering and statistics as also humanities like economics, extension education, and aesthetics. No other branch of agriculture and no other discipline is so exacting in its demands on the versatility of the research worker as Horticulture.

Discussion

Scientific research in horticulture rests on four bases. (i) Recording observations on a sample (ii) Estimating the probability of their being in conformity with the characteristics of the population, (iii) Formulation of hypotheses and (iv) Testing them by experimentation. Hypothesis is a prediction and application are an experiment for testing it. The first two bases form the feed in and the second two bases form the output of research. The hypothesis and its application are dependent on the accuracy and skill displayed in the observation and estimation of its repeatability. Therefore, the quality and utility of research in horticulture rests on the attention paid to these two inputs of research.

Estimation of repeatability of observations made is taken care of statistics. A good knowledge of applied statistics is, thus an essential equipment for starting research work but can't carry out these functions mechanically with soft wares available, without understanding the broad rationale of the mathematical procedures. Very often the statistician would need to be enlightened on the objectives of the study, as also the characteristics of objectives under study in order to make a wise choice of statistical techniques. Besides, a horticultural worker should have enough knowledge to choose procedures more appropriate for his fruit trees which are perennial and large. No data are accepted for publication unless they have been subjected to statistical scrutiny, whatever their possible value in application and utility.

Observation is the first step in research. An observation can be qualitative or quantitative. Qualitative observations are very often subject to subjective bias and lack precision. Such are the characters like colour, flavour, smell and taste. Many attributes which were once described qualitatively have since been quantized, making description more accurate. For example, colours are now precisely recorded in terms of wave length of transmitted or reflected light. Taste is described in terms of acidity and total soluble solids both of which can be measured quantitatively.

Measurement makes observation more objective and accurate. Most measurements are made indirectly by the use of physical methods. This pulls down the walls of that isolated the biologists from the physical scientist. No higher research in biology is conceivable without employing physical methods of analysis.

The measurements depend upon the specific reactions of pure substances. But in the plant substances are in association with innumerable other organic materials from which they first need to be isolated before being exposed to specific reagents. The chemistry of isolation and purification should thoroughly be understood in order to rely on the method. A blind adoption of a method used in one plant may lead to erroneous results in another plant.

Many of the measuring instruments are electronic. Their calibration and standardization call for a reasonably good knowledge of their working. Otherwise, simple faults could lead to vastly erroneous conclusions. Further, such knowledge will help using the equipment for new objectives as situation arise. Every horticulturist who intends using physical and chemical methods of analysis should have a training in the basic principles underlying their operations.

A scan through 180 research papers in Horticulture published in EC Agriculture picked up at random, showed that 39 papers embodied works of other disciplines like Entomology, Plant Diseases, Cytology, and Marketing, the plant being horticultural. About 30 percent of the papers related to the agronomy of the crops involving field or green house studies with simple observations and chemical analyses of major nutrients and measurements. About 60 percent of the papers reported the use of techniques which needed special training [1-3].

The techniques used by them could broadly grouped as

1. Plant Micro techniques
2. Controlled atmosphere and gas analysis
3. Colorimetry
4. Bioassays of growth substances
5. Chromatography of all types
6. Tracer isotope techniques
7. Spectro photometry
8. Tissue culture etc.

The above methods have used various instruments.

This clearly underscore

1. Higher research in horticulture calls for a deep knowledge of a wide range of disciplines.
2. It involves use of diverse techniques and instruments requiring special training.

Conclusion

1. All Horticultural research workers need to have good knowledge of statistics and no experiment should proceed without the clearance from statistician to merit the results for publication.
2. The experimental techniques employed must be clearly understood for better utilisation in the research work with maximum output.
3. The basic principles in the use of instruments used in the research should be understood and applied for getting effective data.

Bibliography

1. EC Agriculture.
2. Gomez KA and Gomez AA. "Statistical Procedures for Agricultural Research" (2009).
3. Kothari CR and Gaurav G. "Research Methodology: Methods and Techniques" (2018).

Volume 5 Issue 1 January 2019

© All rights reserved by S Eswara Reddy.