

PDF - A SURVEY ON SOIL TESTING SERVICES AWARENESS: CASE STUDY OF MIKANG L.G.A.
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CHAPTER ONE

INTRODUCTION

BACKGROUND OF THE STUDY

Soil testing is a set of various chemical processes that determine the amount of available plant nutrients in the soil, but also the chemical, physical and biological soil properties important for plant nutrition, or "soil health". Chemical soil testing determines the content of basic plant nutrients; nitrogen (N), phosphorus (P_2O_5), potassium (K_2O), pH, humus content, total $CaCO_3$, available lime, organic matter, total sulphur (S), trace elements, and other physical characteristics (capacity, permeability, density, pH – value). Soil testing processes involves: i. Taking soil samples, ii. Laboratory analysis of samples and iii. The interpretation of the results by the issuance of fertilizer recommendation. The importance of this soil testing is to know the previous fertilizer and lime applied, the cropping history, • nutrient contents of the parent materials, and losses of surface soil through erosion. Soil testing had its beginnings sometimes after the acceptance of the mineral theory of plant nutrition. In its broadest sense soil testing includes a thorough inventory of the soil properties including primary and secondary minerals, particle size, exchange capacity and adsorbed cations, organic; latter, etc. One cannot apply simple soil tests without at least a general knowledge of the range of the important parameters of the soils to which the soil test results are to apply. In the more restricted sense and the commonly understood one, soil testing consists of some biological or chemical test that can be used as an index of nutrient availability. This nutrient may be native or residual from past fertilizer or manure applications. This index of nutrient availability only indicates what is present or likely to become present during the growing season. How much and what kind of fertilizer to apply involves judgements as to probable yields, effectiveness of the fertilizer and other variables mentioned earlier. Biological soil tests have included various kinds of pot or container tests using rye, sunflower, lettuce and other plants and fungi such as *Aspergillus* spp. or bacteria such as *Azotobacter*. The most complex of the biological tests was the Mitscherlich one from which inferences could be drawn not only as to nutrient availability; but the response of the soil and the crop to fertilization. Those from Western Europe know how many hundreds of thousands of such tests have been done. Most biological tests are slow and time consuming. They have fallen from favour because of the lower cost and greater rapidity of chemical tests. A chemical test is the measurement of ions in a solution extracted from the soil either without prior incubation of the sample as for P, K, etc. or after incubation as for nitrate production.

1.2 STATEMENT OF PROBLEM:

Although soil testing services is a powerful tool to support high productivity by way of rationalizing nutrient use, its current impact on farm practice is presently not visible. In order to make it an effective and farmer oriented service, it is important to expand the arena of soil fertility evaluation beyond NPK, the pH of the soil and fertilizer recommendations for high yield targets, involving all deficient nutrients and exploiting important positive nutrient interactions. Although, inorganic nutrient availability alone will not offer a complete assessment of soil fertility or soil biological influences on important soil properties and processes that affect crop yield and environmental quality. Soil testing could be elevated to a more holistic evaluation of soil fertility and health with the adoption of a test for soil biological activity.

1.3 AIMS OF THE STUDY

The major purpose of this study is to examine soil testing services awareness. Other general objectives of

the study are:

1. To determine the level of availability of nutrients in the soil.
2. To examine the increase in yields and profitability of fertilization.
3. To examine the basis of calculating the required fertilizing of each crop.
4. To examine whether soil testing services affects soil biological activity.
5. To determine the relationship between supply of nutrients and nutrient management in the soil
6. To suggest ways in which soil testing can help improve yields.

1.4 RESEARCH QUESTIONS

1. What are the ways to determine the level of availability of nutrients in the soil?
2. How can increase in yields and profitability of fertilization be predicted?
3. What are the bases of calculating the required fertilizing of each crop?
4. How do soil testing services affect soil biological activity?
5. What is the relationship between supply of nutrients and nutrient management in the soil?
6. What are the ways in which soil testing can help improve yields?

1.5 RESEARCH HYPOTHESIS

Hypothesis 1

H₀: There is no effect of soil testing on the availability of nutrients in the soil.

H₁: There is a significant effect of soil testing on the availability of nutrients in the soil.

1.6 SIGNIFICANCE OF THE STUDY

Soil testing services at state-sponsored and private laboratories have historically focused on total soil organic matter, chemical soil indicators of inorganic N, P, and K, soil pH, and various other macro- and micronutrients to assess nutrient availability to crops. Soil health evaluation describes soil functioning to cycle nutrients, decompose organic amendments, and catalyze and stabilize a variety of soil microbial processes, as well as the criteria for soil testing of being rapid, inexpensive, reproducible, suitable for a wide range of soils, and correlating to nutrient needs of crops and meeting environmental goals.

1.7 SCOPE OF THE STUDY

The study is based on a survey on Soil testing services awareness, case study of Mikang L.G.A, Plateau State

1.8 LIMITATION OF STUDY

Financial constraint– Insufficient fund tends to impede the efficiency of the researcher in sourcing for the relevant materials, literature or information and in the process of data collection (internet, questionnaire and interview).

Time constraint– The researcher will simultaneously engage in this study with other academic work. This consequently will cut down on the time devoted for the research work.

1.8 DEFINITION OF TERMS

Soil: The upper layer of earth in which plants grow, a black or dark brown material typically consisting of a mixture of organic remains, clay, and rock particles.

Testing: In general, testing is finding out how well something works. The means by which the presence, quality, or genuineness of anything is determined; a means of trial. Awareness: Having knowledge that something exists, or understanding of a situation or subject at the present time based on information or experience.

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