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Soil Test Crop Response (STCR)

LECTURE 12



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12.1 Introduction

- Soil test crop response (STCR) study based on soil test based fertilizer recommendation should be carried out to develop quantitative basis for calculating the profit maximizing dose of fertilizers based on soil test for any crop.



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12.2 What is Soil Test Crop Response

- Soil testing is a rapid chemical analysis to access available nutrient status of the soil and includes interpretation, evaluation and fertilizer recommendation based on the result of chemical analysis and other considerations.
- A chemical method for estimating the nutrient supplying capacity of a soil.
- It can determine soil's nutrient status before a crop (field, vegetable, ornamental) is planted.



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12.3 Objectives of STCR

- To study the relationship between soil test values for available N, P, K and yield response to important crops.
- To derive yield targeting equations for important crops for making fertilizer recommendations.
- To evaluate various soil test method for their suitability under field conditions.
- To evaluate the extent to which fertilizer needs of crop can be reduced in relation with conjunctive use of organic manure



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12.4 Targeted Yield Approach

- Targeted yield concept is an approach comes under STCR.
- For obtaining a given yield a definite quantity of the nutrients must be taken up by the crop.
- Once this requirement is known for a given yield, the requirement of fertilizer can be estimated by taking into account efficiency of the soil available nutrient pool and that of fertilizer requirement



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12.5 Concept of STCR

- STCR approach is aiming at obtaining a basis for precise quantitative adjustment of fertilizer doses under varying soil test values and response for targeted levels of crop production.
- STCR provides the relationship between a soil test value and crop yield.
- These are tested in follow up verification by field trials to back up soil testing laboratories for their advisory purpose under specific soil, crop, and agro climatic conditions



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12.6 Methods of STCR

- Gradient experiment
- Test crop experiment



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12.7 Conditions for yield targeting equation

- Used for similar soils of particular agro-eco region.
- Maximum targets should not exceed 75-80% of highest yield achieved for the crop in the area.
- Fertilizer N recommendations for legumes should be same as general dose of the crop of the area.



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12.9 STCR Approach for Precision Agriculture

- Under normal conditions, recommended soil sampling procedure is to take samples from portions of fields are no more than 20 acres in area
- Grid soil sampling uses the same principles of soil sampling but increases the intensity of sampling
- The goal of grid soil sampling is to generate a map of nutrient requirement called an application map
- Application map is loaded into the computer mounted on variable rate fertilizer spreader



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Thank You