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SOIL ANALYSIS

Why Is soil analysis so important?

Soil is an uppermost thin layer of Earth's crust that acts as a natural medium for plant growth. Soil is a mixture of rock particles and humus. Soil is made up of four main components. Minerals (45%), organic matter (5%), water (25%), air (25%). Soil analysis is a valuable tool for your farm as it determines the inputs required for efficient and economical production. A proper soil test will help ensure the application of enough fertilizer to meet the requirements of the crop while taking advantage of the nutrients already present in the soil.

Purpose: Soil testing is required to determine which nutrients are deficient in the soil for crop growth and to determine what needs to be done to make up for it.

Sample time?

The best time of year to take soil sample is after harvest.

Tools required:

- Farm map
- Soil test probe
- Spade, shovel, hoe
- Clean plastic bags (Ghamela)
- Sample submission form

Advantages of soil testing:

- Understands the proportions of soil components as well as defects.
- Crop selection and nutrient planning can be done according to the type of soil.
- Planned measures can be taken to improve the land.
- Due to balanced supply of fertilizers in the soil, its productivity is maintained.

Precautions to be taken while taking soil samples:

- Tools used for soil sampling e.g. Shovel, Spade, Ghamela, Hoe etc. Should be clean.
- Soil samples should be taken after harvesting, but before ploughing.
- Empty bags of chemical fertilizers should not be used while collecting soil samples or sending them to a laboratory for testing.
- Soil samples should not be taken from near manure filled or compost areas, animal place, under trees, near wells, waterways and farm boundary etc.

Soil sampling method:

- When sampling of the soil, remove leaf litter, grass, crop debris and roots. Take a sample of two rows where the crop is sown in a row.
- Make a V-shaped 15-30 cm pit on the flat surface and remove the soil inside. Scrape the soil 2 cm thick from the side of the pit with a hoe from top to bottom and put it in a plastic bucket. Thus take 10 samples from one quarter/section and put them in the same bucket.
- Put all the soil on a clean plastic sheet, mix well, air dry in the shade if it is wet then make four equal parts of this pile. Remove the two opposite sides. Mix the remaining two parts together and make four more parts. Do this process till half a kg of soil is left.
- Place sample (half a kilo) of soil in a clean bag. Put the information sheet in the bag and tie a label on the bag.
- Send samples to the laboratory as soon as possible. Normally sampling and sending to the laboratory should not take more than two weeks. otherwise soil separation is likely to change.
- Soil samples for orchards should be taken from different layers, e.g. After digging the pit up to 30 cm from the first one feet, second layer of 30 to 60 cm layer if there is no sandy soil and third layer soil depth of 60 to 90 cm in deep soil should be taken separately and sent to the laboratory.
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Where and how to send soil sample:

After taking the soil sample, write the following information and put it in the bag containing the soil sample. The soil sample should be sent to the soil testing laboratory as soon as possible.

- Name of the farmer:
- Location of the farm:
- Group No. / Survey No. :
- Irrigated / Dryland:
- Date of collection:

Crops grown in the previous season and its production, fertilizer used and its quantity, Crops to be grown in the next season, It's variety and expected production.

WATER ANALYSIS

Importance of water analysis:

Improper and contaminated water used for irrigation adversely affects crop growth. For this, water should be tested and used for irrigation according to its suitability. Irrigation water should be checked, keeping in mind the following.

If the water test for total alkalinity and soluble salts or mud, if a white layer of salts appears on the surface of the soil in the field used for irrigation, obstruction of crop germination or if the tops shoot of the grown crops are seen tilting, If the soil is sticky and water is stagnant on the surface, water sample should be given for testing if the ground feels stiff while walking on the ground. Water samples taken from various irrigation sources should be representative.

How to take water sample:

In order to take a water sample, first start the motor of your well or the motor of the bore from 5 to 10 minutes and then take the water that comes after it for testing. For this, take a clean water bottle and bring 500 ml to 1liter of water in it for testing. For testing, (the bottle is washed 10-15 times with the same water) it has to be water filled in a half-liter bottle and sent to the laboratory within 24 hours. For this, choose a tightly sealed plastic bottle.

How to send a water sample to a laboratory for testing.

Name and address of the farmer on the water test bottle

Field survey number

Date of sampling

(Briefly label the farmer's experience with the water on the bottle and send it to the laboratory.)

PETIOLE ANALYSIS

Why do Petiole analysis?

It is very important to have a complete balance of nutrients in the plant from planting to harvesting. Due to some reasons the nutrients required by the plant from the soil are not taken in proper quantity so the nutrients in the plant are not balanced. Proper, timely Petiole analysis allows accurate planning of nutrients to be given from the soil as well as by drip. According to the Petiole test report, it is possible to manage which specific nutrient to give when, how and in what form. Since some nutrients are directly related to the pest and disease, if they are planned in a timely manner, it will be much easier to prevent disease at a lower cost and in less time. In such a situation, planning according to the petiole test report significantly improves the productivity, quality, sustainability of the crop and also saves on production cost.

Sampling method for Petiole testing in grape crop:

If the variety is different, so different sample should be collected.

Samples should be collected by 9 am.

Back Pruning:

The fifth or sixth leaf should be taken at the subcane stage after 45 days after back pruning.

Then in the topping stage (70-80 days) take the first mature leaf from the top.

Fruit Pruning:

- The first mature leaves should be taken from the top 20-25 days before pruning.
- During the flowering stage (35-45 days) take leaves the opposite side of the vine bunch.
- Grape berries (8-12) mm. Depending on the size, it takes leaf the opposite side of the vine bunch during the 65 days.
- The first ripe leaves should be taken from the top of the grape berry at veraison stage (90 days after cutting)
- Bring 200 to 250 leaves from the vineyard for leaf sampling.
- In the same way we can test Petiole analysis in different crops.
  (The sampling stages of each crop are different.)

After collecting the sample, Place it in a paper bag with holes and close the bag.

It needs to be mentioned below.

- Farmer Name :
- Village :
- Mobile number :
- Variety name :
- Area :
- The order of the leaves on the cane :
- Days since planting :

If the Petiole is to be brought for analysis, the leaf should be separated from the stalk while collecting the sample.

If a stalk or leaf sample is to be taken for analysis, a branch which has no flowers or fruits should be selected.

- **Soil analysis (chemical and microbial)**
- **Water analysis**
- **Petiole analysis**
- **Fertilizer analysis (organic and chemical)**
- **Seed analysis rate**
- **Bud differentiation analysis**
- **Pesticide formulation analysis (pesticides, fungicides, herbicides etc.)**

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