

## ***Soil sampling and preparation***

### **Soil sample**

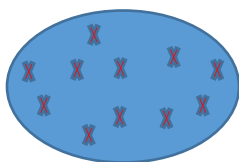
- *Is the amount of soil that represents all or most properties of the field soil .*

### **The objectives of soil sampling and analyzing**

- Determine the minerals and organic matter status of the soil.
- Classification of the soil.
- Determine the effect of (eco system) factors on soil development.
- Studying the soil fertility status.
- Studying the soil chemical properties (pH , EC , cat ions , anions ,----- etc)

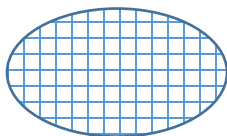
### **Methods of soil sampling**

- **Random method**; in this method we take the sample by using a square made of wood with (1 m<sup>2</sup>) that thrown randomly in the field. It's a rapid method



**Random method**

- **Squares method**; dividing the field in both dimensions (length and width) equally then taking samples from crossing point. This method need time and effort, but covers the field homogenously.
- It is the best method of sampling because the sample represents the status of the soil in the field



**Squares method**

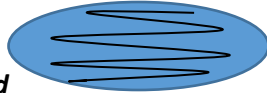
- **Dividing the field diametrically**; Then diving the diametric to equal space taking sample from the point



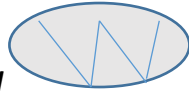
**Dividing the field diametrically**

Soil, water and plant relationship

- **Zigzag method**



- **W method**



### **Types of samples**

- **Single samples**
  - Usually it is collect single samples and must be analyze singly one after one.
- **Composite sample**
  - This type of samples composed of several single samples which mixed thoroughly to form one mixed sample.
- ***Note all single samples should be equal in weight or volume.***

### **According to sample depths:**

- **Surface sample**
  - Usually it is collect from (0-15 cm) or (0-25 cm) or (0-30 cm) depth for chemical and biological analysis to evaluate soil fertility.
- **Sub surface samples**
  - It is collect to classify the soil type and geneses and it is taken from (0-2 m) depth more than (2m)

### • **According to sample mixing:**

- **Undisturbed samples**
  - It is represent natural status from the field, without mixing. Usually are taken for studying the physical properties of the soil (structure, permeability ....etc)
- **Disturbed sample**
  - It is represent the status of the field (drying, mixing, sieving .....etc) usually it is used for chemical properties studding.

**Points taken into consideration with sampling**

- Uniformity of samples in weight or volume.
- Must be avoiding samples from.
  - Wet soils.
  - Near roads.
  - The storage of fertilizer in the field.
  - Top of hills or valleys.

**Equipments of soil sampling****1-Auger**

- Bucket auger: This type is the most suitable for medium textured soils.
- Dutch auger: effective on coherent moist and rather wet soils of high clay content.
- Jarrett auger: effective in gravelly soils.
- Screw auger: is not used for undisturbed sampling But useful in collecting samples for fertility evaluation and rapid soil examination.
- Tube sampler: for rapid sampling of topsoil in medium textured soils.



- Blades, shovels, spades, knives, and core samplers.

**2. Tubes and cylinders.****3. Hydraulic equipment.**

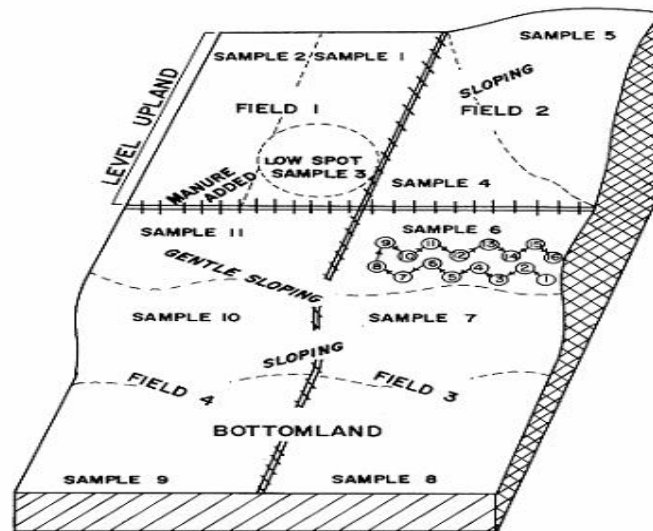
**How to Prepare the samples to analyzing**

- Mixing
- Partitioning
- Drying
- Grinding and sieving
- Storage.

**Sample labeling**

- **Project name:-**
- **Sample name:-**
- **Location:-**
- **Depth:-**
- **Date:-**
- **No. of samples:-**

Example



**Figure 1. Sampling pattern for fertility test in a non-uniform land**  
(Sample numbers refer to composite samples) (Source: Tarzi, 1984)