3 - Viruses: these include:

- Bacteriophage.
- Actinophage.

The majority of districts in the soil is either fed entirely on organic waste, or they prey on other organisms present in the soil, and despite the small size of most soil organisms in size, it makes up for it by many numbers of which the existing at the soil, and preparation this organisms live in at the soil affected by climate and the vegetative part developing above surface the soil.

The main roles of the organisms in soil:

Organisms in the soil have a several roles Includes:

1 – Disintegration organic matter and nutrient elements rotations.

2 – The toxins production.

3 – Materials production that promote plants growth.

4 – Nitrogen fixation.

5 – Mixing the soil.

6 – Soil ventilation improvement.

7 – Improvement installation totals the soil.

Affecting conditions in number and type of micro - organisms present in the soil:

1 - Temperature:

The best degree of temperature for growth most of organisms present in the soil its more much from degree of temperature in the soil even the summer season, where that the heat sets speed interactions chemical and vitality which happen at the soil, although that**(The most suitable degree of temperature for organisms that located at limits of 35 °C),**the most of this organism sit lives in wide expanse of temperature and adapt with temperature changes that occur in the soil.

2 - Humidity:

Humidity it's the essential factor affect at preparation and activity of soil micro - organisms, and the most appropriate amount of adequate moisture for most organisms in the soil it about 50 – 70% of the maximum capacity to save water in the soil which at the border to require the plants for growth and production.

3 - Acidity degree (pH):

The point of acidity and alkalinity at the soil it's very important affect activity the abundance types of organisms in which, it is noted that the number of fungal and bacteria in the acidic soils it's too largest, the moderate soils are considered or nearby which is about (6 - 7 pH) is the most suitable land for growth and activity for different organisms.

4 - Ventilation:

The organisms which live at the soil like other objects live, need to oxygen for growth and reproduction so they affected by the concentration some of certain gases like nitrogen, carbon dioxide and oxygen in the soil air, and it need to oxygen for oxidation processes and to carbon dioxide as a source of carbon in the case of self - feeding organisms and to the nitrogen in the case of installed organisms for nitrogen. And the requirements for the decomposition of organic matter in the soil it need for oxygen to all the micro-organisms and others in the soil.

5 - Salts:

The present of minerals salts in the soil it affect activity of organisms from several aspects, where that mineral salts increase the growth vegetarian of plant, so increase the quantity remains vegetable or resources energy for organisms that present in the soil, and therefore increases the activity of this organisms, and availability of some nutrient elements such as calcium, nitrogen, phosphorus and other is essential for some types of micro-organisms for their growth and reproduction.

6 - Rate Carbons to Nitrogen(C : N ratio):

Carbons compose a great part from installation of organic matter and it have closely conjunction with contents of soil from nitrogen, so the ratio of carbon to nitrogen it have specified limit in the decomposition of organic material and for the plant benefit from the nitrogen. And this ratio depend on several climatic factors following their the temperature and moisture, in lands areas be less of which at wet

lands areas, and which at warm lands areas it less of which at cold lands areas, **and it's clear importance rate of carbons to nitrogen at organic matter in the soil with two points:**

1. Competition for nitrogen between plants and organisms present in the soil when adding organic with high percentage of carbon materials to nitrogen in the soil.

2. Maintaining the level of organic matter in the soil.

Organic matter and humus in agricultural soils:

Sources of organic matter in the soil:

The pronunciation of organic matter at the soil about all articles vegetable and animal emerging at the soil or which added to it regardless about phase decomposition which arrived to it.

The organic matter chemically contains seven groups of materials are:

1 – Substance which dissolve at water these include: Sugars, glucoside, amino acids, salts nitrates, sulphate, chlorides and salts potassium.

2 - Substances which dissolve at ether and alcohol these include: Fat, oils, waxes, tannins and colored materials (Pigments).

3 - Cellulose.

4 - Hemicellulose.

5 - Lignins.

6 - Proteins.

7 - Salts mineral which insoluble water like silicate potassium, magnesium and aluminum which be with mineral salts dissolved what is known as ash.

Humus: (It is an expression of a complex compound arises from the gradual decay of organic matter by means of various microbes).

And the humus was characterized by several qualities general, including:

A - Its color was brown dark or black.

B - Not dissolves in water, but it dissolve at alkaline solution.

C - Contain on rate from carbons top from exist at the plants and microbes, the ratio it's between 55-56% have reach to 58%, due that to rise rate of lignin in.

D – Contain a great rate from protein may reach to more than of 17%.

E - Carbon to nitrogen ratio it less than and it reach about 10:1.

The chemical composition of organic matter:

Composed organic matter from dried matter and water, and compose water about 75% or more, while dry it contain from carbon, oxygen, hydrogen and nitrogen and other metal elements. The installation chemical for residues vegetable dry which form origin organic matter at known land, and it can mainly divided to three sections or departments.

First-(Polysaccharides),Multiple Sugars, it includes: divided

1 - Cellulose.

2 - Hemicellulose.

3 - Starch.

4 - Pectic substances, there are three types of pectin substances:

A - Protopectin.

B - Pectin.

C - Pectic acids.

5 - Chitin.

Second - (Lignin).

Third - (Proteins).

The **soil contents of organic matter and its relationship with its fertility:**

Differs amount what contain any soil with organic matter depending on many factors, including:

1 - Type of developing plants in the soil.

2 - Type of neighborhoods in the soil.

3 - Status of drainage and soil aeration.

4 – Quantities of rain fallen.

5 - Temperature.

6 – Type and the nature of the agricultural practices.

The importance of humus in soil fertility:

Is very important humus for plant nutrition, which is used as a store of major and minor nutrients, and that the approximate proportions of organic carbon, total organic nitrogen, phosphorus and organic sulfur that present in the soils with soft texture which planted in wet areas are as follows?

Organic carbon 50%.

Total nitrogen 5%.

Organic phosphorus 0.5%.

Organic sulfur 0.5%.