Faculty of science

Date: 26/5/2016

Benha University

Time: 1 hour

Botany department

Pre- master students

Soil microbiology 642 ن

Answer the questions

1) **A-Microbial transformation of phosphorus:**

These include (a) altering solubility of inorganic compounds of phosphorus (b) mineralizing organic compounds with release of inorganic phosphate. (c) Converting inorganic anion into cell components and (d) bringing about an oxidation or reduction of inorganic phosphorus.

b) Solubilization of inorganic phosphorus:

Counts of bacteria solubilizing insoluble phosphates range from $10^{5\ to}$ 10^{7} per gram. Such bacteria are abundant on root surfaces. Species of pseudomonas, bacillus, Penicillium, Aspergillus are active in the conversion .the solubilization is not restricted to calcium salts for iron, aluminum and other phosphates are acted on also.

The major microbiological means by which insoluble phosphorus compounds are mobilized is by production of organic acids.in special case of ammonium and sulfur oxidizing chemoautotrophs, nitric and sulfuric acids are responsible.

c) Mineralization of sulfur:

Upon addiction to soil of plant or animal remains, the sulfur contained therein is mineralized.

A portion of inorganic products is utilized by micro flora for cell

Synthesis and the remainder is released into the environment. Aerobically, the terminal inorganic product is sulfate. The ability to form H_2s from degraded proteins is property common to many genera of bacteria. The mineralization of humus sulfur tends to be faster in presence than in the absence of O_2 and the process is favored by increasing temperature in the mesophilic range and by addition of lime to acid sites. The sulfur in cysteine and cysteine is recovered when either of these amino acids is applied to well aerated. Soils this rapid because many microorganisms attack the two compounds.