Food microbiology: The study of microorganisms causing food spoilage and foodborne illness. Using microorganisms to produce foods, for example by fermentation.

Agricultural microbiology: The study of agriculturally relevant microorganisms. This field can be further classified into the following:

Plant microbiology and Plant pathology: The study of the interactions between microorganisms and plants and plant pathogens.

Soil microbiology: The study of those microorganisms that are found in soil.

Veterinary microbiology: The study of the role of microbes in veterinary medicine or animal taxonomy.

Environmental microbiology: The study of the function and diversity of microbes in their natural environments. This involves the characterization of key bacterial habitats such as the rhizosphere and phyllosphere, soil and groundwater ecosystems, open oceans or extreme environments. This field includes other branches of microbiology such as:

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that are found in water.

Microbial ecology

Microbially mediated nutrient cycling

Geomicrobiology

Microbial diversity

Bioremediation

Water microbiology

Aeromi robology : The study of airburne microorganisms.

C. Benefits

While some fear microbes due to the association of some microbes with various human illnesses, many microbes are also responsible for numerous beneficial processes such as industrial fermentation, antibiotic production and as vehicles for cloning in more complex organisms such as plants. Scientists have also exploited their knowledge of microbes to produce biotechnologically important enzymes such as Taq polymerase, reporter genes for use in other genetic systems and novel molecular biology techniques such as the yeast two-hybrid system.

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Bacteria can be used for the industrial production of amino acids. Corynebacterium glutamicum is one of the most important bacterial species with an annual production of more than two million tons of amino acids, mainly L-glutamate and L-lysine. Since some bacteria have the ability to synthesize antibiotics, they are used for medicinal purposes, such as Streptomyces to make aminoglycoside antibiotics.