

# ECONOMIC IMPORTANCE OF BACTERIA

## Beneficial Bacteria

### Food processing

[Sourdough bread](#) is made to rise by [fermentation](#), with a leaven that consists of bacteria, often combined with wild yeasts.

The milk-souring bacterium [Lactobacillus bulgaricus](#) is used to make [yoghurt](#) and [cheese](#). Bacteria are used, too, to form organic acids in [pickles](#) and [vinegar](#).

### Biotechnology

[Biotechnology](#) is the use of microorganisms including bacteria and fungi in the manufacturing and services industries. These include chemical manufacturing such as ethanol, acetone, organic acid, enzymes, and perfumes. In the chemical industry, bacteria are most important in the production of pharmaceuticals<sup>1</sup> [Escherichia coli](#) is used for commercial preparation of riboflavin and vitamin K.

### Genetic engineering

[Genetic engineering](#) is the manipulation of genes. It is also called recombinant DNA technology. In genetic engineering, pieces of DNA ([genes](#)) are introduced into a host by a variety of techniques, one of the earliest being the use of a virus vector. The foreign DNA becomes a permanent feature of the host, and is replicated and passed on to daughter cells along with the rest of its DNA. Bacterial cells are transformed and used in production of commercially important products. The examples are production of human [insulin](#) (used against diabetes), [human growth hormone](#) (somatotrophin used to treat pituitary dwarfism), and infections which can be used to help fight viral diseases.

Using [biotechnology](#) techniques, or bio medical technology bacteria can also be [bioengineered](#) for the production of therapeutic proteins.

### Fibre retting]

Bacteria such as [Clostridium butyricum](#) are used to separate fibres of [jute](#), [hemp](#), and [flax](#) in the process of [retting](#). The plants are immersed in water and when they swell, inoculated with bacteria which hydrolyze pectic substances of the cell walls and separate the fibres. Alternatively the plants are left spread out on the ground, wetted by the dew, to ret naturally. These separated fibres are used to make ropes and sacks etc.

## Digestion

Some bacteria living in the gut of cattle, horses and other herbivores secrete [cellulase](#), an enzyme that helps in the digestion of the [cellulose](#) of plant [cell walls](#). Cellulose is the major source of energy for these animals.<sup>[[citation needed](#)]</sup> The [Escherichia coli](#) that live in the human large intestine synthesizes vitamin B and releases it for human use.

## Pest control

Bacteria can also be used in the place of [pesticides](#) in [biological pest control](#). This commonly uses [Bacillus thuringiensis](#) (also called BT), a Gram-positive, soil-dwelling bacterium. This bacterium is used as a [Lepidopteran](#)-specific [insecticide](#) under trade names such as Dipel and Thuricide. Because of their specificity, these pesticides are regarded as [environmentally friendly](#), with little effect on [humans](#), [wildlife](#), [pollinators](#), or other [beneficial insects](#).<sup>[[citation needed](#)]</sup>

## Harmful bacteria

Some bacteria are harmful and act either as disease-causing agents ([pathogens](#)) both in plants and animals, or may play a role in food spoilage.

## Agents of disease

Bacteria cause a wide range of [diseases](#) in humans and other animals.

[Plant diseases](#) caused by bacteria are commercially important worldwide for [agriculture](#). Besides bacterial pathogens that are already established in many areas, there are many instances of pathogens moving to new geographic areas or even the emergence of new pathogen variants. In addition, bacterial plant pathogens are difficult to control because of the shortage of chemical control agents for bacteria.<sup>[[2](#)]</sup>

## Food spoilage

[Saprotrophic](#) bacteria attack and decompose organic matter. This characteristic has posed a problem to mankind as food such as stored grains, meat, fish, vegetable and fruits are attacked by saprotrophic bacteria and spoiled. Similarly milk and products are easily contaminated by bacteria and spoiled