Environmental Biotechnology

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ABSTRACT

Environmental biotechnology is biotechnology that is applied to and used to study the natural environment. Environmental biotechnology could also imply that one try to harness biological process for commercial uses and exploitation. The International Society for Environmental Biotechnology defines environmental biotechnology as "the development, use and regulation of biological systems for remediation of contaminated environments (land, air, water), and for environment-friendly processes (green manufacturing technologies and sustainable development)" Environmental biotechnology can simply be described as "The optimal use of nature, in the form of plants, animals, bacteria, fungi and algae, to produce renewable energy, food and nutrients in a synergistic integrated cycle of profit making processes where the waste of each process becomes the feedstock for another process."

INTRODUCTION

Consider an environment in which pollution of a particular type is maximum. Consider the effluents of a starch industry which has mixed up with a local water body like a lake or pond. We find huge deposits of starch which are not so easily taken up for degradation by micro-organisms except for a few exemptions. we isolate a few micro-organisms from the polluted site and scan for any significant changes in their genome like mutations or evolutions. The modified genes are then identified. This is done because, the isolate would have adapted itself to degrade/utilize the starch better than other microbes of the same genus. Thus, the resultant genes are cloned onto industrially significant micro-organisms and are used for more economically significant processes like in pharmaceutical industry, fermentations...etc Similar situations can be elucidated like in the case of oil spills in the oceans which require cleanup, microbes isolated from oil rich environments like oil wells, oil transfer pipelines...etc. have been found having the potential to degrade oil or use it as an energy source. Thus they serve as a remedy to oil spills. Still another elucidation would be in the case of microbes isolated from pesticide rich soils.

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