Sustainable Management of Sugar Beet Processing By-Products and Value Addition- A Review

Abstract

Sugar beet as an industrial crop plays a main role in satisfying domestic demand of sugar and biomass. Sugar beet is cultivated in approximately 50 countries across the globe and entangles huge business worldwide. In the search for sustainability and economic value, the complete utilization of this crop is necessary. Sugar beet dispensation requires an elevated degree of processing know how and produces large amounts of processing by-products such as beet pulp and molasses, which have limited applications such as fertilizer, livestock feed, compost and such others.

Biotechnological applications in the field of industrial residues management promote sustainable development of country's economy. The objectives pertaining to food processing by-products, waste and effluents include the recovery of fine chemicals and production of precious metabolites via chemical and biotechnological processes. Pre-treatments, followed by recovery procedures endow value-added products (natural antioxidants, vitamins, enzymes, cellulose, lipid, pectin, protein, and pigment) of high significance to the pharmaceutical, cosmetic and food industries. With the background of high crop production in the upcoming years, there is an imperative need to counterpart this production with some utilization and industrial application of sugar beet by-products since sugar industry emerges enormous amounts of sugar beet by-products, which are thriving nutrient resources. The present review highlights explorations of value addition to sugar beet by-products, which can be achieved with valorization strategy, integration of techniques and applications of bioengineering principles in sugar processing and waste management and secondly conserve environment with disposal problem accelerating both ecological and economical resources.