Chapter 12
Impacts of Food Industrial Wastes on Soil and Its Utilization as Novel Approach for Value Addition

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ABSTRACT

Among the various agro-industries, food processing industries are the second prime generator of wastes after domestic sewage. In the current epoch of the rapid budding world, the wastes are mounting, which robustly sway the health of ecosystems and eventually the human population. For that reason, each agro-industrial sector has critical stipulation toward the secure utilization of agro-materials all the way through recycling of wastes. A crude disposal and littering of these waste materials frequently signifies a problem that is additionally provoked by different legal restrictions. Inadequate management of these solid waste constituents could lead to drastic change in physico-chemical properties of soils. The waste product, which is discarded into the environment, is loaded with valuable compounds. They are new, innate, and monetary sources of colorants, protein, dietary fiber, flavoring, antimicrobials, and antioxidants, which can be utilized in the food industry as a basis of natural food additives.

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INTRODUCTION

India is a largely populated country which exists as the major reason for massive waste generation created frequently out of domestic & industrial actions which includes removal of peel followed by cutting of raw fruits and vegetables former to processing, eating and cooking (William, 2005). FAO revealed that every year, about one-third of all the food produced for the purpose of human consumption globally is lost or wasted. Large amounts of food processing by-product wastes are generated all over the world. It is estimated that about 5 million tons of sugar beet pulp and 3.5 million tons of brewers grain and almost half a million tons of onion peeling waste are created annually (Awarenet, 2004).This food wastage generation predicts a huge missed opportunity to enhance global food security, but also to alleviate environmental impacts and exhaustive resource use from food chains. According to the various quantitative food losses and waste estimations globally per year are roughly 40-50% for root crops, fruits and vegetables, 20% for oil seeds, meat and dairy plus 35% for fish and 30% for cereals (Gowe, 2015).

At the present epoch, ample quantity of waste generated marks food industry. As per the latest research carried out by FAO, almost 1.3 billion tons of food has been exhausted globally per year, which symbolizes nearly one third of the overall production of food industry (Gustafssonet al., 2013). Referring to the individual supplement fruit processing industries contribute more than 0.5 billion tons of waste. Thus, providing globally the accessibility of feed stock and encouraging the researchers, scientists and other authorities to exercise comprehensive studies on the various value added potential of fruit processing waste (FPW). On the other hand, vegetables are essential but uneconomical i.e. they produce ample waste concentration about 25%- 30% of inedible products (Ajila et al., 2010). Around twenty peculiar kinds of plants are generally developed for vegetables in the United States (US). Including this in each State these plants are grown on commercial basis out of which maximum population resides in New York, Texas, California, and Wisconsin. The profits from them to cultivars approach approximately to 300 million dollars annually despite of the fact not more than 20 to 30% of the crop is consumed. In this perspective, the utilization of the whole plant tissue could have cost-effective benefits to cultivars and a positive brunt on the environment, leading to a superior multiplicity of products (Cerezal & Duarte, 2005). Out of the total wastes 4 million tons of them are generally leaves. Several wastes are left as such on the soil to be plowed underneath. Few of them are fed, some are discarded in dumps and some are a simple nuisance a small portion is synthetically dehydrated for feed. The most prominent component of the wastes is water which accounts nearly about 75 to 90% (Willaman & Eskew, 1943). On a comparison fruit processing waste are originated to be selective and concentrated in nature as compared to other biomass derived waste. Besides, the greatest contribution provided is the utilization of peels, pomace and seed fractions as an excellent feedstock for recovery of bioactive compounds which include flavonoids, lipids, dietary fibers, pectin, etc (Kowalska et al., 2017; Banerjee et al., 2017).

A novel bio-refinery method would aim to manufacture a wider variety of important chemicals from fruit and vegetable processing waste. The wastes from bulk of the withdrawal processes may supplementary be used as recycle sources for creation of bio-fuels. These all benefits will open up as a scope for future utilization of fruit and vegetable waste for therapeutic and nutraceutical purpose as well as a great source for value addition of the end products.

According to the data acquired on global trend of fruit and vegetable production, the total of residues with prospective consumption after processing has been anticipated in millions tons every year. This demands the use of different forms of energy, water and other factors providing a by-product potential as the cardinal significance. This comes into being due to the presence of biocomponents, which may