



BIODEGRADABLE WASTE AND IT'S MANAGEMENT

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Abstract:

The causes of food waste or loss are numerous, and occur at the stages of production, processing, retailing and consumption. Food waste is the food that is discarded or cannot be used. Bio-waste is defined as biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers, retail premises, and comparable waste from food processing plants. The most significant benefits of proper bio-waste management - besides avoided emissions of greenhouse gases - would be the production of good quality compost and bio-gas that contribute to enhanced soil quality and resource efficiency, as well as a higher level of energy self-sufficiency. The main environmental threat from biodegradable waste is the production of methane in landfills. Biodegradable waste can be used for composting which turns the waste into humus. It can also be used as a resource for heat, electricity and fuel in future, by using anaerobic digestion as it is being achieved by the swiss *Kompogas* treatment for 20 years now.

Keywords: *health, environment, nutritional status, waste management techniques and food waste.*

Introduction:

The causes of food waste or loss are numerous, and occur at the stages of production, processing, retailing and consumption. Food waste is the food that is discarded or cannot be used. Bio-waste is defined as biodegradable garden and park waste, food and kitchen waste from households, restaurants, caterers, retail premises, and comparable waste from food processing plants. It does not include forestry or agricultural residues, manure, sewage sludge, or other biodegradable waste such as natural textiles, paper or processed wood. It also excludes those by-products of food production that never become waste. The current main environmental threat from bio-waste is the production of methane from waste decomposing in landfills.

The Landfill directive (1999/31/EC) obliges member states to reduce the amount of biodegradable municipal waste that they landfill to 35% of 1995 levels by 2016 (for some countries by 2020) which will significantly





reduce this problem. The Landfill Directive does not prescribe specific treatment options for the diverted waste. The most significant benefits of proper bio-waste management - besides avoided emissions of greenhouse gases - would be the production of good quality compost and bio-gas that contribute to enhanced soil quality and resource efficiency, as well as a higher level of energy self-sufficiency.

Impacts of biodegradable waste on climate

The main environmental threat from biodegradable waste is the production of methane in landfills. Methane is 21 times as potent a greenhouse gas as carbon dioxide and accounted for some 3percent of total greenhouse gas emissions in the EU-15 in 1995. The Landfill Directive 1999/31/EC obliges Member States to reduce the amount of biodegradable waste that they landfill to 35% of 1995 levels by 2016, which will significantly reduce the problem.

Uses of biodegradable waste

Biodegradable waste can be used for composting which turns the waste into humus. It can also be used as a resource for heat, electricity and fuel in future, by using anaerobic digestion as it is being achieved by the swiss *Kompogas* treatment for 20 years now. This produces additional Biogas and still delivers usable nutrients that can be implemented to the soil. Especially animal-based kitchen scraps such as leftover fish, meat are best disposed this way (as these are best not composted). Finally note that leftover human food can also be used as fodder to flightless birds, goats, pigs, sheep or alternatively can be fed to birds, and other wildlife. The waste management is important to prevent the pollution of the environment and to repair and reduce damage caused by pollution, to safeguard a healthy, pleasant ecologically diverse and sustainable environment to prevent the generation and the harmful effect of waste.

Waste that is not properly managed is a serious health hazard and lead to the spread of infectious diseases. The nutritional status of population depends to a great extent on environmental conditions. Food waste has its negative effects on our environment. Food recovery can make a significant contribution towards reducing hunger in the local community.





The relation between environmental exposures and nutritional status is very complex.

Causes of food waste

In developing and developed countries which operate either commercial or industrial agriculture, food waste can occur at most stages of the food industry and in significant amounts. In subsistence agriculture, the amounts of food waste are unknown, but are likely to be insignificant by comparison, due to the limited stages at which waste can occur, and given that food is grown for projected need as opposed to a global marketplace demand. Nevertheless, on-farm losses in storage in developing countries, particularly in African countries, can be high although the exact nature of such losses is much debated.

Research into the food industry of the United States, whose food supply is the most diverse and abundant of any country in the world, found food waste occurring at the beginning of food production. From planting, crops can be subjected to pest infestations and severe weather, which cause losses before harvest. Since natural forces (e.g. temperature and precipitation) remain the primary drivers of crop growth, losses from these can be experienced by all forms of outdoor agriculture. The use of machinery in harvesting can cause waste, as harvesters may be unable to discern between ripe and immature crops, or collect only part of a crop. Economic factors, such as regulations and standards for quality and appearance, also cause food waste, farmers often harvest selectively, preferring to leave crops not to standard in the field (where they can be used as fertilizer or animal feed), since they would otherwise be discarded later.

Biodegradable waste management

Response to the problem of food waste at all social levels has varied hugely, including campaigns from advisory and environmental group and concentrated media attention on the subject

Prevention

One way of dealing with food waste is to reduce its creation. Consumers can reduce spoilage by planning their food shopping, avoiding potentially wasteful spontaneous purchases, and storing foods properly.





Landfills and greenhouse gases

Dumping food waste in a landfill causes odour as it decomposes, attracts flies and vermin, and has the potential to add biological oxygen demand to the leachate.

Municipal collection

In areas where waste collection is a public function, food waste is usually managed by the same governmental organization as other waste collection. Most food waste is combined with general waste at the source. Separate collections, also known as source-separated organics, have the advantage that food wastes can be disposed of in ways not applicable to other wastes. In the United States, companies find higher and better uses for large commercial generators of food and beverage waste.

Separate curbside collection of food waste is now being revived in some areas. To keep collection costs down and raise the rate of food waste segregation, some local authorities, especially in Europe, have introduced "alternate weekly collections" of biodegradable waste (including, e.g., garden waste), which enable a wider range of recyclable materials to be collected at reasonable cost, and improve their collection rates. However, they result in a two-week wait before the waste will be collected. The criticism is that particularly during hot weather, food waste rots and stinks, and attracts vermin. Waste container design is therefore essential to making such operations feasible.

Animal feed

The feeding of food scraps to animals is, historically, the most common way of dealing with household food waste. Chickens have traditionally been given mixtures of waste grains and milling by-products in a mixture called chicken scratch. As well, giving table scraps to backyard chickens is a large part of that movement's claim to sustainability though not all backyard chicken growers recommend it.

Composting

Food waste can be biodegraded by composting, and reused to fertilize soil. Vermicomposting is the practice of feeding scraps to worms who produce fertilized soil as inevitable waste: food waste can be composted at





home, avoiding central collection entirely, and many local authorities have schemes to provide subsidized composting bin systems. However, the proportion of the population willing to dispose of their food waste in that way may be limited.

Commercially, food waste in the form of wastewater coming from commercial kitchens' sinks, dishwashers and floor drains is collected in holding tanks called grease interceptors to minimize flow to the sewer system. This often foul-smelling waste contains both organic and inorganic waste (chemical cleaners, etc.) and may also contain hazardous hydrogen sulfide gases. It is referred to as fats, oils, and grease (FOG) waste or more commonly "brown grease" versus "yellow grease", which is fryer oil that is easily collected and processed into biodiesel and is an overwhelming problem

In regions where people practice dumpster diving, food waste is also reduced. However, it can pose a health risk to these people and there may also be questions of legality.

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