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Field study of Chicken feather waste open dumping on road sides of Tuticorin city, Tamilnadu, India

B.Govindarajan[1]*, R.Nagarajan[2], P.Senthilkumar[3], R.Thangamani[4] A.Noorthen[5]

[1&5]Assistant Professor, Department of Zoology, VHNSN College (Autonomous), Virudhunagar, India

[2]Assistant Professor, Department of Zoology, Kamaraj College, Thoothukudi, India

[3]Researcher, Institute of Forest Genetics and Tree Breeding, Coimbatore, India

[4]Assistant Professor, Department of Zoology, Nehru Memorial College, Puthanampatti, Tiruchirappalli (Dt), India

*Corresponding Author E-mail: bgrmphilbed@gmail.com

Abstract

The manuscript looked at feather waste disposal and the consequent environmental impacts. Primary data was generated by field observations for assessment of the road side environment. The field study revealed that roadside disposal of chicken feathers wastes has serious impacts on the environment. Some of these impacts include physical, chemical and biological nuisance of the feather wastes to the environment, the waste dumps also serve as hideouts for rodents which are risky. This article therefore recommends that Government should come up with proper orientation and environmental laws should be put in place for the general public and also to provide necessary facilities and arrange for better methods of collection of solid wastes.

Keywords: feathers, chicken, open dumping, Tuticorin

Introduction

The increasing universal residents are associated with growing demand for food. Huge numbers of municipal solid waste (MSW) are generated through various food industries among which meat industry generate a waste such as feather, bones, blood etc. The global poultry production is growing rapidly and creating employment opportunities (Agblevor *et al*., 2010). Chicken feather

is the most important by-product generated in millions of tones from the commercial poultry processing which is accumulating at high rate (Zhao *et al*., 2012).

Billions of chickens are killed for meat annually and near about 8 billion tons of chicken feather wastes are produced. Feathers are generated each year by poultry processing unit, creating a serious solid waste management problem. Chicken feathers are one such waste which account for 7% of the total weight of the chicken (Riffel and Brandelli, 2006). Collection and disposal of wastes differs from country to country. In USA, the methods of disposal are landfills and incineration, in Australia is landfill, while in Japan its incineration and recycling which started in April 2001 (Matsuto *et al*., 2004). In India, the common method of disposal is open dumping. In most developing nations, wastes are dumped on roadsides and any available open pits irrespective of the health implication on people. This field study reports feather waste disposal among Tuticorin population.

Material and Methods

Description of the research area

During the current research Tuticorin city was preferred as a study area to assess the road side open dumping of feather waste. Tuticorin is one of the important, rapidly growing city from Tamilnadu. The area of the district is 4621 sq.k.m and the population is 1738376 (as per 2011 census). Tuticorin city generates solid wastes of about 170 metric tonnes per day.

Field Sampling

The field study was conducted by personal observation and road side walk observations and took photographs. Photography was collected from a road side feather dump site, where chicken feathers were found in half decomposed state.

Result and Discussion

In general, feather waste road side dumping is a major problem in India. This field study has very clearly shown that present day feather waste disposal by people has caused serve environmental and social problems. Considering the photographs taken it is observed the feather waste road side dumping is going on illegally and create several environmental problems. Besides their visual irritation potential health threat is more intuitionally. Some dumps spread

into roads it may cause the two-wheeler accident. Thus, illegal dumping increases the costs of road maintenance.

Feather is composed of ß-keratin to the tune 91% of feather protein that makes feather recalcitrant to common proteases like trypsin, pepsin, papain, etc. making its degradation difficult (Mabrouk, 2008). Feather waste may be cleaned by the action of microbes. Bioremediation is the permanent solution for managing the feather waste. Roeper *et al*., 2005 has explained the problem coming along with the poultry production is the manure that needs to be taken care of, as a non-appropriate disposal can become risky for environment.

Feathers constitute the major bulk of biological waste generated by local butchers and poultry processing industries in India (Khardenavisa *et al*., 2009). Authorities must encourage proper disposal of waste. The physico-chemical composition of feather as percentage by dry weight are protein 85.4%, fats 1.22%, ash 8.60%, fibers 0.68%, calcium 0.55% and phosphorus 0.16% (Han and Parsons, 1991). Feathers hydrolyzed by mechanical or chemical treatment can be converted to feedstuffs, fertilizers, glues and foils or used for the production of amino acids and peptides. So we recommend creating compost for agricultural purposes.

Conclusion

Feather waste management is a serious threat in Tuticorin city; due to its environmental and human health related problems. The field study showed that population growth and unplanned disposal of the feather waste. The feather waste roadside disposal method in the study area common. Non biodegradable fractions of the feather wastes are the major problems in waste management.

These materials have physical environmental nuisance and it is necessary to observe that not only Tuticorin. Open road side dumping of feather wastes is common in most growing cities of developing countries suffer these impacts of environmental problems. To prevent this ugly nuisance, the following recommendations are considered;

- First and best method is to increase the number of dust bins and promote the usage of dust bins.

- Awareness should be created about impact of road side dumping.
- Financial support must be provided to encourage recycling of waste by public and private companies.
- Proper direction and environmental laws should be put in place for the general public.
- Corporation should make rapid efforts to improve the present waste disposal and management system of the study area.
- Residents should be avoiding open dumping on road side.
- Efforts should be made at recycling waste since this is even economically very beneficial. In general, our study showed that waste feathers can be used as compost.

Plate: Anna Nagar Main Road

Plate: Mapillaioorani Main Road

Plate: East Coast Road

Plate: East Coast Road

Plate: Mapillaioorani Main Road

Plate: Mapillaioorani Main Road

Plate: Davispuram

Plate:Thiruchendur Road

Plate: Meelavittan Road

Plate: Meelavittan Road (Near by 4th gate)

Plate: Meelavittan Road (Near by 4th gate)

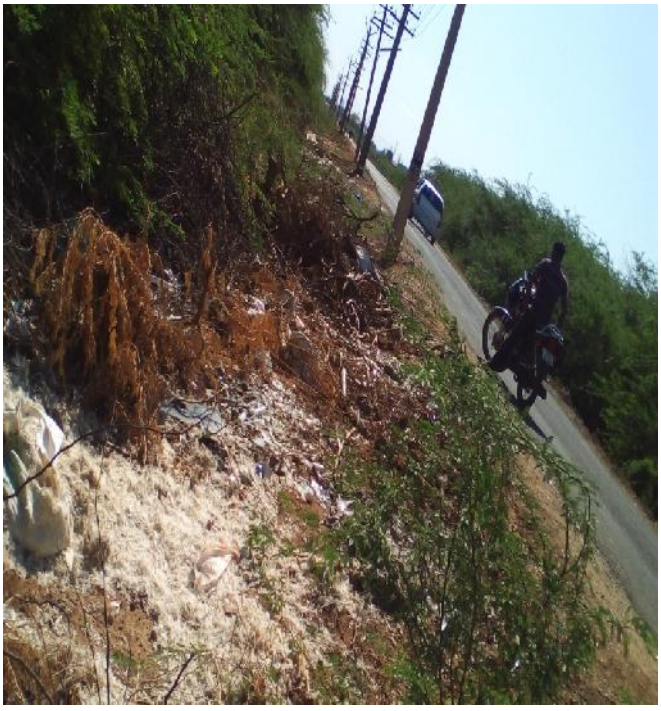

Plate: Meelavittan Road

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