

STUDY ON DISPOSAL OF BROILER SLAUGHTER WASTE IMPLYING ECO-FRIENDLY WASTE MANAGEMENT

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Abstract: Broiler is a readily available meat source catering the need of meat eating people. The disposal of broiler waste such as carcasses, blood, feather and offal produced from slaughtering broiler birds need to be disposed or utilized properly. Considering this, the present study was purposively conducted in Nagapattinam district of Tamil Nadu to identify the existing disposal method and recommend suitable eco-friendly utilization and disposal methods. Sixty butchers were randomly selected from the study area and the data were collected through personal interview and observation method. The study revealed that none of the farmers possessed high level knowledge whereas nearly one-fifth (18.33 per cent) of the butchers possessed medium and a majority (81.67 per cent) possessed low level knowledge in proper disposal and utilization of broiler slaughter waste. In contrast, none of the butcher adopted proper disposal method. It was found that from 36.67 and 8.33 per cents of the butchers shop, broiler slaughter waste was collected by pig farmers and fish farmers respectively to feed their pigs and fishes. The broiler slaughter waste produced from the remaining 55.00 per cent of butchers shop was improperly disposed in road-side. An overwhelming majority (93.33 per cent) of butchers agreed that disposal of broiler slaughter waste was their responsibility and expressed their willingness to learn on proper disposal broiler waste. The results will foster the policy makers and line departments to formulate and implement strategies for adopting the recommended methods of eco-friendly broiler slaughter waste management by initiating the co-operation from and among the butchers, pig and fish farmers and local governing body.

Keywords: Broiler slaughter waste, Eco-friendly waste management.

Introduction

Protein source from animal origin is vital to cater the need of meat eating people. Broiler is one such meat source. Poultry slaughter waste, such as carcasses, blood, feathers and offal should be properly disposed of. It can contain viruses, bacteria and residues. In resource-poor areas, burning or burial are the most likely, practical and effective methods for disposing of waste [1]. However, according to waste management hierarchy, these wastes should be recycled and disposed without causing damage to the environment [2] and [3].

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Poultry offal waste will help to reduce the high cost of dietary ingredients and feeding that are associated with intensive animal production systems as well as reduce the environmental and health effect on the nation [4]. Slaughter houses are littered with non-meat products and wastes that need to be recycled into useful by-products for further agricultural and other industrial uses [5]. The unhygienic slaughter and slaughter waste can cause environmental and public health problems. Creation of necessary infrastructure for meat production facilities in rural areas will be promoted as forward linkage for animal producers. Integrated modern abattoirs would be encouraged taking into account the legal regulatory provisions for production of quality meat, to ensure zero environmental pollution, minimize wastage of byproducts and utilize edible and inedible byproducts. The regulatory mechanism for quality meat production should be synchronized with global health standards for domestic consumption as well as for export purposes [6].

The livestock and fish feed and pet food developed using various offal of poultry will help in controlling the environment pollution and wealth has been generated from waste. Composting is an aerobic biological process to degrade organic material. It is a common method to treat poultry slaughterhouse wastes, grease trap residues, manure, litter, and sometimes also feather. Composting reduces pathogens, and the resulting compost can be used as soil conditioner or fertilizer [7]. Anaerobic digestion reduces pathogens and odours and requires little land space for treatment, and can treat wet and pasty wastes [8] and [9]. In addition, any releases to air, water, and land from the process can be well controlled. Most of the nutrients also remain in the treated material and can be recovered for agriculture or feed use.

The practices of eco-friendly broiler slaughter waste management (BSWM) practices enlighten the scope and role of butchers. [7]. Considering this, the study was carried out with the following objectives.

- To study the knowledge level of butchers on eco-friendly disposal of broiler slaughter waste.
- To measure the adoption level of eco-friendly broiler waste disposal practices by the butchers.
- To find out the contribution of butchers in eco-friendly BSWM.

Materials and methods

Individuals decide their meat eating behaviour. Nagapattinam district was purposively selected for the study since it has people of various religion, religiously important places, coastal line and located in Cauvery delta region. Applying simple random sampling

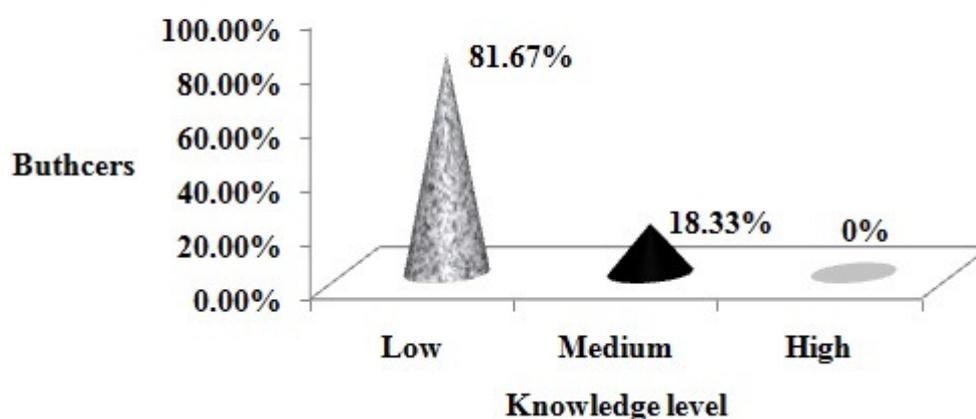
technique, each 15 butchers were selected from four village viz., Nagapattinam, Sikkal, Vaimedu and Manjakollai from Nagapattinam district. Discussion with the Subject Matter Specialist revealed that broiler slaughter waste can be used for composting, feeding livestock and fish feeding and as an industrial input which are considered as recommended eco-friendly broiler slaughter waste management practices [10]. These practices were considered as recommended practices. The data pertaining to the objective set forth were collected by an in-depth personal interview with the help of a pre-tested interview schedule. The data so collected were tabulated and contribution made by farm women was interpreted and analysed using percentages and multiple regression analysis.

Results and discussions

a. Knowledge level of butchers in eco-friendly broiler slaughter waste management

Figure 1 clearly depicts that an overwhelming majority of the butchers (81.67 %) possessed low level of knowledge on eco-friendly slaughter waste whereas nearly one-fifth (18.33 %) possessed medium level of knowledge. It is notable that no one possessed high level of knowledge. Perishable nature of broiler slaughter waste and tireless/tedious physical work required in broiler slaughter procedures could possibly be the reason for this knowledge lag.

Figure 1. Knowledge level of butchers on BSWM



Interaction with the butchers revealed that butchers were concentrating more on consumers' satisfaction in order to retain the customers to sustain in the market. Hence, they felt that eco-friendly disposal of broiler slaughter waste was time-taking and they could not adopt such disposal practices due to their monotonous work. Further, they did not aware of the economic utility of broiler slaughter waste.

b. Perceived responsibility of butchers

Figure 2. Responsibility perceived by the butchers

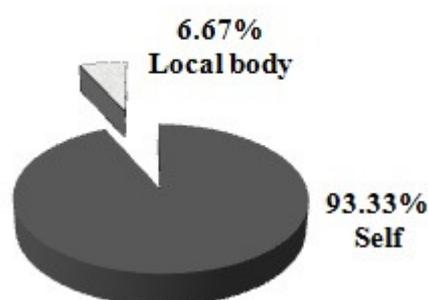
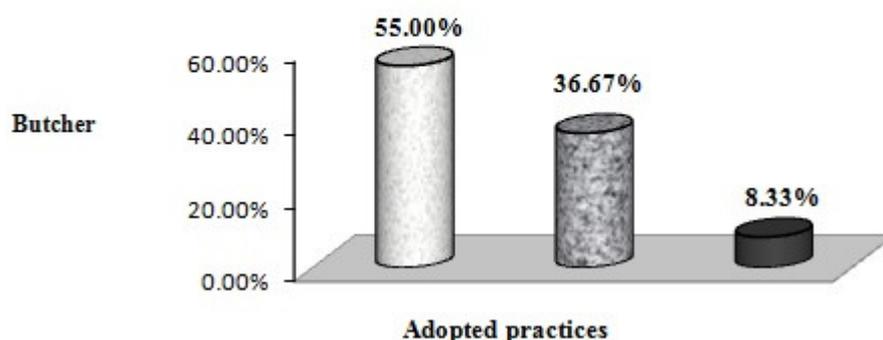


Figure 2 envisages the perceived responsibility of the butchers. An overwhelming majority of the butchers (93.33 %) agreed that it was, no doubt, their responsibility to dispose the broiler slaughter adopting eco-friendly practices. Contrarily, only 6.67 per cent of them stated that it was the responsibility of the local bodies. Butchers believe their self-responsibility since they are socio-economically benefited from their broiler meat marketing.

c. Adoption of eco-friendly broiler slaughter waste management practices

Figure 3. Practices adopted by butchers



Despite there are practices of eco-friendly disposal of broiler slaughter waste, more than half of the butchers (55.00 %) improperly disposed the waste (Figure 3). On the other hand, 36.67 per cent and 8.33 per cent of the butchers permitted the pig farmers and fish farmers respectively, to collect the waste and feed their pigs and fishes. Amid the work load involved in broiler bird purchase, keeping and slaughtering, butchers felt it was easy to dispose the broiler slaughter waste on the road-side, river-side and in the remote places. These practices pose potential health hazard to public and environment. The practices could be ameliorated by sensitizing and educating the butchers about the importance of eco-friendly

disposal of broiler slaughter waste. The utility of the waste derived from broiler slaughtering should also be educated to the butchers.

It is seen from the Table 1 that out of eight independent variables, only three variables such as age (X_1), education (X_2), experience (X_3), occupation (X_4) and locality (X_7) had significant positive relationship with knowledge level of butchers. The other variables such as religion (X_5), operational size (X_6) and extension agency contact (X_8) showed non-significant relationship with knowledge level of butchers. This revealed that better education, more experience, pursuing broiler meat sale as primary occupation and rural locality will improve the knowledge of backyard poultry farmers on broiler slaughter waste management.

Table 1. Pearson correlation coefficient and multiple regression analysis of independent variables towards knowledge level on BSWM

S. No.	Independent variable	Pearson correlation co-efficient	Multiple regression analysis		
			Partial regression coefficient (b)	Standard error of b	't' value
1.	X_1 Age	0.783**	0.154	0.039	3.941**
2.	X_2 Education	0.672**	0.497	0.223	2.227*
3.	X_3 Experience	0.612**	-0.033	0.044	-0.744 ^{NS}
4.	X_4 Occupation	0.632**	0.951	0.601	1.583 ^{NS}
5.	X_5 Religion	-0.115 ^{NS}	-0.263	0.421	-0.626 ^{NS}
6.	X_6 Operational size	-0.154 ^{NS}	0.090	0.304	0.297 ^{NS}
7.	X_7 Locality	0.777**	1.512	0.420	3.596**
8.	X_8 Extension agency contact	0.195 ^{NS}	0.577	0.369	1.565 ^{NS}

R^2 value = 0.81

F value = 26.77**

^{NS} - Not significant

* - Significant at 5 per cent level

** - Significant at 1 per cent level

The significant positive relationship of education and experience with knowledge is quite natural that the educated and experienced butchers are keen to know more about eco-friendly broiler slaughter waste management. The significant positive relation between pursuing broiler meat sale as primary occupation may be due to the interest exhibited by the butchers in their business. Since the rural locality has other sources of meat for rural eating people, the butchers have sufficient time to bestow their attention in broiler slaughter waste management. Further, in rural areas, improper disposal of broiler slaughter waste attracts the immediate attention of rural people. Hence, rural locality has significant positive relationship with

knowledge of butchers. The co-efficient of multiple determinations (R^2) fitted for the regression model was statistically highly significant (R^2 value 0.81). Hence, the contribution of independent variables towards dependent variable knowledge was not analysed and discussed.

The recommended practices, while considering the waste management hierarchy, are making manure, inclusion in livestock and fish feed and utilizing as an industrial input which ensure eco-friendly recycling of broiler slaughter waste. Burial and burning are the practices which ensure the disposal of waste but not eco-friendly. Burial of broiler slaughter waste has to be strictly monitored to avoid groundwater contamination since it adversely affects the local environment, particularly the pollution of surface water, groundwater, soil and air. All these measures may increase the actual cost incurred in of land filling. The following were recommended eco-friendly broiler slaughter waste management procedures to be followed [2].

- Inclusion in livestock, fish and pet feed
- Composting
- Biodegradable plastic production
- Bio-diesel and bio-gas production
- Input in textile industry
- Methane gas production
- Electricity production
- Slow nitrogen releasing fertilizer production

Eco-friendly broiler waste management practices should be disseminated among the butchers, nearby pig farmers and poultry farmers and industries by a co-operative, co-ordinated and concerted efforts from the stakeholders *viz.*, government departments, research institutes, Non-governmental Organizations, Pollution Control Board and local bodies.

Conclusions

Broiler slaughter waste can be a source of income despite it poses a potential threat to environment, if it is disposed improperly or left abandon on road-side and river-side or in remote areas. Millennium Development Goals (MDGs) also emphasis eco-friendly management of all wastes. The results of the study revealed the *status-quo* of broiler slaughter waste management practices carried out by the butchers and reiterates the importance of educating the butchers to adopt eco-friendly broiler slaughter waste management practices *viz.*, composting, feed production and inclusion as industrial input.

Policy makers swift their intervention and bestow their attention on these results while formulating and implementing suitable strategies considering eco-friendly broiler slaughter waste management practices.

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