Research Paper Management

Poultry Waste Management and Dead Bird Dispoal Technique

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KEYWORDS

Growing concentration of egg production unit's results in the production of poultry waste on a large scale. This also poses problems of handling and disposal for many poultry producers, with the public becoming more aware and concerned about environmental pollution. Two main types of wastes are produced by poultry enterprises depending on the rearing system adopted on the farm: poultry litter and cage layer waste. Poultry litter is the waste from deep litter systems and does not have much nutritive value, since it contains mostly used litter material. Cage layer waste consists mainly of excreta collected under the cages, spilled feed and feathers. Cage rearing of layers is the most widely followed system for layers.

RECYCLING POULTRY WASTE

The use of poultry waste as a source of manure for crop production has been the preferred system for recycling nutrients. In recent years, poultry nutritionists have explored the possibility of recycling poultry waste as a feed for the poultry itself. Poultry droppings, until now considered as waste, or used sparingly as manure, may prove to be an alternative for conventional feed ingredients.

Poultry excreta are commonly referred to as dried poultry droppings, cage layer excreta, dried poultry waste or dried poultry manure. Dried poultry waste reportedly contains about 30 per cent protein, of which about 60 per cent is from non-protein nitrogenous sources. It has more mineral value. Poultry waste has a high water content and there is a need to develop suitable and economical processing technology to remove excessive moisture and destroy harmful pathogens from the organic waste. It is high in fibre and low in metabolizable energy.

The true digestibility coefficient of crude protein in poultry litter is about 64 per cent. Some of the constituent amino acids were found to range from 24.7 per cent (for valine) to 76.4 per cent (for serine). The absorption of calcium and phosphorus was characteristic of the individual bird and ranged from 1.2-45.3 per cent for calcium and from 7.5-46.2 per cent for phosphorus.

Poultry dropping may contain various types of microbial organisms and moulds. Therefore, before poultry manure can be recycled as poultry feed, it needs processing. The drying and duration of storage may also help in altering the microbial load in fresh droppings.

DRYING

Probably the oldest method of processing waste for refeeding is the drying of poultry manure in natural air conditions under sunlight. This is the cheapest and most feasible method in a tropical country. Moreover, fresh poultry droppings have lower moisture content than manure from other livestock, making sun drying the most effective processing method.

Air-drying requires varying lengths of time depending on the climate and the level of humidity. Drying the manure with heat has also been attempted. The manure may be dried at temperatures ranging from 149-385oC. Drying with heat results in a highly significant loss of energy and significant loss of nitrogen. Thin bed drying of poultry manure to 30 per cent or lower moisture levels was found to prevent the breeding of flies, to reduce obnoxious odours and to maintain the nutrient value of the manure particles. The faster the manure is dried, the higher is the nitrogen value.

HEAPING

Deep stacking of poultry waste produces considerable heat and had been shown to destroy coliforms. The maximum temperature was reportedly attained in 4-8 days. When litter from the broiler house is placed in a heap, the heat which subsequently develops is sufficient to destroy the pathogenic organisms that are present.

COMPOSTING

Collecting poultry manure in pits under cages or slat or wire floors is gaining favour as a practical and economical way to handle poultry waste. The manure may be allowed to accumulate for several years through the process of composting. Aerobic bacterial action occurs. Many compost pits have been in operation for several years without manure removal. The top foot is composed of fresh manure, the bottom foot is in an anaerobic condition and the central portion is undergoing composting.

The essential requirement in managing the deep pit is that the fresh, wet material be adequately aerated to remove the moisture. To further the composting process and prevent odour, the pit must be watertight so that seepage of water cannot enter. Care must be taken to prevent drinkers from leaking or overflowing into the pit, for such overflow prevents proper bacterial action in the accumulated wet manure. When the procedure operates correctly, there is little or no odour arising from the pits and manure removal may be delayed for years.

POND DISPOSAL

Fresh poultry manure may be flushed into an open, shallow pond. Bacterial action reduces the waste material to a smaller volume. As bacterial growth occurs only during the warm months, the use of ponds is seasonal. The resulting solution may be spread in its liquid state on farmland. When aerobic action takes place, the lagoon produces little odour; but as the sludge builds up, anaerobic activity takes place and odours may be pronounced.

AERATION

The oxidation method is used for poultry by placing a continuous-flowing trough under the birds. Water is poured into the trough to keep the manure fluid and pumps keep the sludge circulating. The effluent is aerated by paddles. The addition of oxygen by the paddles increases the activity of aerobic bacteria, greatly reducing the incidence of any odours. After 4-6 months, the material is removed in liquid form and usually spread on the land. The material is practically odourless.

DEAD BIRD DISPOSAL

Dead birds must be removed from poultry houses on at least a twice-daily basis. An accurate count should be kept of birds collected and the number recorded in the farm diary. Dead birds on poultry farms should not be carelessly thrown out in the open. It will lead to the spread of infections and also cause major pollution problems. Typical methods of mortality disposal include burial, incineration, rendering, and composting. Many states have banned the use of burial pits, which historically have been used to dispose of dead birds. Incineration can be costly and raise air quality concerns, and the decreasing number of renderers further complicates disposal. Various safe means of disposing of dead birds are:

BURYING

This is a suitable method of disposal of birds for small farms that may not be able to afford to construct an incinerator. Where environmental regulations allows, a deep hole may be dug and the carcasses buried deeply so that they cannot be taken out and to prevent worms from carrying infections from the carcass to the surface of the ground. The best and easiest way is to dig a deep narrow trench. Each day's collection of dead birds can be deposited and covered until the trench is filled. The dead birds can also be buried deep in the ground in plastic bags which will further reduce the chances of infections spreading.

PIT DISPOSAL

- This is an effective and convenient method for disposal of dead birds which is within the means of poultry raisers. A decomposition pit can be used for small losses, but care should be taken in choosing the location of the pit:
- The pit should be a reasonable distance (150 feet) from the poultry houses and the well that provides the water supply.
- A pit 6 feet (1.83 m) in diameter and 6 feet deep (1.83m) is large enough to take care of one 10,000-capacity broiler unit.
- Contact a local government or agricultural agency to verify that disposal pits are permissible in your area
- It is important that the roof or walls will not collapse easily.
- Flies and other insects must not be able to enter the pit and, above all, there must be no danger of small children falling into it.

Troubleshooting Guide for Carcass Composting

Problem/Symptom	Probable Cause	Recommendations
Improper temperature	Too dry (less than 40% moisture)	Add water
	Too wet (more than 60% moisture)	Add bulking material and turn pile
	Improper C:N ratio	Evaluate bulking material and adjust as necessary
	Improper mixing of ingredients	Ensure adequate cover
	Adverse environment	Layer ingredients appropriately
Failure to decompose	Improper C:N ratio	Evaluate bulking material and adjust as necessary
	Carcasses layered too thickly	Single layer the carcasses.
	Carcasses on outside edges	Maintain 6-10 inches between carcasses and edges
Odor	Too wet	Add bulking material and turn
	Too low C:N ratio	Evaluate bulking material and adjust as necessary
	Inadequate cover over carcasses	Cover with 10-12 inches of bulking material
Flies	Inadequate cover over carcasses	Cover with 10-12 inches of bulking material
	Poor sanitation conditions	Avoid leaching from pile
	Too wet	Turn pile and add bulking material
	Failure to reach proper temperature	Assess C:N ratio, layering
Scavenging animals	Inadequate cover over carcasses	Maintain 10-12 inch cover Avoid initial entry with fence or barrier

REFERENCES

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