SIMPLE TECHNIQUES FOR MAGGOT PRODUCTION: TECHNICAL REPORT

[*]Gaddafi, S., *Saulawa L.A., [*]Usman, H.B., [*]Alkali, M.M & [**]Bichi, J.M

[*]Department of Animal Science, Federal University Dutsin-Ma, Katsina State, Nigeria,
[**]Department of Animal Science, Bayero University Kano, Nigeria.
Corresponding author: sanigaddafi4@gmail.com, GSM: +234(0)7067212353

ABSTRACT

Searching for cheaper and less tedious methods of producing maggot with good nutritional value will be a pragmatic approach to address issues of livestock feed insecurities thereby increasing farmer's income. Several attempts have been made to find inexpensive and relatively abundant nutrient substrates to partially or, even completely, replace expensive components among are fruits residues, brewery by-products, feather, abattoir wastes product, hatcheries and dairy waste although the sustainability of these requires skills, labour, capital and accessibility to companies producing such by-products. This paper highlights simple techniques of producing qualitative and quantitative maggots from readily available materials without elaborated maggotry building and equipment. Techniques involved from site selection for maggotry, substrate tanks (by uses of 200 litter capacity drum), choice of available substrate and flies attractant, harvesting techniques, processing and preservation. Photograph 1 - 6 provide practical demonstrations of techniques involved. Simple techniques of maggot production will save cost, labour and minimized threat of livestock waste product that imposes serious pollution problems to the incumbent environment and human health.

Keywords: Techniques, Maggot and Production**.**

INTRODUCTION

In developing nation like Nigeria, the cost of commercial livestock farming and fish feeds have become very expensive (John, 2015) account for over 60% of the recurrent overhead costs of livestock farming and about 70% of a fish farming venture (Sogbesen *at al.,* 2005). This is due mainly to the fact that most of the protein ingredients such as fishmeal are imported while locally available alternatives like soyabeans and groundnut also serve as food for humans. Maggot meal have been used extensively to replaced conventional expensive feed ingredient with better utilization by various classes of livestock such as Broiler chickens (Adeniji, 2007; Hwangbo *et al.,* 2009), Layers (Agunbiade *et al.,* 2007), rabbit (John, 2015), Pig (Adeniji, 2008), and Fish (Ebenso and Udo, 2003; Sogbesan *et al.,* 2006).

Sogbesan *et al.,* (2006) reported that about 932.5 tonnes of poultry manure is produced annually in Nigeria due to the well-established poultry and livestock industries which are expanding at 6-8% annually (Adejinmi, 2000). This large turn-out of poultry waste imposes threat of disposal to the poultry industries and as well serious pollution problems to the incumbent environment and man`s health. Therefore, recycling this waste will help to assumed significant role in livestock and aquaculture for the enhancement of detritus food chain and production of high quality protein. Maggot and other non-conventional insects have been explored to check their nutrient contents, relative abundance, use and conversion into processed meals, incorporation into formulated diets and subsequent development of technique(s) for on-farm mass production (Ugwumba and Ugwumba, 2003). The objective of this paper is to highlights simple techniques of maggot production.

MAGGOT PRODUCTION

Maggots: Are the larvae of the domestic fly (*Musca domestica*). Maggot serves as a solution to the high cost of feed in fish and livestock production especially poultry production.

ROLE OF MAGGOT PRODUCTION

1. As product for aquaculture: feeding of fresh maggots to tilapia and catfishes is can be done twice daily (late in the morning and later afternoon). It provides rich sources of nutrients.
2. Maggot provides a source of nutrient for chicken, quail, turkeys, guinea fowl, ducks etc.
3. It provides fertilizer for crop production; the spent substrates are used to fertilize directly plants in the field. The spent substrates are incorporated into the compost production.
4. It also helps to protect the environment as wastes are concentrated and decomposed.
5. The technology for maggot production is simple and cost effective for farmers.

POINT TO CONSIDER IN SITE SELECTION FOR MAGGOTRY

1. Maggotries should preferably be located away from human residence.
2. The place should be surrounded with trees and vegetation to absorb offensive odour from the maggotry and reduces the excessive high ambient temperature.
3. The housing should preferably be oriented in an East-West direction to reduce the effect of direct sunlight on the substrate.
4. The roof can be made up of corrugated iron sheets or thatch. The garble roof type of building with openings at the top and sides for ventilation is recommended.
5. In the absent of housing, maggotry can be sited under the trees.

MAGGOT CULTURE

To produce maggots, the following prerequisites must be satisfied:

1. Substrates: these can be fermented grain residue, maize bran, brewery spent grain.
2. The fly attractants: these include substances that arouse the attention and attract flies to enter substrate tanks. These include animal manure like pig and poultry waste; animal offal from the abattoir, slaughtered birds visceral, crack and spoiled eggs, dead lizards, birds, rats and other animals. Decaying fruits like mangoes; Fermented parkia seeds (*Daudawa*) and other good attractant.
3. Flies: preferably house fly (Musca domestica).

Photograph 1: substrate and flies attractant application in drum.

Photograph 2: covering the substrate after flies deposited eggs for 2 days.

Photograph 3: harvesting maggot using sedimentation technique

Photograph 4: washing maggot with clean water

Photograph 5: frying maggot for preservation

Photograph 6: sundrying method for maggot preservation

TECHNIQUES OF MAGGOT PRODUCTION

Maggot production is an aerobic fermentation process. Maggot can be produce in a clean substrate tank (plastic or metallic 200 liters drum) place 20kg full of fresh animal manure (poultry litres), 5kg full of fresh brewery spent grain or maize bran and 5 litters of water should be sprinkled on top and mix them together.

Cut the animal offal into small pieces (10cm length) or other flies attractant such as blood, cracked eggs and spread them in the middle on top of the substrate. The flies are attracted immediately to lay eggs. During dry weather, water the prepared tank (drum), using a watering can. Small maggots will be observed about 6 hours later (after first contact of flies with substrate), cover the drum with mosquito net to prevent coming out of maggot from the drum. Water the substrate daily. The drier the weather, the more frequent the watering. Avoid water logging of substrate.

At day 7 after flies contact with substrate the drum should be open and harvesting will be done by sedimentation process where about 15 litters of water should be added into drum to facilitated maggot floatation, floated maggot is then harvested using rubber sieve materials and maggot will then quickly empty into bucket containing clean water to reduce dirty and substrate from maggot. Maggot will later sieved again and fried in a fried pan for 5 minutes to reduce moisture content thereby sterilizing possible microorganisms and later sun dried for 1 hour. About 4 to 6 kg of maggot will be obtained from each drum. The processed maggot will be serve to animals or incorporated into other feed ingredient for fish, poultry, pig and rabbit or packaged in a bag and stored for more than 6 months.

CONCLUSION

Maggot, the larvae of the domestic fly (Musca domestica) has ability to grow on a large range of substrates and this can make them useful to turn wastes into a valuable biomass rich in protein and fat for livestock. Therefore, qualitative and quantitative maggot can be produce without elaborated building structures, equipment, and using available substrate and flies attractant in an area.

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