

# Fly larvae production on station in Burkina Faso: Effect of substrate, attractant and season on larval biomass

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## Introduction

- The availability of cheap protein feed is a big issue in poultry nutrition in Burkina Faso
- The objective of this study is to contribute with fly larvae as an alternative to conventional fishmeal. More specifically, the study focused on assessing the best ways to maximize larvae production.

## Methods

1. 20 boxes (30 cm depth, 1 m<sup>2</sup> surface) were built for larvae production.
2. 4 substrates (local beer residue, cow dung, pig litter and manure, poultry litter and manure), 3 flies' attractants (local beer, rumen fluid content, and blood), and 3 seasons (cold-dry, hot-dry, hot-humid) were tested.
3. 10 kg of substrate, 2 liters of attractant and 14 liters of water were used in each box to produce the larvae.
4. 27 samples of the collected dry larvae were analyzed for chemical characteristics

## Recommendations

- Refine the study on the effect of attractant by testing the blood only as attractant
- Evaluate the larvae composition according to season

## Future opportunities

- Formulation of feed to be tested on guinea fowl performances by combining fly larvae with other sustainable protein source of plant origin to enhance feed palatability for guinea fowl.

# Poultry manure appears to be the best substrate for larvae production (Figure 1, P < 0.05)



Figure 1: Effect of substrate on yield of larval biomass in grams / 26 kg of fresh material

# Rumen contents mixed with blood gave the best result (P < 0.05) (Table 1)

# Production was lowest during the hot-dry season (P < 0.05) (Table 2)

# Chemical composition of fly larvae showed an acceptable level (49.3%) of crude protein content (Table 3)



Dry fly larvae from different runs

Table 1: Effect of substrate and attractant on fly larvae production (in g/26 kg of material)

Substrate	Mean larval production (g)
Rumen content	1145 <sup>a</sup>
Local beer residue	1266 <sup>a</sup>
Rumen content + blood	2187 <sup>b</sup>
Control (no attractant)	1216 <sup>a</sup>

Table 2: Effect of season on larval biomass (LSM ± SEM) (in g/26 kg of material)

Season	Mean larval biomass (g)
Cold-dry	1691 <sup>ad</sup>
Hot-dry	716 <sup>bc</sup>
Hot-humid	1364 <sup>ad</sup>

Letters indicate level of significance

Table 3: Chemical composition of fly larvae

Composition	Percentage (%) on DM basis
Dry matter (DM)	95.6 %
Ash	16.1 %
Organic matter (OM)	83.9 %
Crude protein (CP)	49.3 %
Crude fibre (CF)	12.2 %
Acid detergent fibre (ADF)	12.9 %
Acid detergent lignin (ADL)	1.8 %
Calcium (Ca)	1.2 %
Phosphate (P)	1.5 %