Other substrates that have been used by others include:

- Cow dung
- Brewery waste
- Palm kernel
- Fish offal
- Vegetable waste
- Kitchen waste
- Wheat bran
- Faecal sludge

A mixture of two or more substrates can be used as well. Substrate with less moisture can be mixed with high moisture substrate to give the desired moisture for BSFL growth.

Water content of substrate

The preferred moisture of a suitable substrate is between 60-90%. A dry substrate can be enhanced by addition of a suitable quantity of water periodically during production or at the beginning when introducing larvae. As an example: for every 2kg of wheat bran, 4.5 L of water is added to provide the desired moisture content for growing larvae of BSF on wheat bran (2kg wheat bran: 4.5L water).

Nutrient content

Substrates rich in proteins and easily available carbohydrates are the most suitable for developing larvae. When using animal manure, select from a farm that feed their livestock with nutritious feed and adhere to good husbandry practices.

Particle size of substrates

Black soldier fly larvae can easily access nutrients in substrates with small particles than in those with larger particles. Large particle substrates should be chopped into smaller pieces for easy breakdown and nutrient uptake by BSFL.

Attractants

In a system where free flying adults are relied on for egg laying (natural oviposition), an attractant may be needed to lure female adult to lay its egg.

Some attractants used are: millet porridge waste (Hausa koko), fruit waste, pig manure, and brewery waste.

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Suitable substrates for the production of black soldier fly larvae (BSFL)

Implemented by:
CABI

Suitable substrates for the production of black soldier fly larvae (BSFL)

Any organic material that can serve as a rearing medium in the production of black soldier fly larvae (BSFL) is called substrate. Eggs incubate and newly hatched larvae develop in the substrate, taking and storing the nutrients in the substrate into their body mass. BSFL are hungry feeders, consuming large volumes of substrates to store up enough energy for the adult stage because the adults do not feed and take only water.

In general, most organic waste substances are good rearing media for black soldier fly larvae (BSFL). However, choosing the right substrate is one of the most important factors to consider in a BSFL production system. The moisture content, nutrient composition and particle size of a substrate affect the development and nourishment of the larvae as well as the quality of protein obtained from the BSFL feed

Types of substrates

Larvae of black soldier fly feed on a wide range of organic waste substances or matter, from market waste, food processing waste, farm animal waste to faecal sludge. Low nutritional quality or low moisture substrate will lead to low quality BSFL feed and weak adults in an adult rearing system. In addition, the availability of the substrate, in terms of the quantities that can be obtained and the proximity of the substrate collection point to the rearing facility are equally important.

Some substrates that have been tried and tested on the IFWA project are:

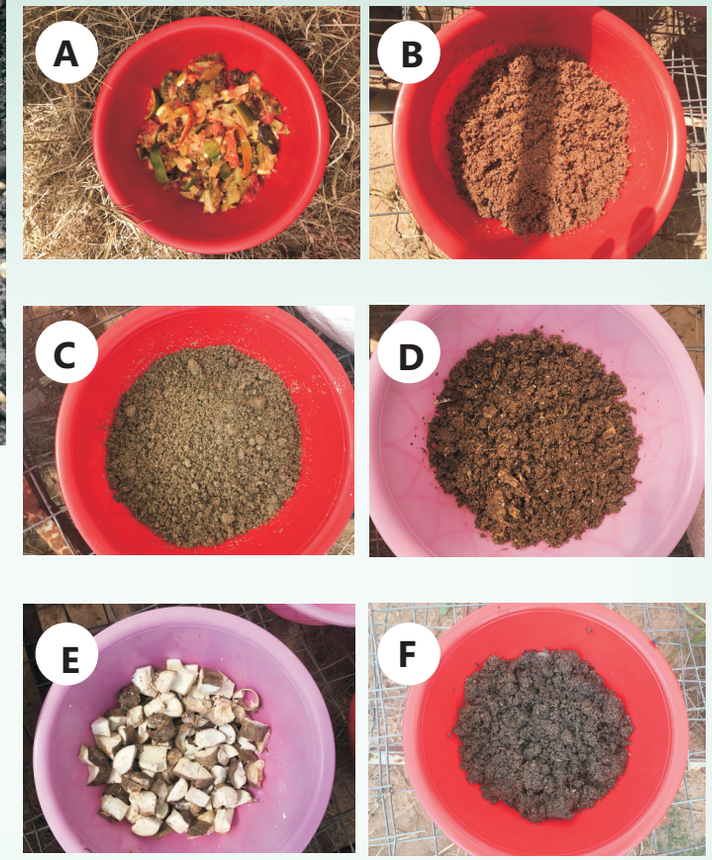

Fig 1.
(A) fruit waste; (B) Pito mash;
(C) Millet porridge (D)Chicken manure;
(E) Cassava waste; (F) Pig manure