

ORGANIC WASTE MANAGEMENT USING BSFL TECHNOLOGY

FORWARD

FROM ORGANIC WASTE TO RECYCLING FOR DEVELOPMENT

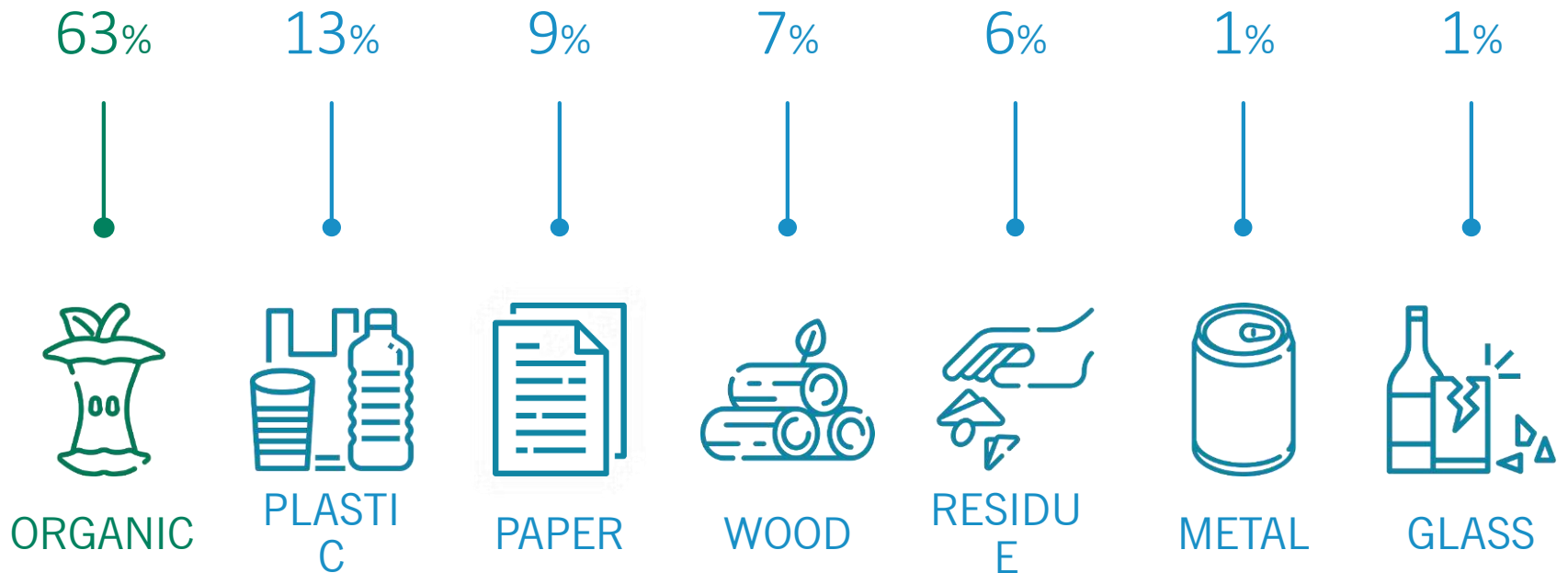


Swiss Confederation
Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Economic Affairs SECO



WASTE PRODUCTION IN INDONESIA

Source : KLHK (2017)



COMMON WASTE MANAGEMENT PROBLEMS IN INDONESIA

Most landfills in
Indonesia are
overcapacity

Waste to landfills
should be **reduced**

Incineration of
mixed waste is not
feasible

Recycling organic
waste =
**solving 60%
waste problem**



ORGANIC WASTE DERIVED PRODUCTS



BSFL



PROTEIN WORMS

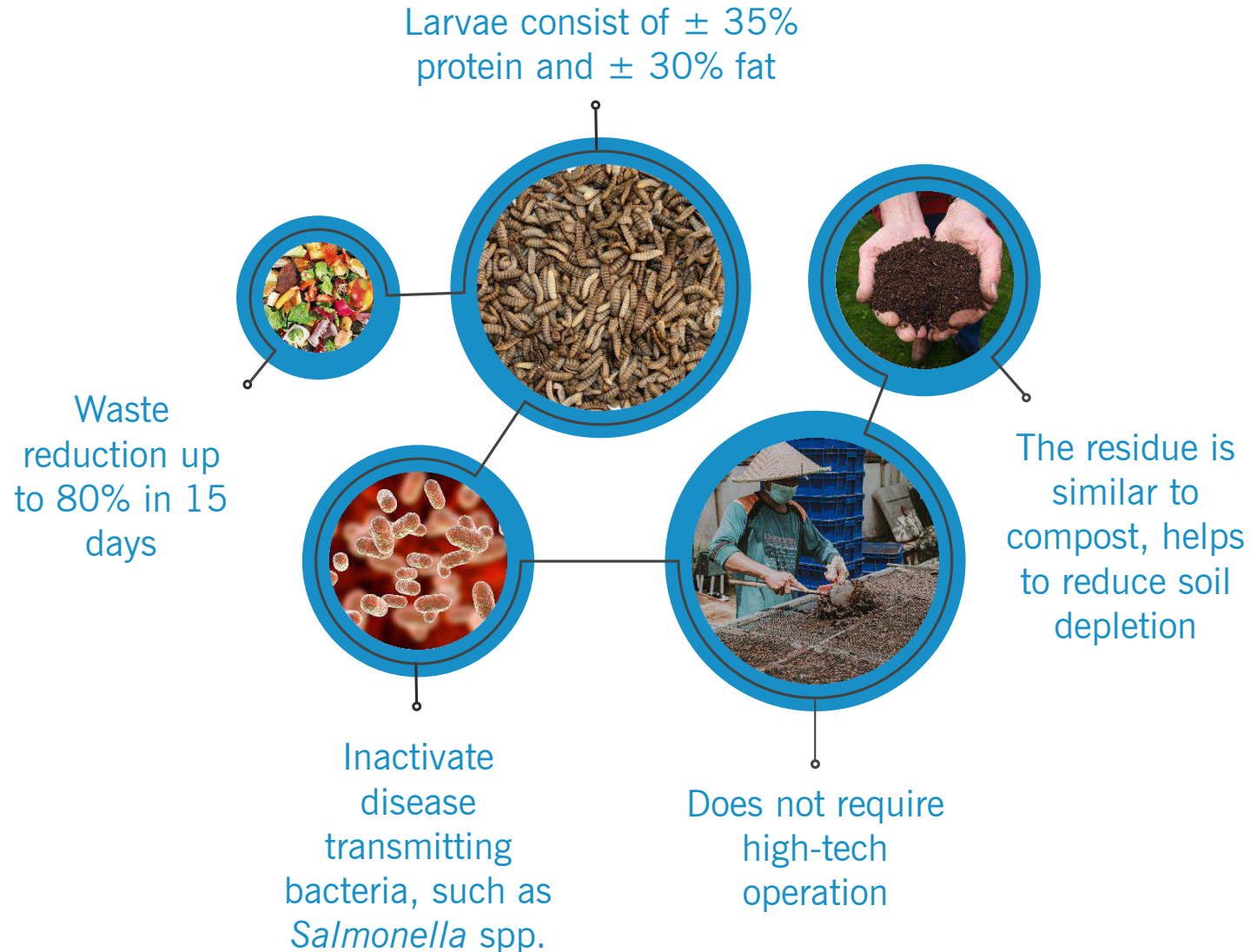


COMPOST

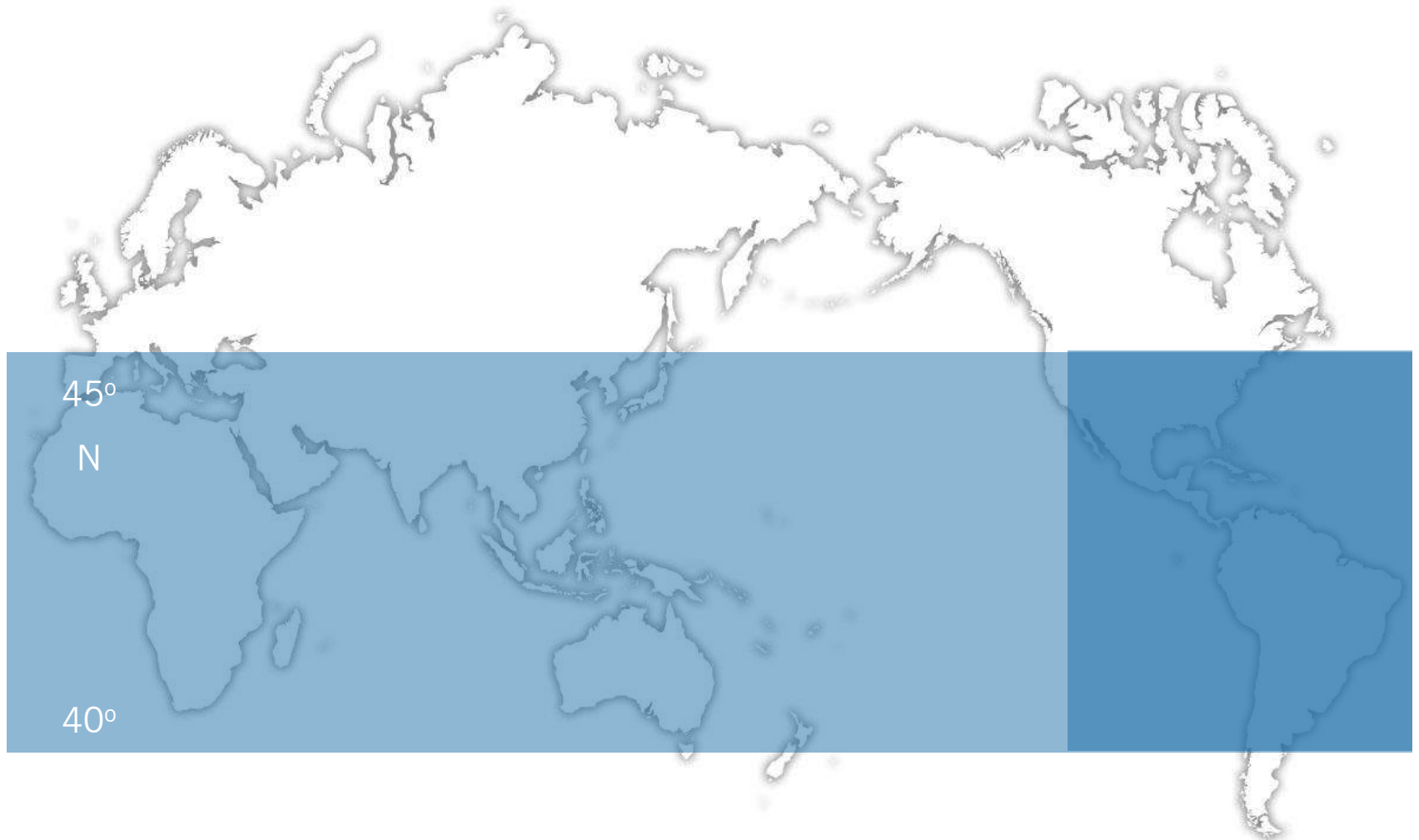


BIO-GAS

KEY ATTRIBUTES FOR BSF CONVERSION

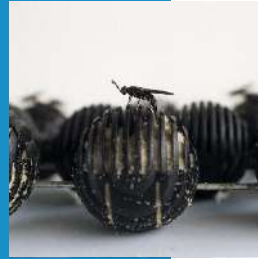


BLACK SOLDIER FLY DISTRIBUTION AREA



01

BSF
REARING



03

WASTE
TREATMENT



04

PRODUCT
HARVESTING



05

POST
HARVESTING



02

WASTE
PRE-
PROCESSING

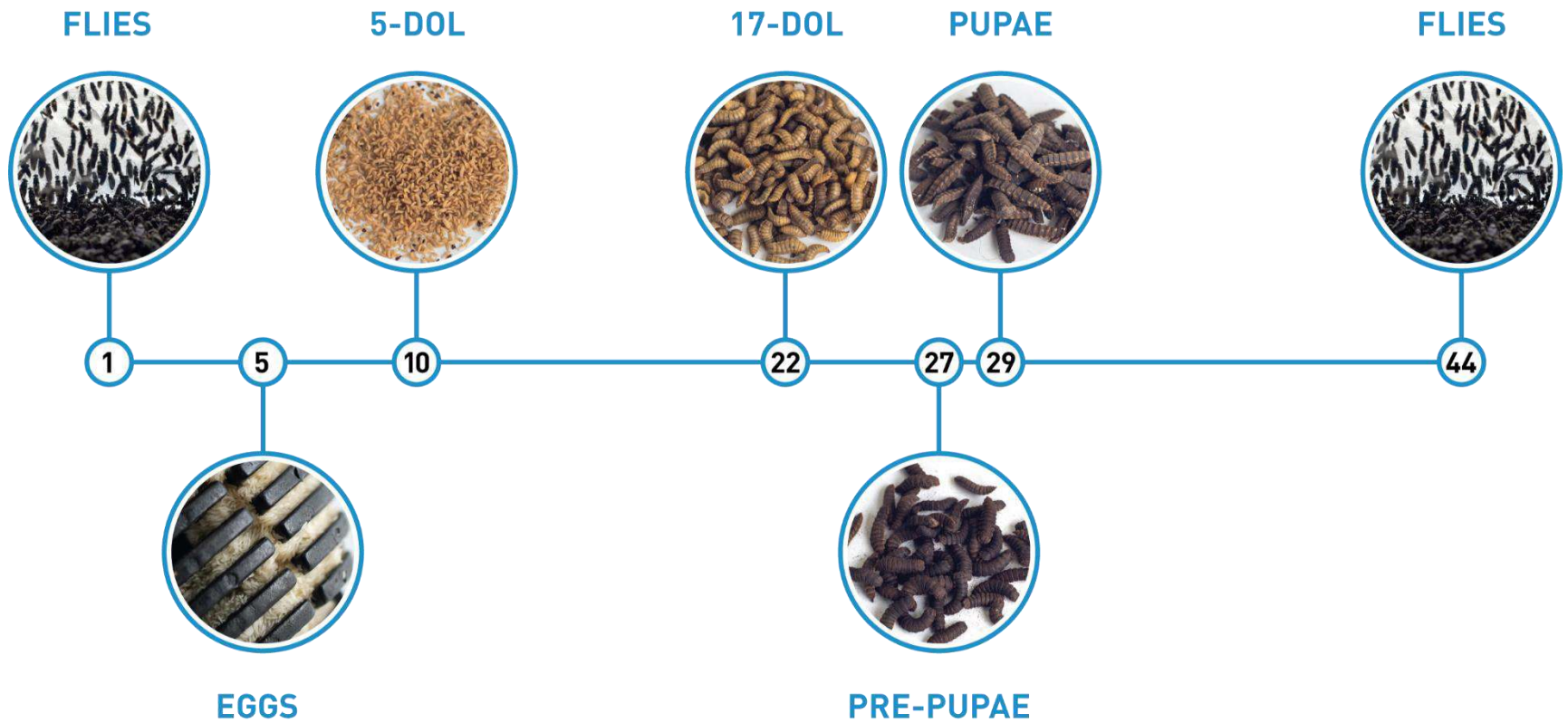


0
1

BSF
REARING UNIT



BSF REARING UNIT



BSF LIFE CYCLE





0
2

WASTE PRE-PROCESSING



WASTE PRE-PROCESSING



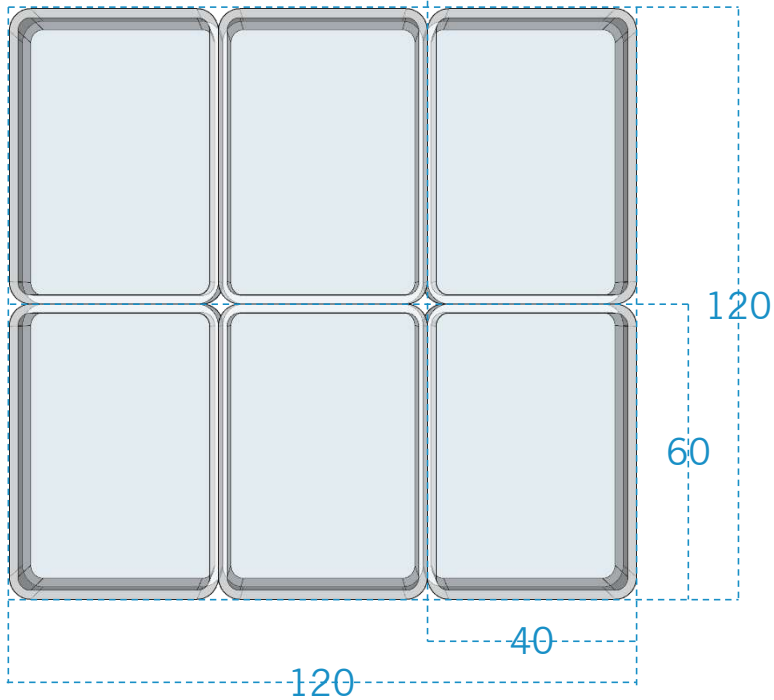
03

WASTE TREATMENT

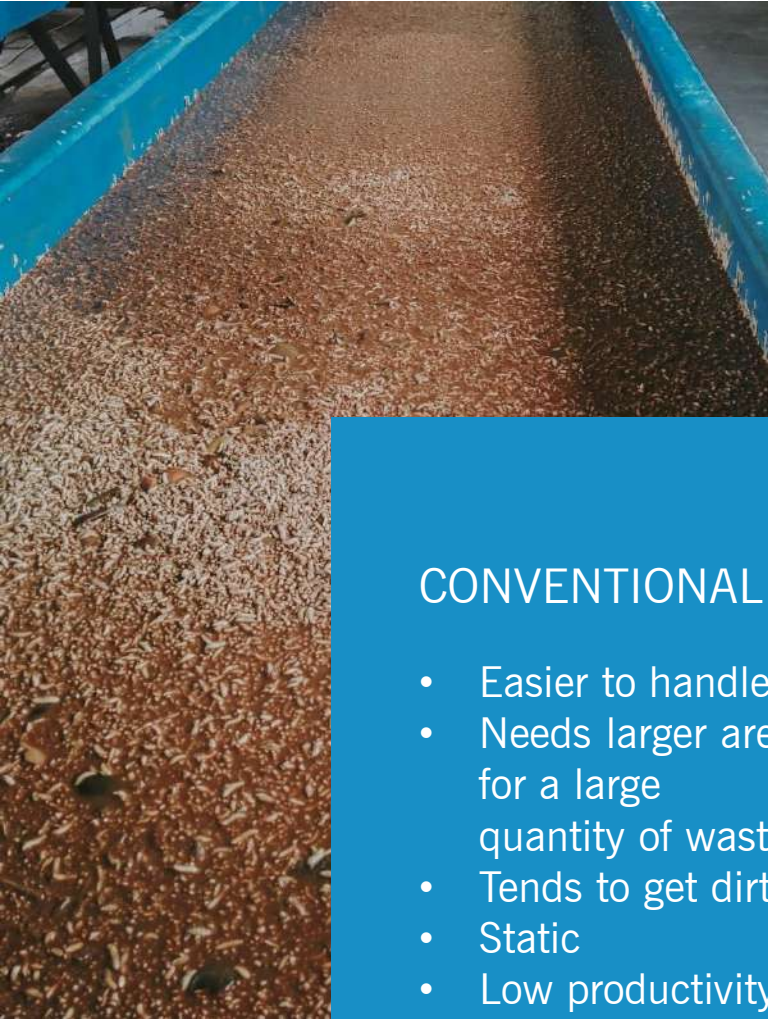
eawag
aquatic research ooo



WASTE TREATMENT

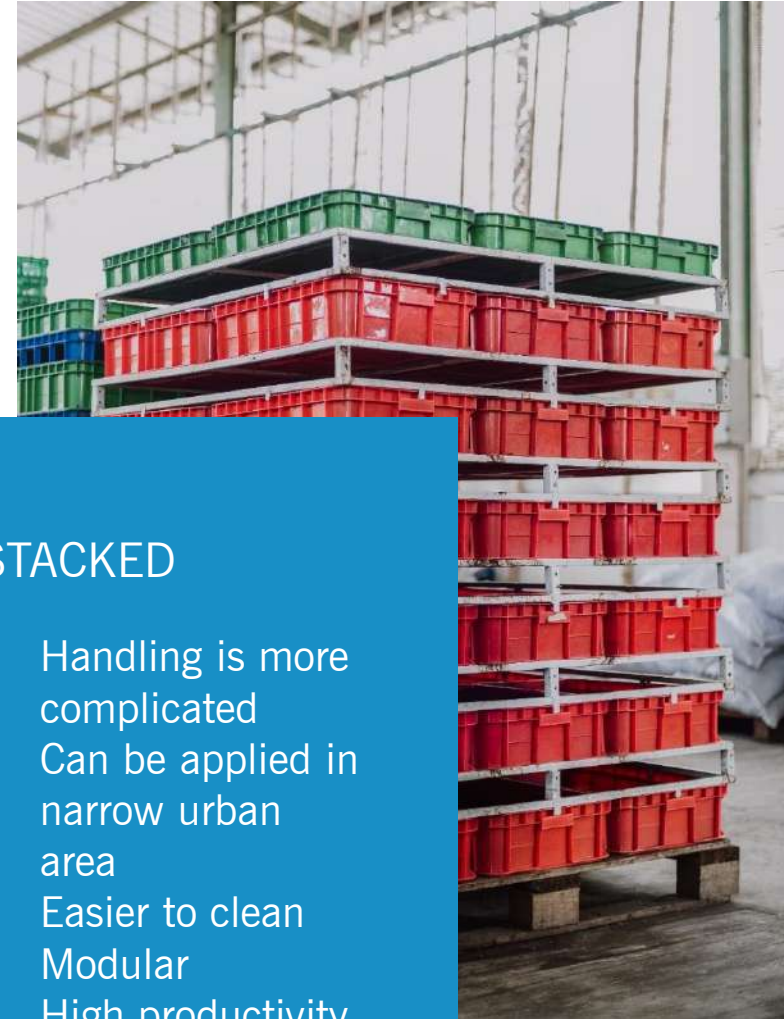


WASTE TREATMENT



CONVENTIONAL

- Easier to handle
- Needs larger area for a large quantity of waste
- Tends to get dirty
- Static
- Low productivity (3 Kg/m²/day)



STACKED

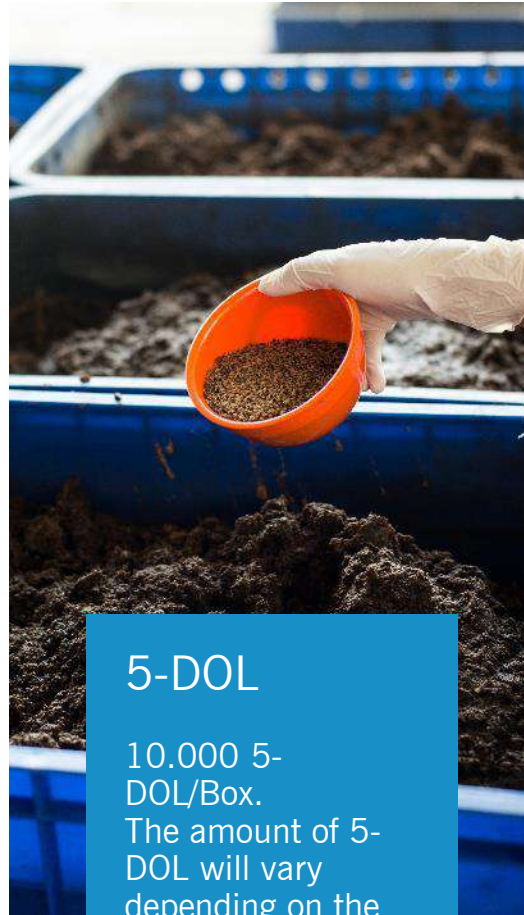
- Handling is more complicated
- Can be applied in narrow urban area
- Easier to clean
- Modular
- High productivity (35 Kg/m²/day)

WASTE TREATMENT



SET-UP

Feeding as much as 3x for 12-15 days with total amount of 15 kg/box



5-DOL

10.000 5-DOL/Box.
The amount of 5-DOL will vary depending on the amount and type of waste



KERANJANG KONVERSI

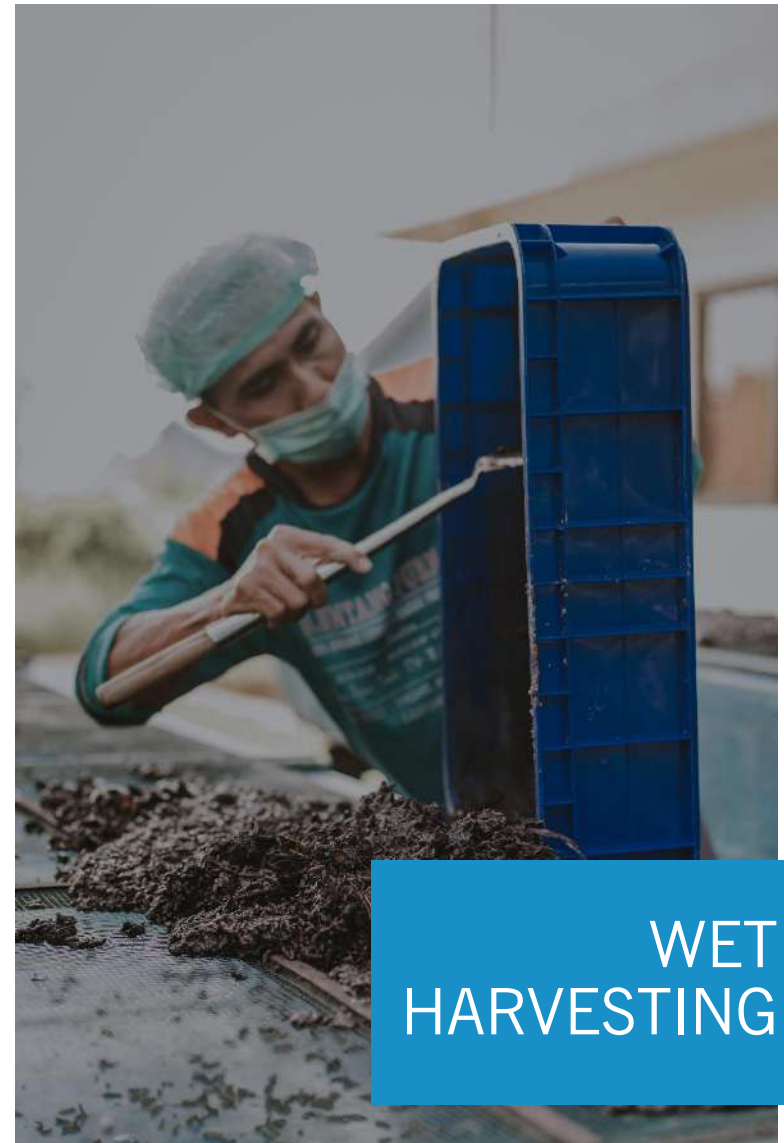
36 Box in 1 pallet, with the total amount of 540 kg/pallet.

0
4

PRODUCT HARVESTING



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DRY HARVESTING



05

POST HARVESTING



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30%
Fat

35
%
Protein

Source of essential amino acids
such as lysine, methionine, and
tryptophan

Insects are part of the natural diet of
many animals





FRESH LARVAE

Shorter

Closer

Low

Low

PARAMETER

Shelf life

Radius

Margin

Investment



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DRIED LARVAE

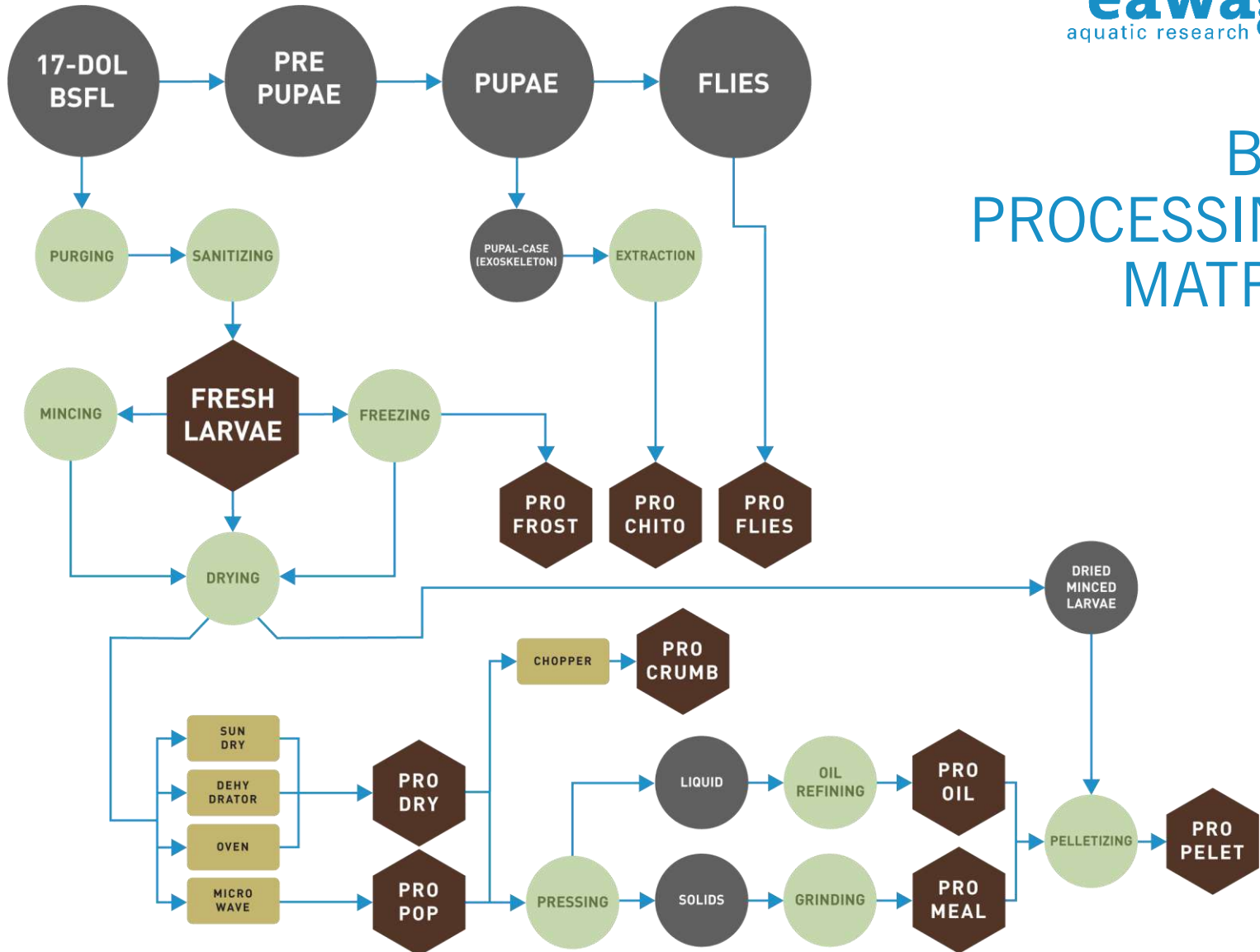
Longer

Longer

High

High

BSF PROCESSING MATRIX



BSF PRODUCTS

The image displays three different BSF (Black Soldier Fly) products from the PROBSF line, each in a 50g bag. The products are PRO POP (yellow bag), PRO MEAL (teal bag), and PRO PELET (dark blue bag). Each product is shown with a pile of the feed and a blue circle indicating its protein and fat content. The PRO POP product is made of dried larvae, PRO MEAL is a fine powder, and PRO PELET consists of small, cylindrical pellets.

Product	Protein	Fat
PRO POP	43%	24%
PRO MEAL	56%	12%
PRO PELET	23%	8%

Sandec:
Departemen Pengembangan
Sanitasi, Air dan Limbah Padat

Proses Pengolahan Sampah Organik dengan Black Soldier Fly (BSF)

Panduan langkah-langkah lengkap

Black Soldier Fly Biowaste Processing

A Step-by-Step Guide



Sign up on Coursera



Municipal Solid Waste Management

1,38K abonnees

ABONNEREN



Kuliah Online Pengelolaan Sampah di Indonesia



Webpage Kuliah Online



Kuliah Online Pengelolaan Sampah Indonesia

ABONNEREN



Terima kasih!

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Project
FORWARD

Project
SIBRE

Top Row L to R : Lutfi, Hanif, Mega, Heny, Endang, Ratna, Yuvita, Hana, Julia, Natya, Nurul, Dinda, Bram
Bottom Row L to R : Wawan, Guruh, Lia, Cynthia, Diana, Rini, Early, Fany