



Insects to feed the world.

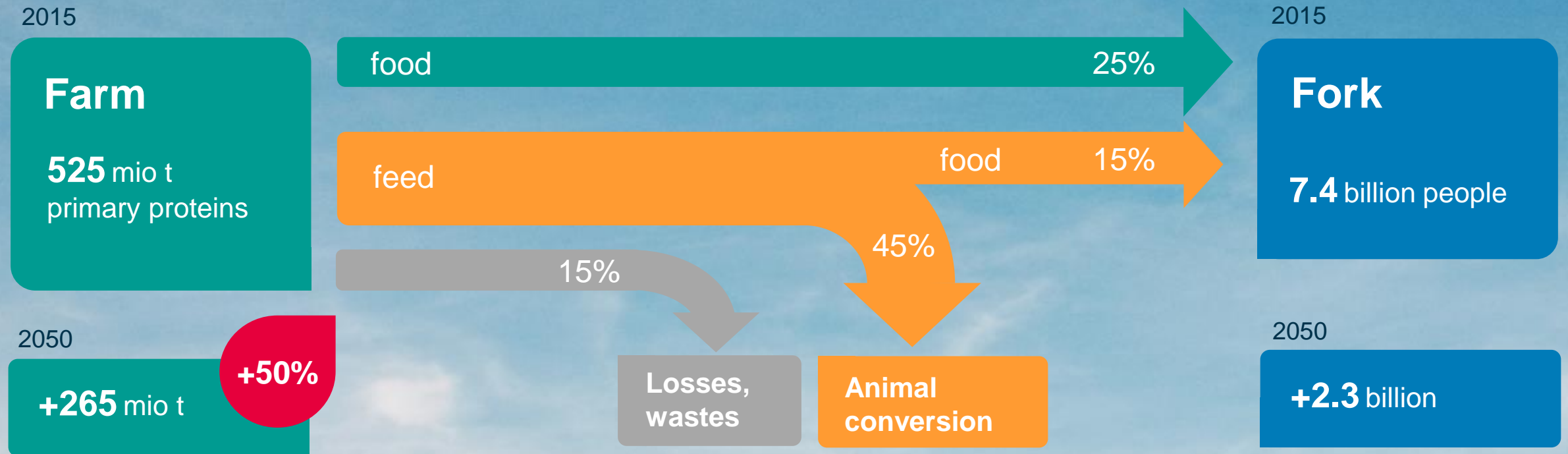
Bühler Insect Technology Solutions
Elias El-Cheikh, Dubai, 5.11.2019



Innovations for a **better world.**

BUHLER

Protein demand is expected to increase by 50% by 2050.



Meat consumption

Will increase by 50% until 2050, most of which in Asia, Africa, and Latin America.

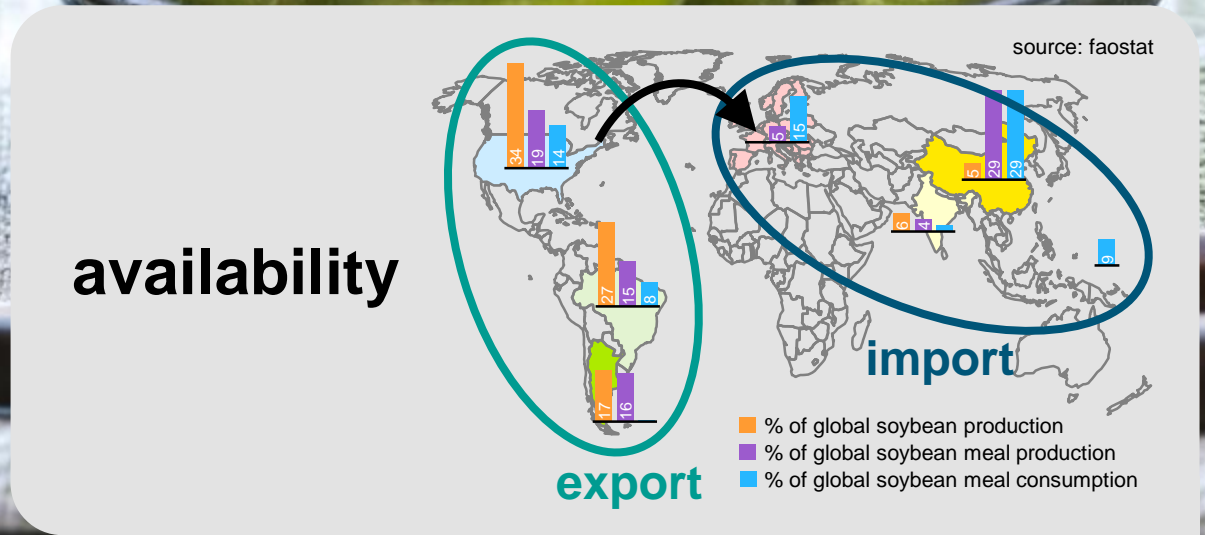
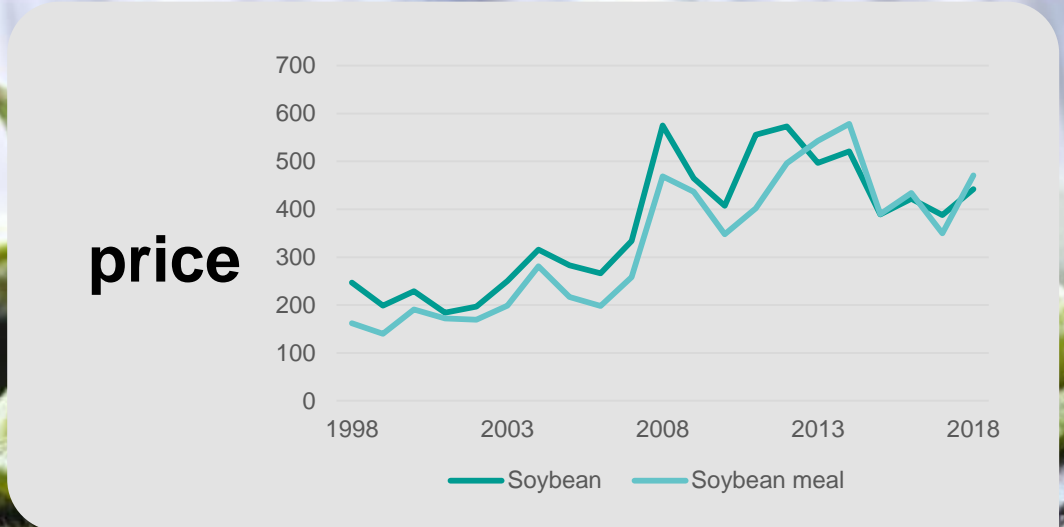
Arable land

Today, 85% is already in use

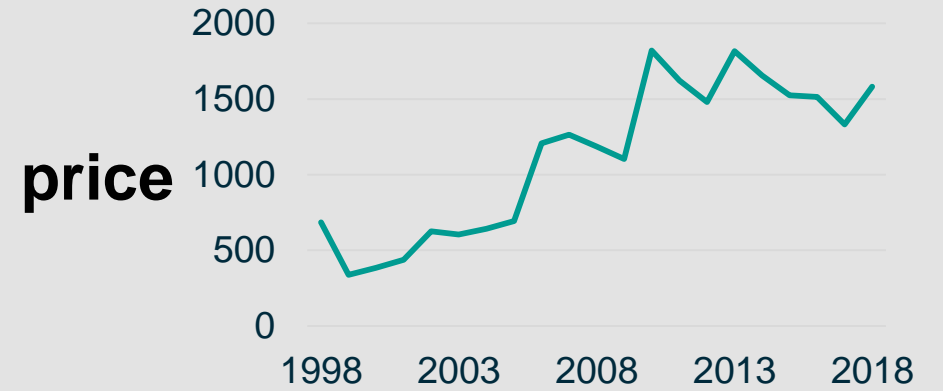
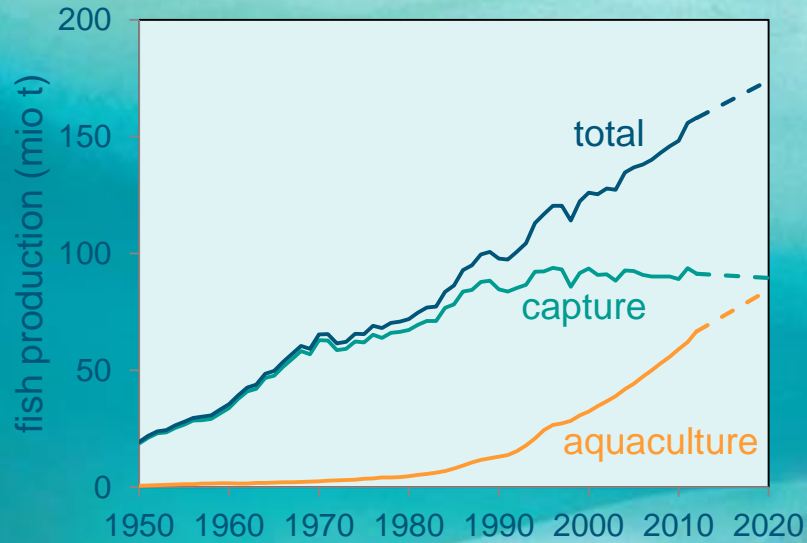
Current feed proteins

Limited availability and high price volatility

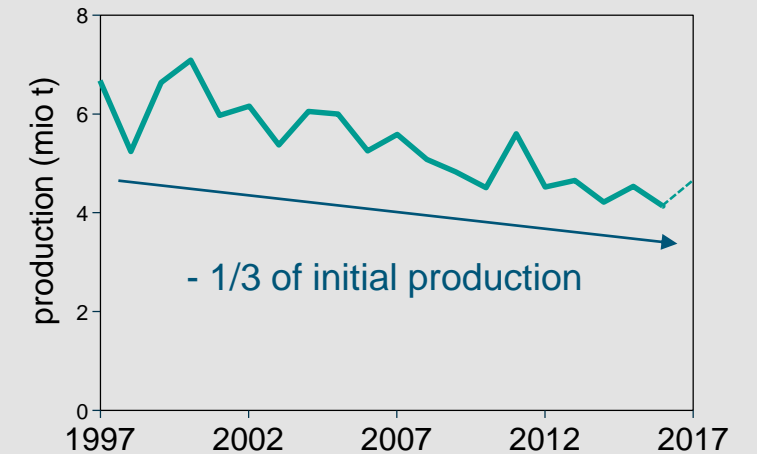
Soybean and soybean meal prices are increasing.



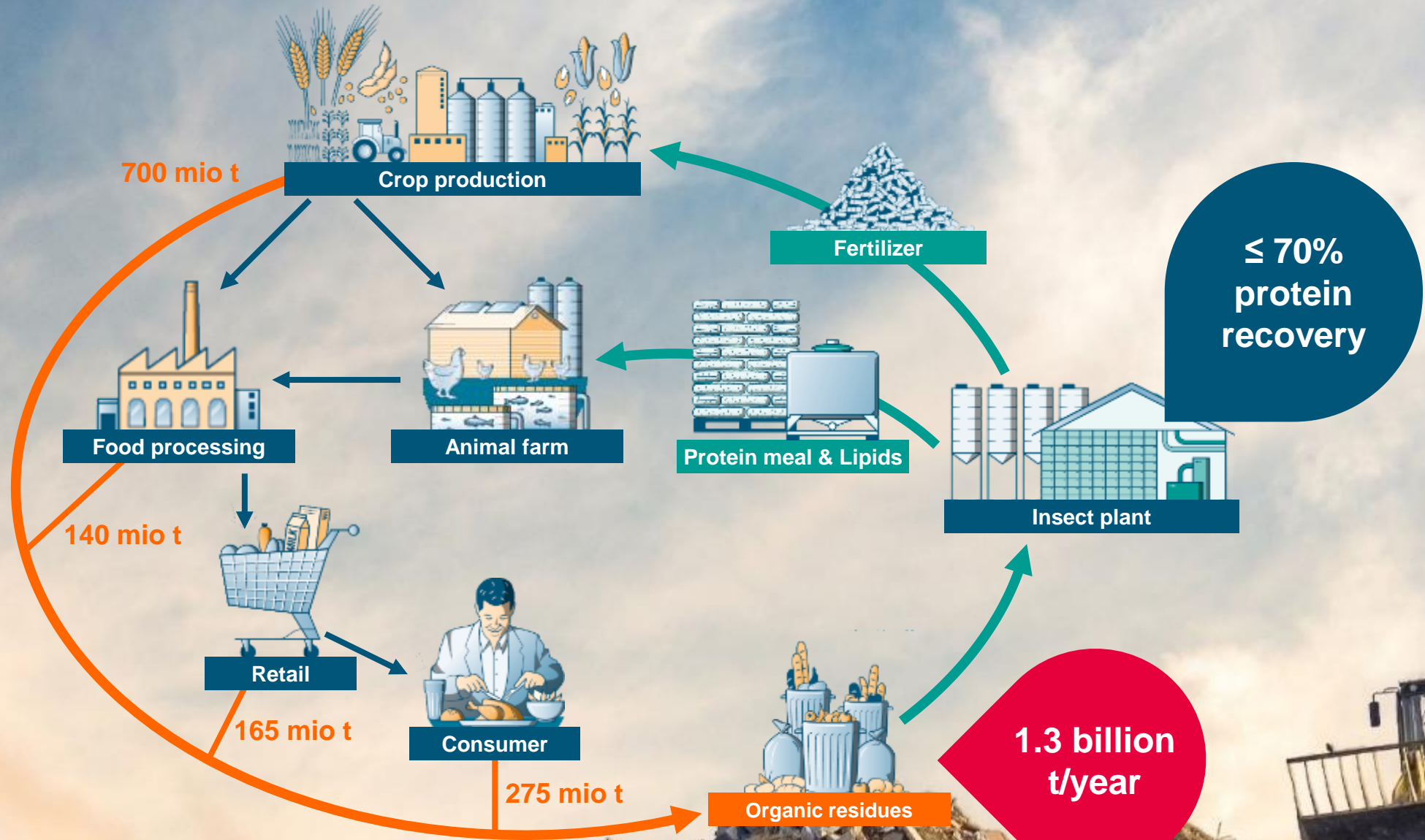
Fishmeal supply is drying up.



availability



Insects can close the loop in the food value chain.



Why insects?

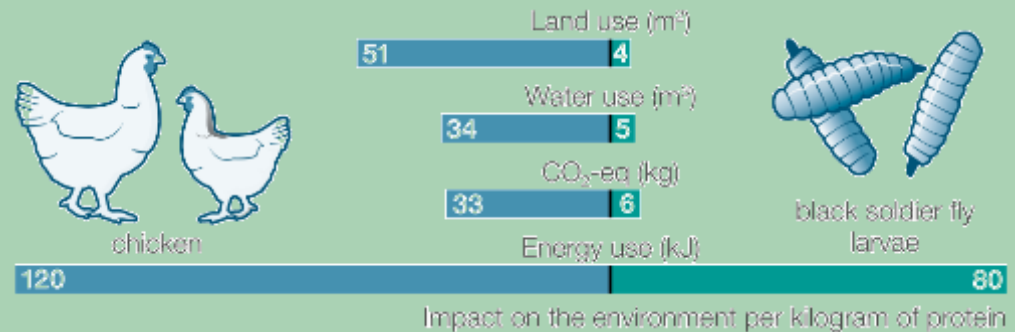


Insect proteins can be produced locally.

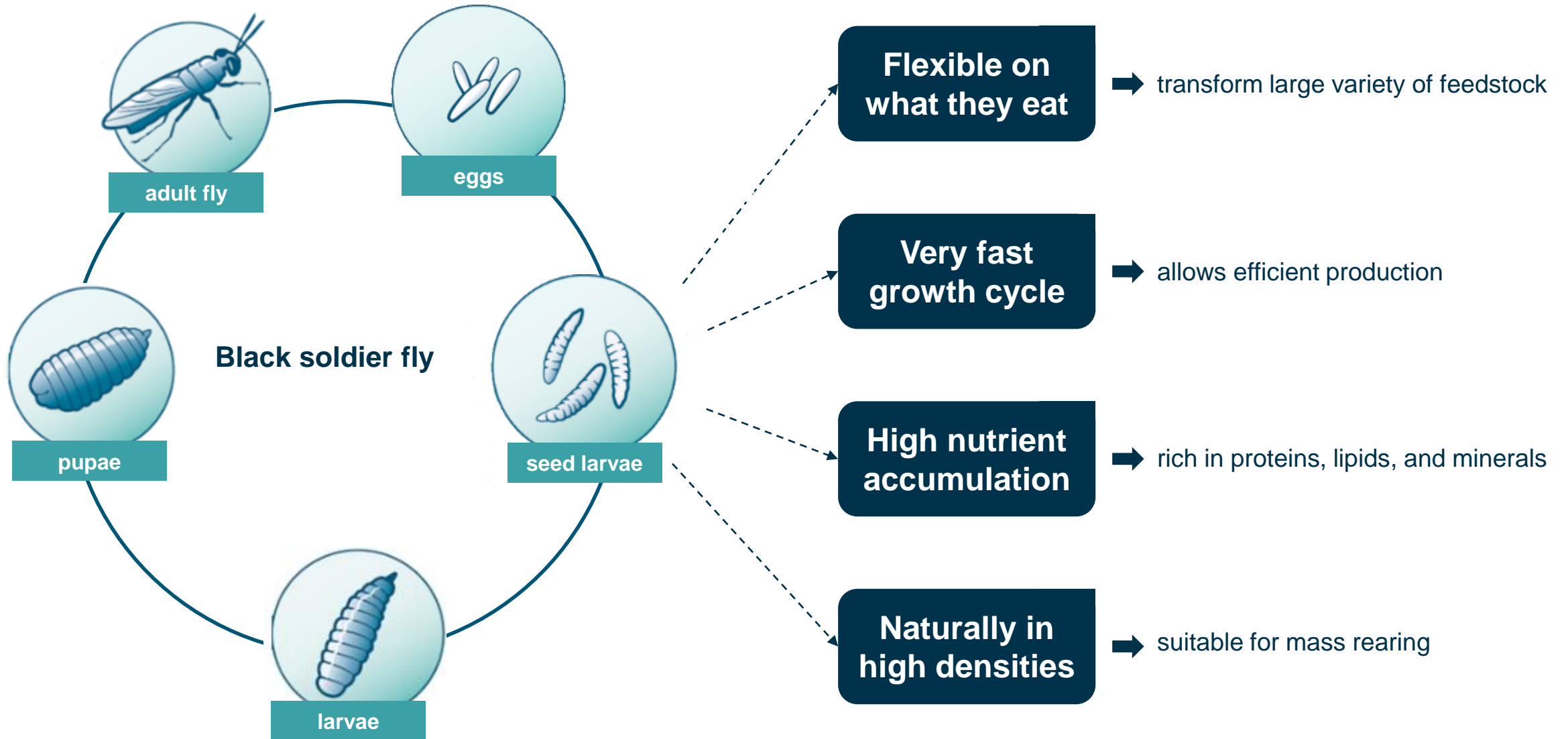


They are the natural diet of many animals.

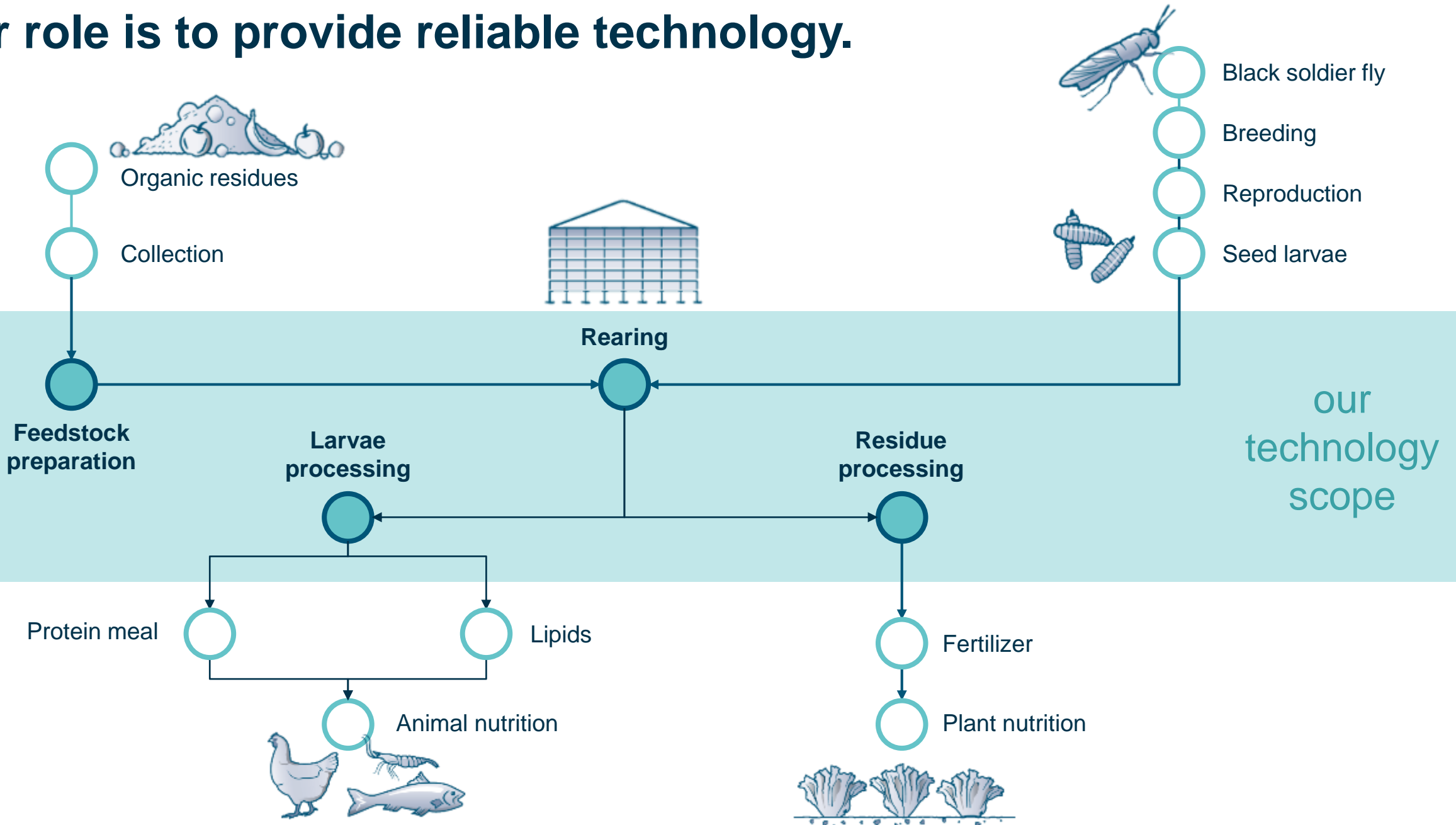
Production with little environmental impact



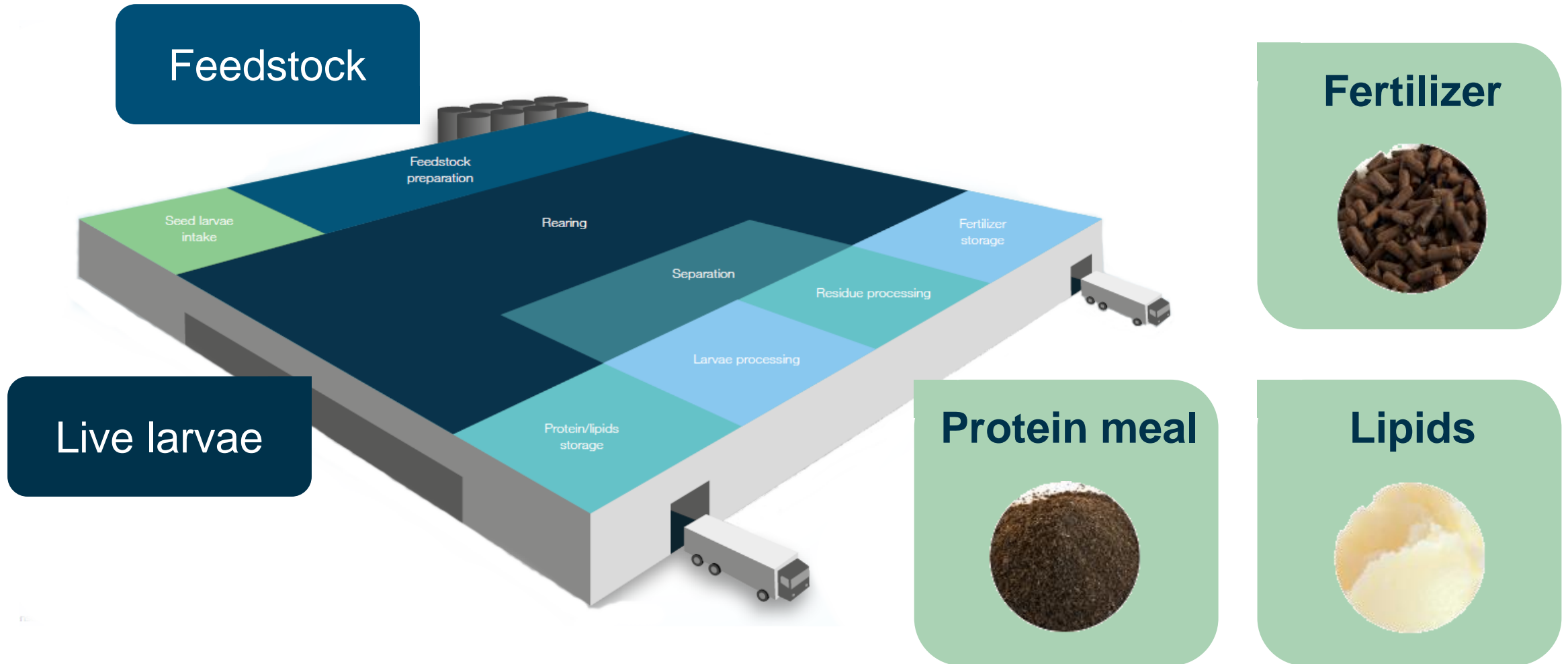
Black Soldier Fly: most suitable for feed production.



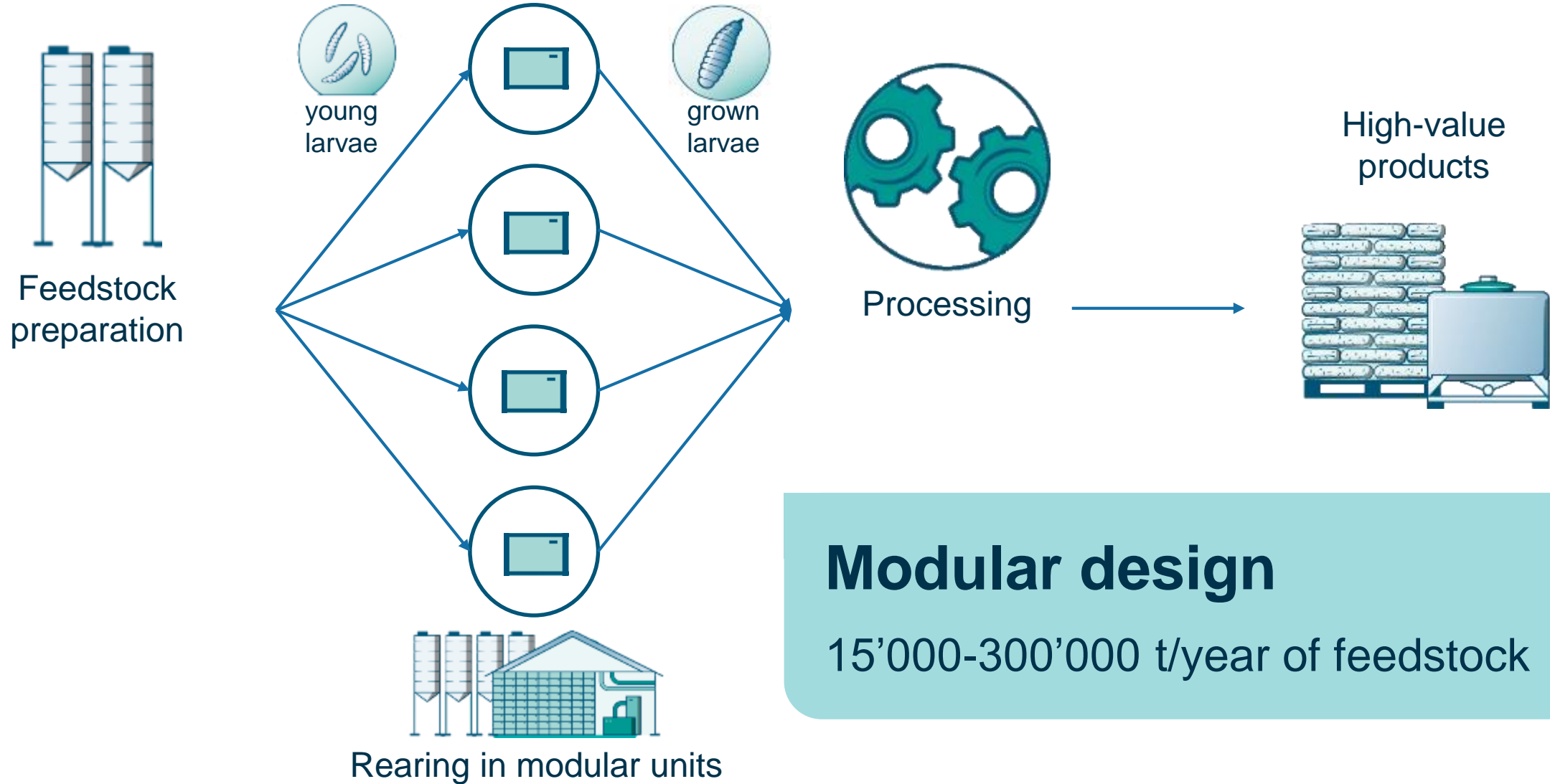
Our role is to provide reliable technology.



We focus on a complete industrial solution.



System set-up needs to consider economy of scale.



Modular design

15'000-300'000 t/year of feedstock

Product description and potential applications.

Protein meal



Key benefits: Balanced amino acid profile with very good palatability and digestibility.



Application examples:

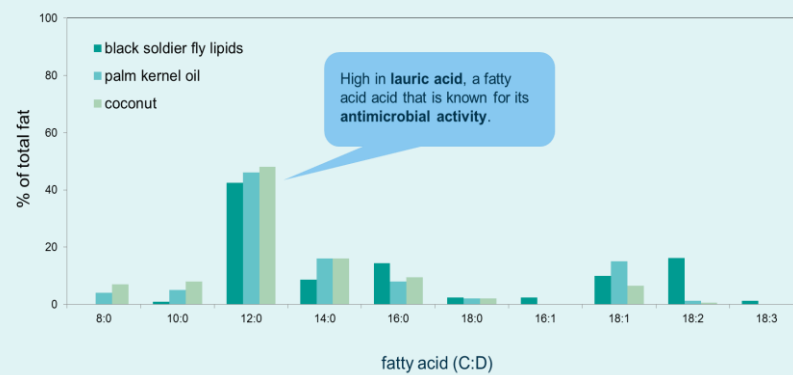
- hypoallergenic dog food
- high performing fish feed
- attractant for shrimp feed
- high-growth broiler feed
- ...



Insect lipids



Key benefits: Easy digestible energy with high lauric acid content.



Application examples:

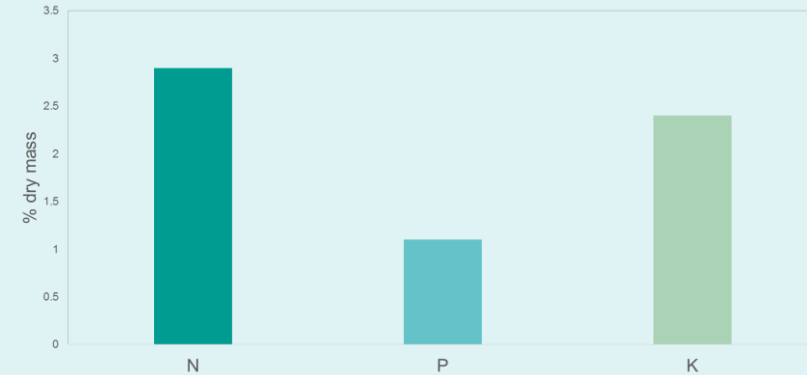
- high performing broiler feed
- chicken starter feed
- cosmetics
- detergents
- ...



Fertilizer



Key benefits: Slow nutrient release over time with chitin as functional component.



Application examples:

- soil improver for home gardeners
- low fertile soil amendment
- high yield crop production
- biogas production
- ...



Insect market hits commercial scale.



Protix opens insect protein production plant

BERGEN OP ZOOM, NETHERLANDS — Protix opened its 14,000-square-meter insect protein processing plant on June 11 in Bergen op Zoom, Netherlands. It is the first industrial insect protein production plant built by Bühler Insect Technology.

Albert Heijn selling insect company's own brand eggs

By Jane Byrne

11-May-2018 - Last updated on 12-May-2018 at 20:00 GMT



Dog food made from insects to go on sale in UK for first time

Globally pets consume 20% of meat and fish, a figure insect pet food could help to reduce

French supermarket Auchan to sell insect protein fed trout

By Jane Byrne

19-Oct-2017 - Last updated on 19-Oct-2017 at 10:37 GMT



19 October 2018

19.10.2018

Skretting Norway's factory in Averøy has produced commercial salmon feed with insect meal for the first time. Nord insect meal, with 360,000 fry receiving this pioneering feed.

Insects for feed – marketing to the end-consumers



Insects for food – examples of innovative products



Engineering Customer Success.