



INVERTAPRO: LARVAE PRODUCTION FROM FOOD WASTE

AUTHOR

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HIGHLIGHTS

- *Invertapro operates an insect factory where meal worm larvae feed on food waste. The factory is a full-scale and automated factory, with self-developed and patented production technology.*
- *Main products include protein for human consumption (dried larvae and larvae meal), protein for animal feed, and organic fertilizers based on production residuals (e.g. larvae manure and peel).*
- *The production processes and products are approved and certified by the National Food Safety Board (NFSB).*

ABOUT THE CIRCULAR PRACTICE

Invertapro is a company specialising in larvae production from food waste, and it is the largest of its kind in Norway. The company was established in 2016 and is running a factory in the rural municipality of Voss. Invertapro is upscaling proteins from food waste in the Bergen city region to products ready for human consumption, animal feed, and organic fertilizer (bio-fertilizer). Products for human consumption include dried larvae snacks and ground larvae as protein enrichment for baking flour. Feed products include ingredients in pet food. Moreover, Invertapro is developing protein basis for feed solids aimed for the expanding Norwegian aquaculture sector. The production processes and products are approved and certified by the National Food Safety Board (NFSB).

Invertapro describes their production process as “no-waste” since residuals from insect production. For instance the dry-stuff bed the larvae live on, is sold as organic fertiliser for private gardens and horticulture.

Invertapro is a shareholder company, 60 percent owned by the entrepreneurs. 20 percent is owned by the BiR waste company, 10 percent by Norgesgruppen (Group Norway) – Norway’s largest supermarket chain – and 10 percent by various actors, including a local bank and private investors. Norgesgruppen is funding Invertapro’s new factory with 4 million Euros, which will take Invertapro from a test-stage to a fully automated insect factory during the next year.

BUSINESS MODEL

Invertapro’s business model rests upon three elements: valorisation of food waste; efficient and automated production to reduce production cost; and a long-term strategy of making products for sectors and actors who are willing to pay a premium for circular goods with a low environmental footprint. Invertapro is targeting both. These include both individual consumers and industrial actors.

The consumer market for Invertapro’s products is still limited, mainly due to a lack of social acceptance. The feed markets are also currently underdeveloped, but when CBIs like Invertapro are able to upscale production and the products become competitive in both market value and nutrient properties, this will change (according to Invertapro representatives). The protein feed market in Norway is very large for its population, due to the combined sizes of the national salmon farming and poultry sectors.



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ABOUT CIRCLE

The CIRCLE project aims to develop an interdisciplinary perspective on the circular economy in the Baltic-Nordic region by integrating insights from sociology, economics, philosophy, political science, and environmental science. The emphasis is placed on the use of by-products (bio-resources) generated as part of primary production in agriculture, forestry, and aquaculture and across the sectoral boundaries to explore the underlying models of socially- and commercially-driven collaborations, and the factors facilitating and hindering the development and wider use of circular practices and collaborative arrangements thereof.

*More about CIRCLE:
<https://circle-eea.eu>*

*More about Invertapro:
<https://www.invertapro.com>*

OPPORTUNITIES AND CHALLENGES

The factors enabling the establishment of Grønne Folk and acting as a basis for its relative success are the increased awareness of food waste in the Norwegian consumer market (which Grønne Folk helps to reduce) and increased focus on eating more vegetables. Also, Grønne Folk is situated in a vegetable-producing agricultural region, which means that they have easy access to waste vegetables and transportation distances are kept low.

According to Invertapro, future challenges and potential barriers are a lack of social acceptance of insect protein as a food ingredient, and lack of public support matching the national goals and ambitions of increased circularity and reduction of food waste in the agri-food and aquaculture sectors. Invertapro is also worried about increased competition for bio-residuals in the future, as more circular business initiatives are established.