

Seed Money Project: ProEnto, Cies Roskam

Insects for feed and food

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Content of presentation

- Background
- Workplan
- Activities performed
- Food safety
- Substrates
- Strategy
- Business plan
- Next step

Background

- March 2015 Lunch meeting state secretary in Mexico
- Start-up phase ProEnto company: Black Soldier Fly
- Proposal has a strong theoretic technical view
- Compromise between business development & technical development

Partners

Research Partners:

- Cies Roskam - ProEnto
- Peter Ravensbergen - FBR
- Ine van der Fels - RIKILT
- Marian Peters - NGN / VENIK

Possible consortium partners:

- Christiaens Group
- NGN
- VENIK
- ProMexico: poultry consortium
- Mexican waste producers
- Buyers: Nutreco, Mexican feed/pet food companies

Work plan

Phases:

- Strategy (PR, MP)
- Technical design in relation to substrates (MP)
- Food safety aspects & risk protocols (IvF, MP)
- Business plan design (PR)

How:


- Desk study, transformation of available information
- At least 1 visit of ProEnto to NL: visit to partners
- Consortium Business Plan

Activities performed

- Several Skype calls:
 - Strategy development
 - Possible interested partners
- Visits in the NL:
 - Wageningen relevant partners (ASG, PRI, Rikilt, FBR)
 - HAS Insect Lab - Den Bosch
 - New Generation Nutrition - Den Bosch
 - Hato Lighting - Sittard
 - Christiaens Group - Horst
 - Pas Reform Hatchery systems - Zeddam
 - Orffa Additives - Werkendam
 - Koppert Biological Systems - Berkel & Rodenrijs
 - RVO - Den Haag (contacted, not visited)

Food safety aspects of substrates


- Substrates for insect rearing can contain certain microbiological and/or chemical hazards, which may transfer to insects and/or their substrates
 - Not much data available for microbiological and chemical contamination, and their transfer to insects/substrates
 - Recently, EFSA working group on safety of insects for use in feed and food reviewed all literature, and provided an overview
- General principles for legislation on food safety of products are comparable around the world
 - In EU, legislation is most strict



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Food safety aspects of substrates


- Discussion meeting with RIKILT expert on how to ensure the safety of insects, produced by ProEnto
 - EC principles taken as starting point by ProEnto
 - Select several substrates to be used:
 - Crops from Mexico: alfalfa, maize, tomatoes, sorghum, oatmeal, mushrooms, and lost of vegetables and fruits
 - Select set of fixed suppliers of substrates
 - E.g. several restaurants, catering companies



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Food safety aspects of substrates

- Identify potential hazards of concern in the substrates
 - Pesticide residues, heavy metals, packaging materials?, mycotoxins?
 - All substrates will be heated, thus low probability of microbiological contamination
 - Also look at possible contamination of frass, since it will be used as fertilizer
- Identify possible control measures
 - Sampling for certain chemical contaminants
 - Which contaminants to test, how to test, what are levels of concern?
 - Needs to be further defined



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Dilemma's & choices: waste manager or feed supplier

- Background: the playground to act on is a 'blue ocean of possibilities'
 - Risk is to lose focus and energy on exploring every business opportunity
 - Clear strategic choices needed
- Roles input stream as substrate for insect production:
 - Conversion of waste with insects – business is based on fees for processing of waste
 - Producer of feed – business based on production of safe feeds
- Implications:
 - Business model – different revenue streams
 - Markets
 - Production system




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Conditions & complications

The choice of the end market determines:


1. Quality – safety
 - a. Nutritional value
 - b. Contaminants
 - c. Reliability of the source (Protocols & documents)
2. Quantity
 - a. Availability
 - b. Seasons
3. Price



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Setting the standards at ProEnto

- Introduction to the Dutch Quality Handbook based on Venik standards
 - to be adapted to the specific Mexican situation
- Introduction to standard protocols/procedures and forms
 - to be converted to the Mexican ProEnto-situation
- Research procedures for ProEnto's own R&D to evaluate
 - Quality vs. price,
 - Performance tests and feed-conversion of different substrates,
 - humidity, temperature and growth rates



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BSF Business opportunity

Strategy:

- For now: Focus on PMC: Protein production for shrimp feed, incremental growth of the company
- For later: Oil production for feed and pharma industry
- Find public & private investment partners

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Market scope

No limitations (no legislation) in Mexico for use in animal feed:

- Feed for fish & shrimps
- Pet food
- Chicken feed

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Business partners

- Substrates – Chicken farmers, ChampiMex, Agropark Queretero
- Substrates handling company – Christiaens Group
- Hatchery system company – Pas Reform
- Lighting company – Hato
- Milling / Extraction – Ottevanger
- Feed ingredient company – Orffa, Unilever, Coppens Diervoeding
- Consultant – NGN

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Finances

	1 st year	2 nd year	5 th year
Income (€)	200,000	1,000,000	4,000,000
Costs (€)	430,000	900,000	1,800,000
Result before taxes	-230,000	+100,000	+2,200,000
Investments	400,000	400,000	400,000 (3 rd)

Price of insect protein varies a lot: €1,300 – 7,000/ton: €1,300/ton
 Price of insect oil varies a lot: €3,000/ton (compare: lauric acid = €40,000/ton)
 Price of organic waste: €150/ton

Break even point: 1.5-2 year

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Lacking knowledge

Substrates

- What substrates are the best diet for the BSF larvae for the best nutritional value of the insect protein?
- What pre-treatment is necessary to reduce risks?

Production process

- How to set up a risk control system to avoid contaminations?
- What system is the best to feed the larvae during growth?
- What are the optimal temperature, humidity, light etc. conditions in all stages of the insect cycle?

Nutritional value

- What is the nutritional value proposition?
- What is the performance in animal diets?

Legislation

- What will be EU, US or other worldwide legislation?

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Aim:

BSF Insect umbrella project for TKI Agri-Food

Umbrella project (*Koepel project*): Insects in feed and food with 4-5 PPS projects each with different partners f.e.:

- Substrates system: ProEnto, Christiaens Group, HAS Den Bosch, ASG
- Production system: Protix, ProEnto, Hato, Pas Reform, HAS Den Bosch, PRI
- Protein in feed and food: Protix, ProEnto, Orffa, Trouw Nutrition, FBR, ASG, NGN
- Food and feed safety protocols: RIKILT, VENIK, ...
- EU and worldwide legislation: LEI, RIKILT, VENIK



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Thanks for your attention

Questions?

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