



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



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



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



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



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



Dilemma's & choices: waste manager or feed supplier

- Background: the playground to act on is a 'blue ocean of possibilities'
- O Risk is to lose focus and energy on exploring every business opportunity
- o Clear strategic choices needed
- Roles input stream as substrate for insect production:
 - O 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:
 - O Business model different revenue streams
 - Markets
 - o Production system

WAG ENING EN UR

10

Conditions & complications

The choice of the end market determines:

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

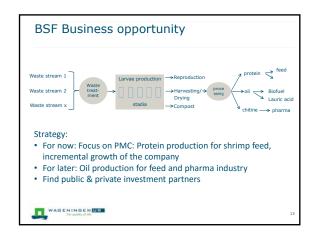


Setting the standards at ProEnto

- Introduction to the Dutch Quality Handbook based on Venik standards
 - o to be adapted to the specific Mexican situation
- Introduction to standard protocols/procedures and forms
- o to be converted to the Mexican ProEnto-situation

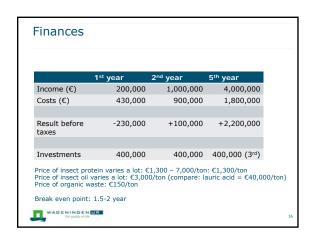
 Research procedures for ProEnto's own R&D to evaluate
- Quality vs. price,
- Performance tests and feed-conversion of different substrates,
- o humidity, temperature and growth rates

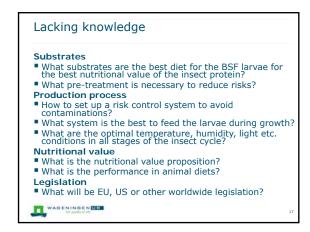












Aim: BSF Insect umbrella project for TKI Agri-Food Umbrella project (Koepel project): Insects in feed and food with 4-5 PPS projects each with different partners f.e.: Substrates system: ProEnto, Christiaens Group, HAS Den Bosch, ASG Production system: Protix, ProEnto, Hato, Pas Reform, HAS Den Bosch, 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

