Stimulation of natural defenses:

a growing technique for plant protection against diseases

Dr. Olivier Klarzynski

Laboratoires Goëmar
St-Malo - France
A GROWING COMPANY
focused on international expansion

Head Quarter
Saint Malo, France (1974)

US Commercial Subsidiary
Agricultural business

US Manufacturing Subsidiary
Valve and packaging technologies
OUR ACTIVITY
Developing and marketing Sea based products aimed at Health

Sea water

Seaweeds

Human Health
- OTC : sea serums
- Pharmaceutical molecules
- Cosmetics / Nutraceuticals

Plant Health
- Biostimulants
- Plant vaccine
- Cereals decontamination
Plant vaccine
An innovating crop protection strategy

Plant Health: Iodus product
- The first plant vaccine approved
- A product resulting from 10 years of R & D
- A patented molecule, Laminarin, extracted from L. digitata
- A natural product, a real technological breakthrough
Laminarin and the Vaccination concept

The Lab of the Sea

- Perception of the pathogens
- Cell wall reinforcements
- Phytoalexines
- PR Proteins
- Systemic signals

Plant Pathogens
Elicitors and plant-pathogen relations

- Cell wall
  - FUNGI
    - nuclear
    - Laminarin
      - pectinases
      - oligogluclans
      - glucanases
    - oligopectins
      - receptor
      - defence signals
        - receptor
        - defence products
**Laminarin** active molecule

β-glucan purified from *Laminaria digitata*

Toxicological data: non-classified molecule
- Non irritating
- No mutagenic effect
- No residues
- …
**Laminarin** based vaccine

**Status in France**

- **Approval** in November 2002 in France, against early diseases of **Wheat** (*Iodus™ 2 Cereals*)
- **First sales in France in 2003** on winter wheat
- **Laminarin** is included in **Annex I** of the 91/414/CEE Directive, since January 2005
- **Extension** in December 2005 on **Barley** early diseases (*Iodus™ 2 Cereals*)
- **New registrations in progress** for **Strawberry** (Powdery Mildew) and **Apples/Pears** (Fire blight)
Registrations in progress for cereals in:
- UK
- Germany
- Switzerland
Laminarin: a wide range of other potential applications

- **Vine**
  - Downy and Powdery Mildew, Grey Mold
  - Esca (wood)

- **Apple**
  - Scab, Powdery Mildew, Fire Blight
  - Storage diseases (fruits)

- **Tomato**: Bacterial spot

- **Soybean**: Asian rust

- **Strawberry**: Bacterial spot

- **Etc…**
Goëmar Agriculture Business on the French market

A sales network made of 22 peoples: Goëmar’s sales team works actively over the whole French territory.

Presence on major markets:
- Large crops: 40% of our turnover
- Fruit trees: 33%
- Vine: 27%

Strong relations with distributors: Our team maintains a thigh technical and commercial partnerships with the distributors.
Goëmar selling's capacities Worldwide

- Goëmar’s Export team works with our national and international distributors.

- Agrimar is a subsidiary of Goëmar in US.
Vaccine products:
Goëmar is looking for agreements with national or international companies to develop and sell Laminarine products worldwide.

Other Bio Control Products:
Goëmar is seeking for agreements with other companies to release these products on the French market.
Avenue du Général Patton
CS 61848
35418 St Malo Cedex – France

+ 33 2 99 21 53 70
www.Goemar.com