



## Load the Seed

Loading the Seed  
for Performance

Bob Legro



# Loading the Seeds for Performance



Presentation by Bob Legro  
Global Research Director INCOTEC Group B.V.

field crops



vegetables



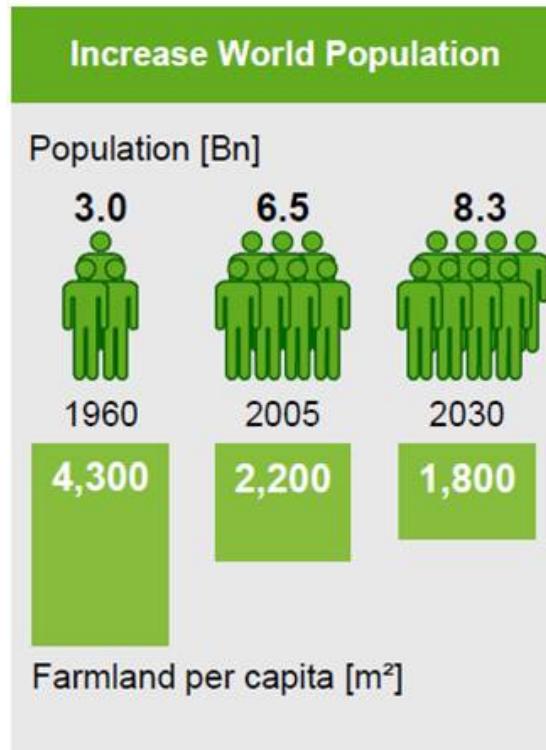
ornamentals



analytical services



# Challenges for the world



- Growing world population (> 9 billion in 2050)
- Decreasing agricultural land (urbanization)
- Protecting our planet (energy, waste)
- Climate changes (pressure on crops)

Source:  
OECD-FAO Agricultural Outlook 2008-2017  
WORLDBANK

*.....need to grow more with less!!*

# Crop productivity

Crop productivity strongly depends on

- Genetic background
- Production conditions

But ....it all starts with the seed!!

- Which seeds are alive?!
- Which seeds will germinate?!
- Which seeds will produce a healthy plant?!
- How much protection and nourishment can we provide?!

***...and this is where INCOTEC gets involved!***



# Emerging challenges in seed treatments



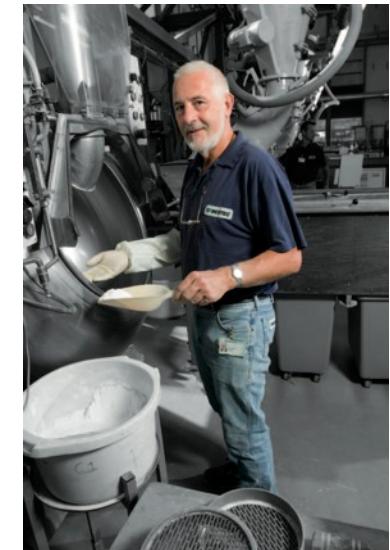
- Increasing application of multiple actives and additives
- Challenges in applying these on seed while maintaining activity of each of the components
- Seed must still meet all application, handling and plant ability requirements

***.....the seed acts as the carrier!!***



# incotec

involved in seeds



# INCOTEC strategy

- Leverage INCOTEC's advanced application technologies to deliver actives, nutrients and beneficial biological products on seed
- Superior polymer technology to handle growing complexity of actives on seed
  - Unique ability to stack actives on seed with excellent compatibility and efficacy
  - Improve application and handling of seeds
- Global presence with access to multiple actives and work with several partners

# INCOTEC around the globe

Employees WW : **486**

R&D WW: **85**

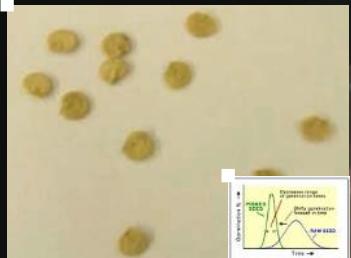
Production locations: **10**



# The world of INCOTEC



UPGRADING



PRIMING



DISINFECTION



ANALYTICAL SERVICES



APPLICATION ACTIVES  
& ADDITIVES

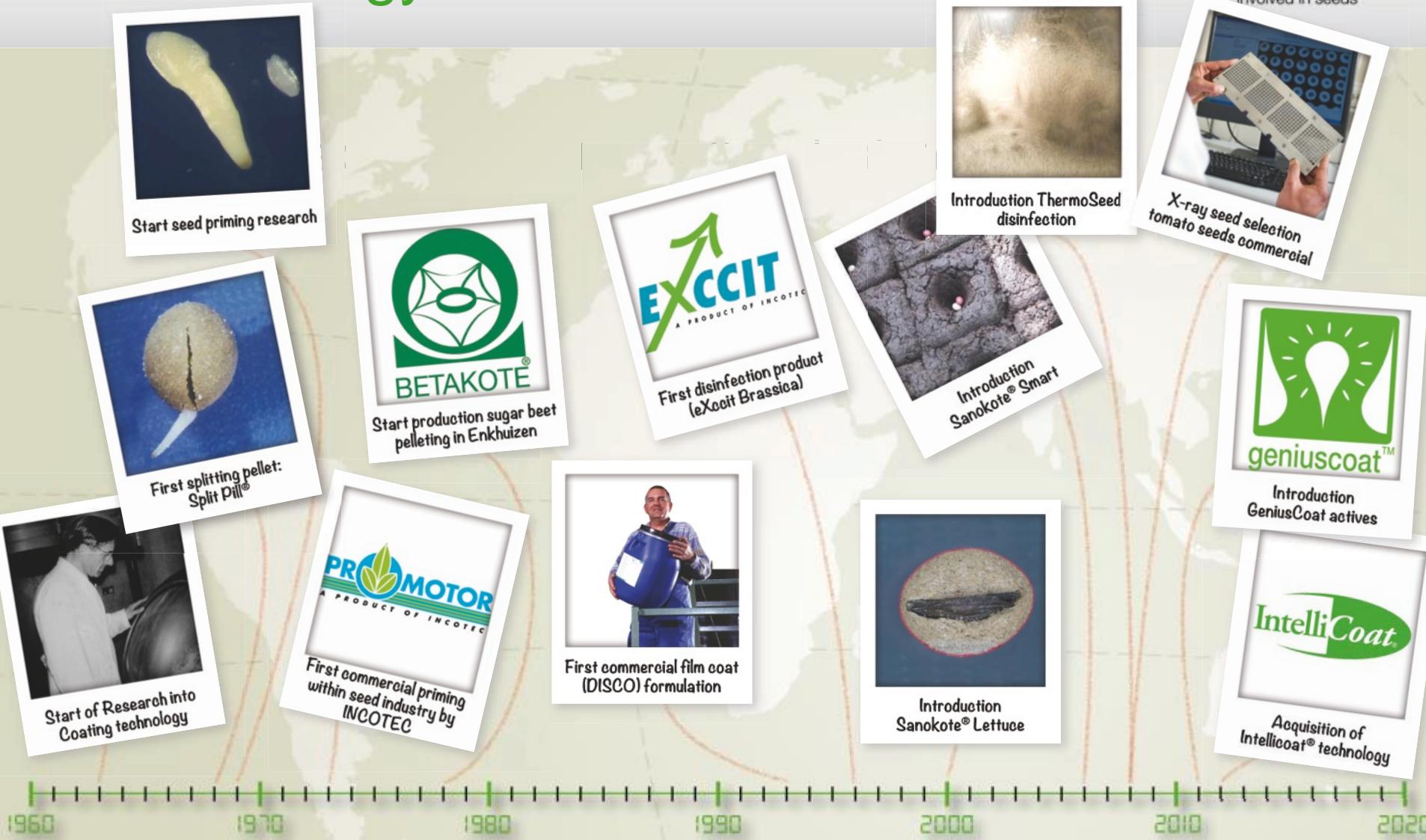


ENCRUSTING &  
PELLETING



FILM COATING

# Developments in seed and coating technology



# Challenges in crop productivity.....



## Seed Technology offers many options

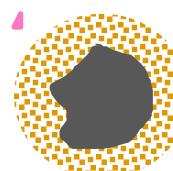
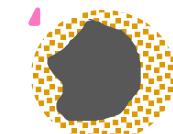
Seed factors	Technologies	External factors
Purity Inbred/Weed/Other	Testing	Disease Virus/Fungus/Bacteria
Morphology Size/Shape	Cleaning	Moisture Drought/Flood
Uniformity Size/Shape/Weight/Density/Color	Upgrading	Temperature Cold/Heat
Dormancy Time/Temp/Light/Seedcoat	Priming	Oxygen Light
Germination Energy/Capacity (optimal)	Disinfection	Soil Salinity/pH/Fertilization
Vigor Energy/Capacity (stress)	Coating	Beneficial MO's NFO/Antagonist/Mycorrhizha
Disease Virus/Fungus/Bacteria	Application Act & Add	Pest Insect/Nematode/Snail/Bird/Rodent



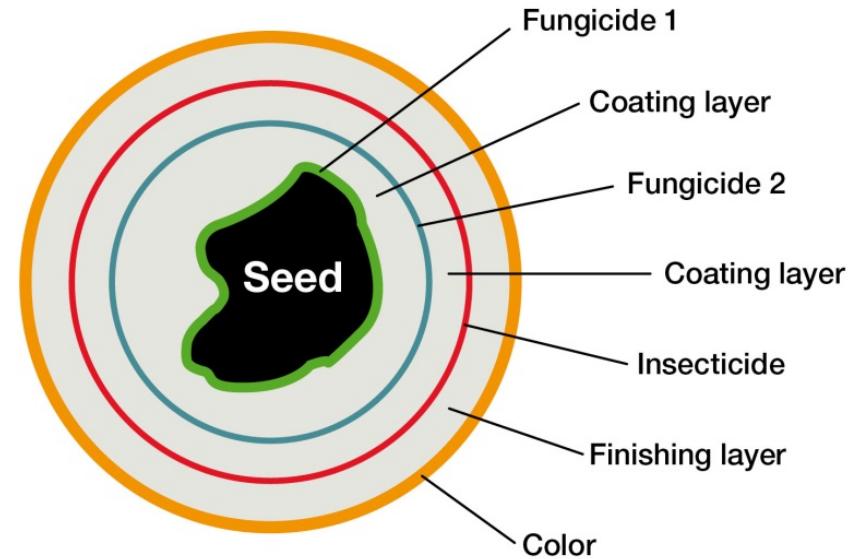
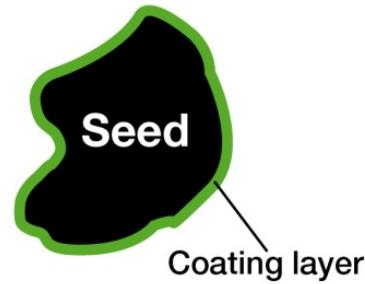
Application of  
actives and additives

# Multiple factors involved in seed application technology

- Overall economics
- Desired product form
  - Film coated
  - Encrusted
  - Pelleted

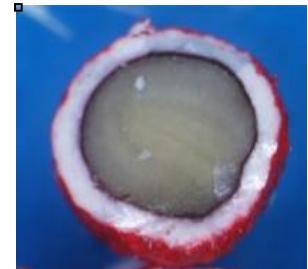


# Film coating vs encrusting/pelleting



# Multiple factors involved in seed application technology

- Active
  - Appearance (liquid or powder, color)
  - Physico-chemical properties (solubility, smell, surface tension, viscosity)
  - Rate of active (low, medium, high)
  - Toxicity of active (human toxicity, phyto toxicity)

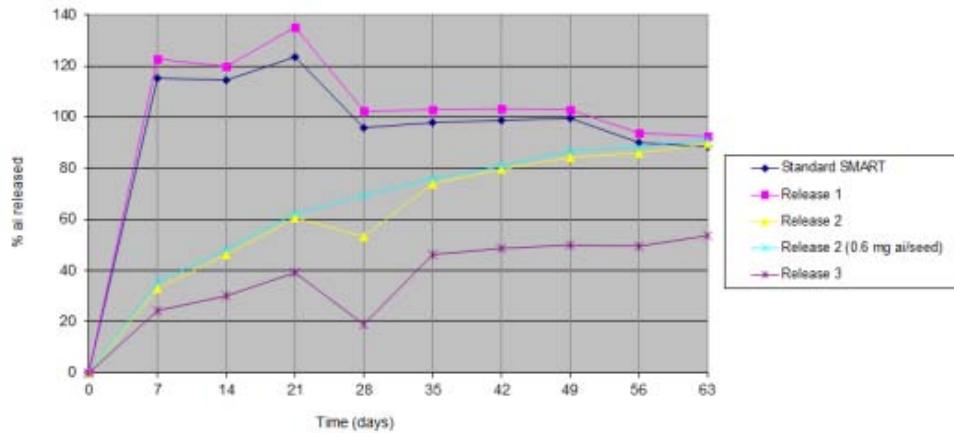


# Multiple factors involved in seed application technology



- Quality Aspects
  - Active  
(recovery, seed-to-seed distribution, stability, release)
  - Final product  
(post treatment handling, plant ability, general cosmetics, color)

Release of a.i from different coatings (0.8 mg a.i/seed) in free water at 20°C



# State-of-the-art application technology



- Film coating
- Encrusting
- Pelleting



Sunflower  
20% weight increase



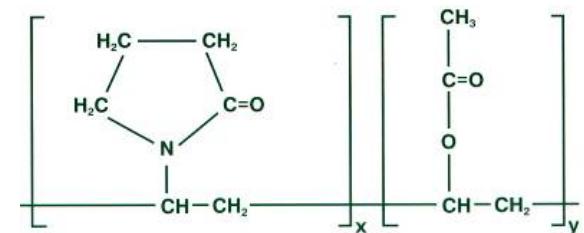
Lettuce pellet with  
Gaucho



> 150 FC formulations  
> 100 E&P formulations

# New polymer technologies

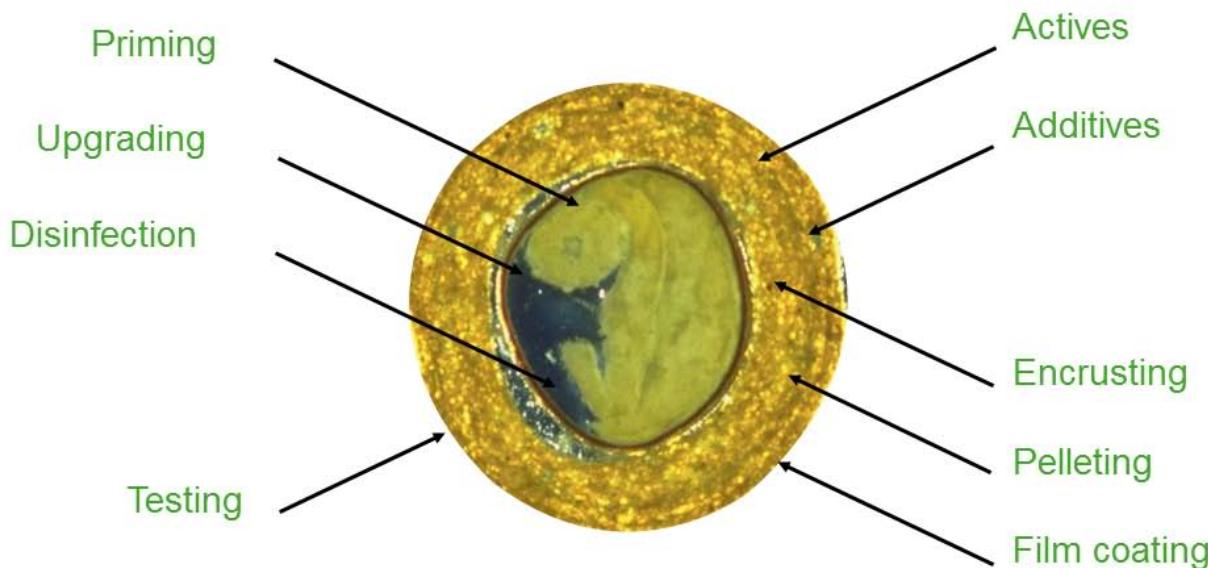
- Delay coatings for seed production – Pollinator Plus
- Functional polymer coatings for stress tolerance – chilling protection
- Next generation polymers to improve flow plant ability and extremely low dust-off
- Polymers with improved compatibility of chemicals and biologicals
- Increased shelf life of biological products



# Enhancing yield potential Incotec offers many opportunities!

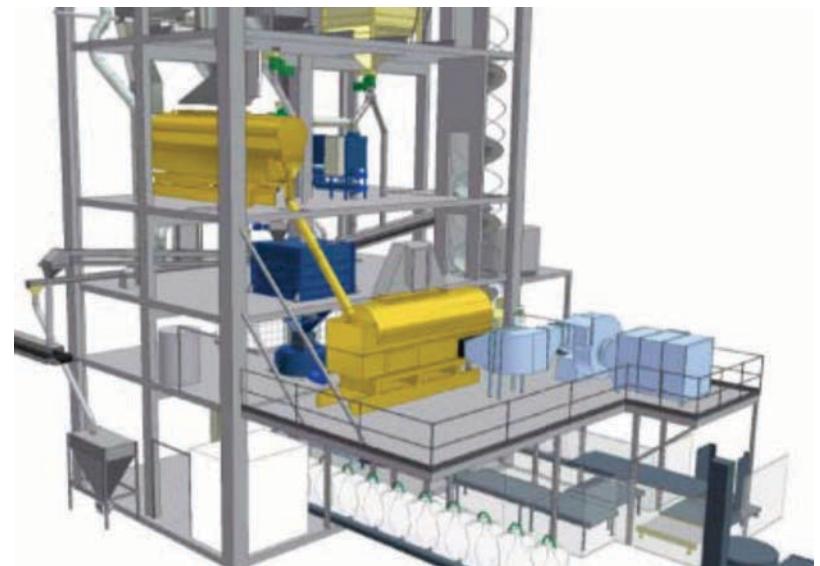
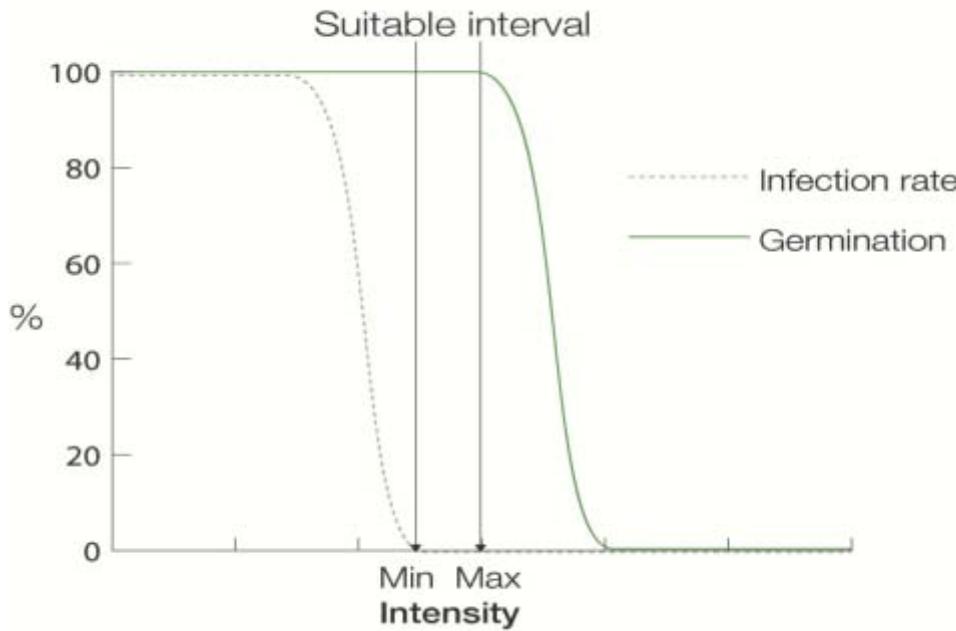


- Combine multiple products
  - Through INCOTEC's independent position we provide access to products and combinations of products from various suppliers
- Combine multiple technologies:



# ThermoSeed

## ► Unique disinfection technology



- Patented
- Wheat 15t/hr
- Rice pending

## In conclusion:

- INCOTEC is privately owned and works with all the seed companies and suppliers of actives and additives
- INCOTEC is committed to seed – we have the largest research group of its kind in the world
- INCOTEC's global presence allows us to deliver consistent products across the globe
- INCOTEC has an ever increasing, broad portfolio of technologies to meet the growing needs of the seed treatment market

# INCOTEC's mission statement

INCOTEC will be recognized as the world leader in creating and delivering sustainable added value to seeds and vegetative genetic materials to support the increasing need for healthy food and to make our contribution to the welfare of the world population.



A wide, vibrant green field with distinct dark, wavy patterns from agricultural machinery. In the upper right, two young children, a girl in a red jacket and blue pants, and a boy in a red jacket and light blue pants, are running towards the left.

Strong, healthy seed  
is the start of an abundant, healthy crop

**INCOTEC is ready to meet your needs!**



**incotec**

involved in seeds

Thank you for your attention!

field crops



vegetables



ornamentals



analytical services





Getting the most  
out of your seed!

[www.incotec.com](http://www.incotec.com)

**INCOTEC®**, your reliable partner in providing comprehensive solutions to all your seed needs:

**DISCO™ Film Coat liquids** - low dust off and excellent plantability

**Encrustment products** - seed build up to improve plantability

**Disinfection** - clean seeds for healthy plants

**Priming** - increase speed and uniformity of germination

**Additives** - enhance plant health and increase yields



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