

WE BOOST YOUR YIELD

Our nature is to help you grow

Imagine a way to optimize yield and profit before your seeds hit the soil. At Incotec we have developed a full program of seed enhancements that applies the best innovative technologies to your seed using the highest quality standards. Let's find which solution your seed needs.

Contact Incotec for:

Pelleting • Encrusting • Film coating • Priming • Upgrading
Disinfection • Application of actives and additives



Agrithority: Exceed the Seed Session

Title: Imagine Improvements in Seed Enhancement Technologies for Enabling Next Generation Agriculture



incotec

involved in seeds

Terry Meyer, Ph.D.
ASTA Dec. 2015

field crops



vegetables



ornamentals



analytical services



Improving Productivity, Safety, Value

- Yield Factors:
 - Plant breeding
 - Seedling vigor
 - Plant health
 - Agronomic practices
 - What else?
- Risk Management
- Safety
- Efficiency



Let's explore role of Seed Treatment

Benefits of Seed Treatment (ST)

Examples



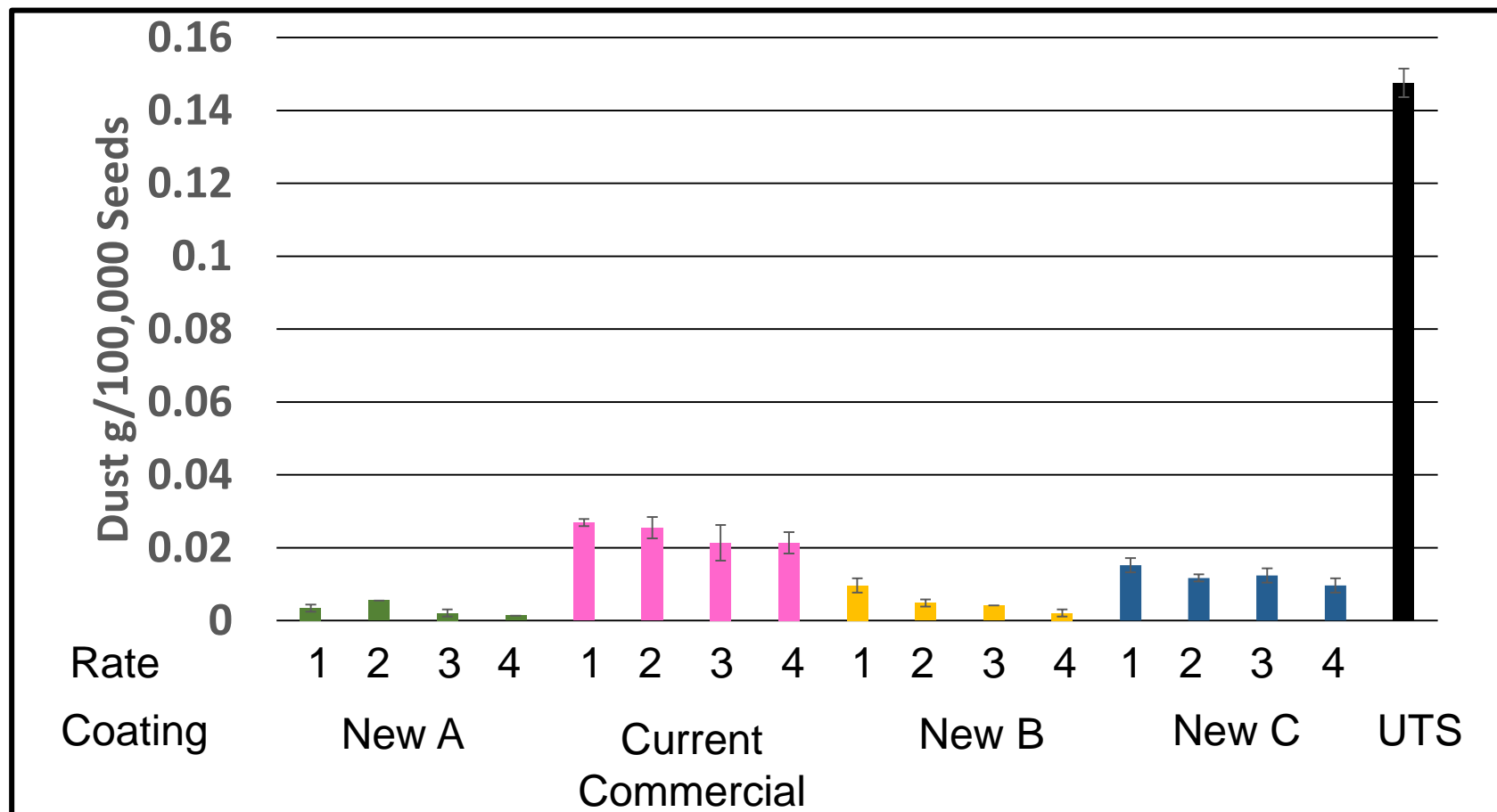
- Mitigate losses from diseases and pests
 - **Soy** ST cost 1 bushel/acre, but return about 3 bu/acre.
Corn return approaches 10 bu/acre
 - **Cotton** 65% yield benefit from Thielaviopsis control
 - **Rice** 83% damage reduction from grape colapsis larvae in Arkansas
 - **Spring wheat** and barley 25% yield increase (Montana State Univ report)
- Corn planting two weeks earlier extends season

Film Coating

- Application of a very thin layer of polymer, possibly mixed with an active or additive, with virtually no change in size or weight
- Objectives:
 - Improved application of treatment chemicals, addition of nutrients or strengtheners, inclusion of colorants



Future Includes Dust Reduction (Treatment Value Remains with the Seed)



Seed Treatments for Tomorrow



- What's in the pipeline
 - New actives
 - New modes of action
 - Potency
 - Control challenging and emerging pests and diseases
 - New Biologicals (projected \$500-600M by 2020)
 - *Pseudomonas* and *Bacillus* species
 - *Trichoderma* and *Ectomycorrhizae* species

Biological Seed Treatments

Rapidly Developing New Solutions

- Biodiversity all around us
- Plants host viruses, bacteria, and fungi
- Reported benefits from biological STs:
 - Nitrogen fixation
 - Nutrient access or uptake
 - Average yield increase
 - Drought tolerance
 - Cold tolerance
 - Salt tolerance
 - Insect and disease control

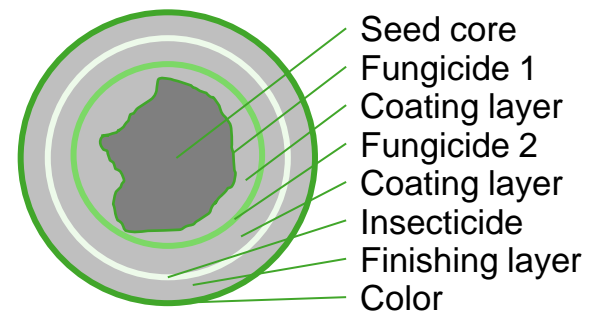


Actives and Additives

- Application of actives and additives through the seed coating
- Major groups of actives:
 - Plant protection products
 - Growth promoting agents
 - Plant strengtheners



Control Thiram Thiram /
prochloraz 0.3 Thiram /
prochloraz 0.3



Coating Opportunities of the Future Today

- Loading capacity several fold higher
- Dry faster
- Efficient use rates
- Enhanced potency of actives
- Stabilize biologicals



Example: New Generation DISCO

Advanced soybean and corn seed treatments



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High Cosmetic Quality

Apron[®] Maxim[®]:

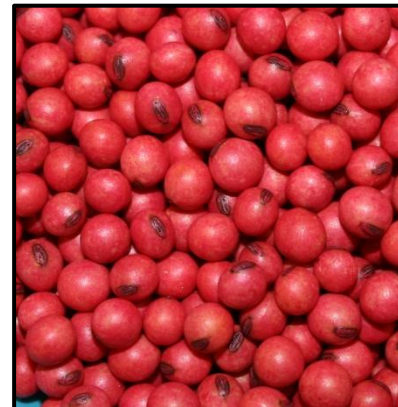
PPPs only



Ex 1



**CruiserMaxx[®]
Vibrance[®]**



12/1/2015

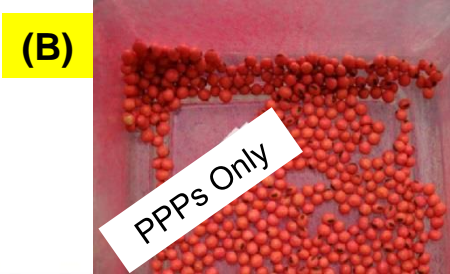
Solve Tack and Clumping



|-----Apron® Maxim® PPPs-----|

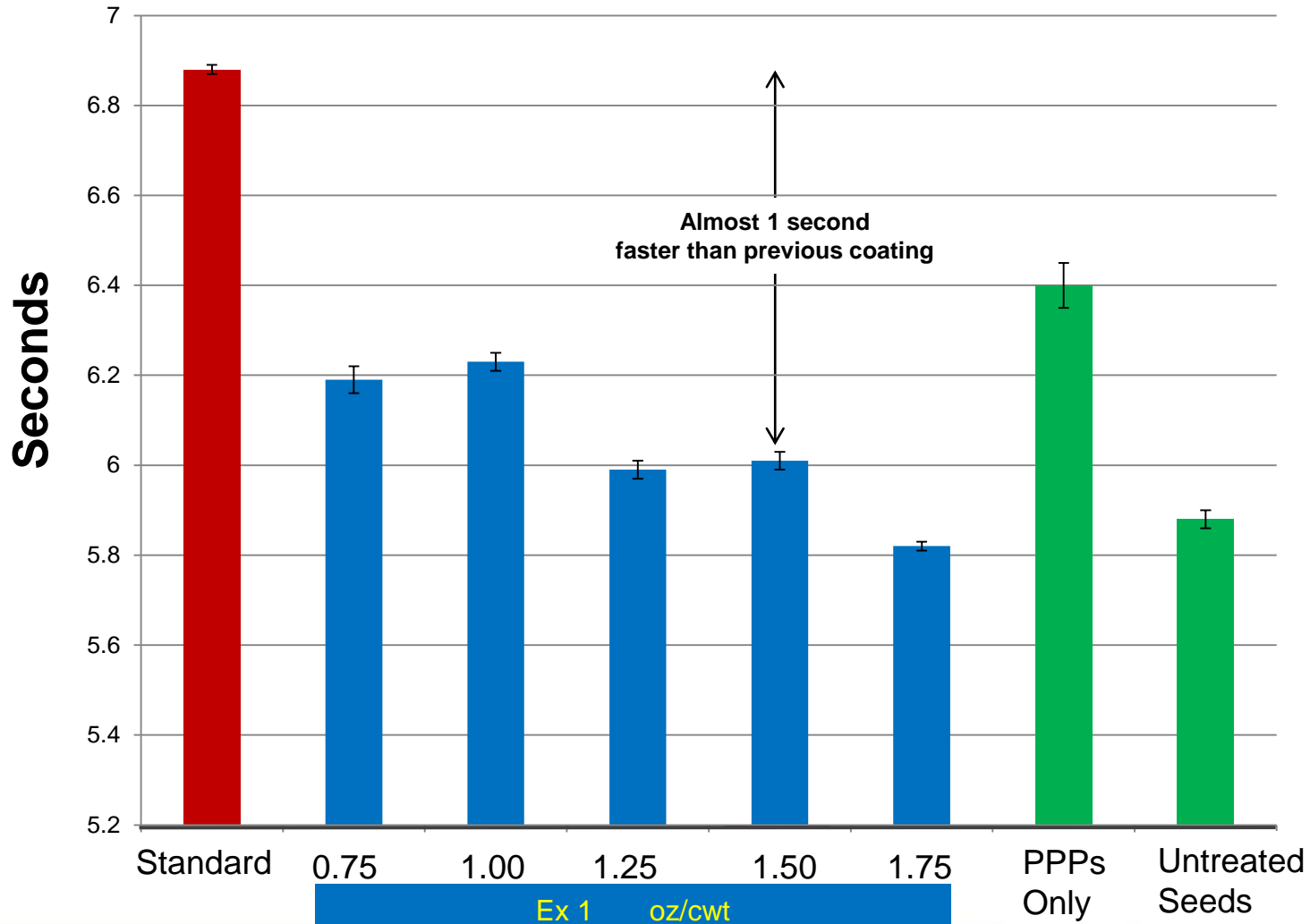
|-CruiserMaxx® Vibrance® -|

Ex 1 Oz/cwt	Tack	Clumping	Tackiness	Clumping
Commercial Standard	Yes	Clumping (A)	Yes	Small tiny clumps
0.75	None	No clumping	Minimal	No clumping
1.00	Minimal	No clumping	Minimal	No clumping
1.25	Minimal	No clumping	Minimal	No clumping
1.50	Some	No clumping	Minimal	No clumping
1.75	Yes	Sticky, but no clumping	Minimal	Sticky, but no clumping
PPP only	Yes	Very sticky w/tiny clumps; Stuck to collecting container even when held at 90o angle (B)	Some	Sticky, but no clumping



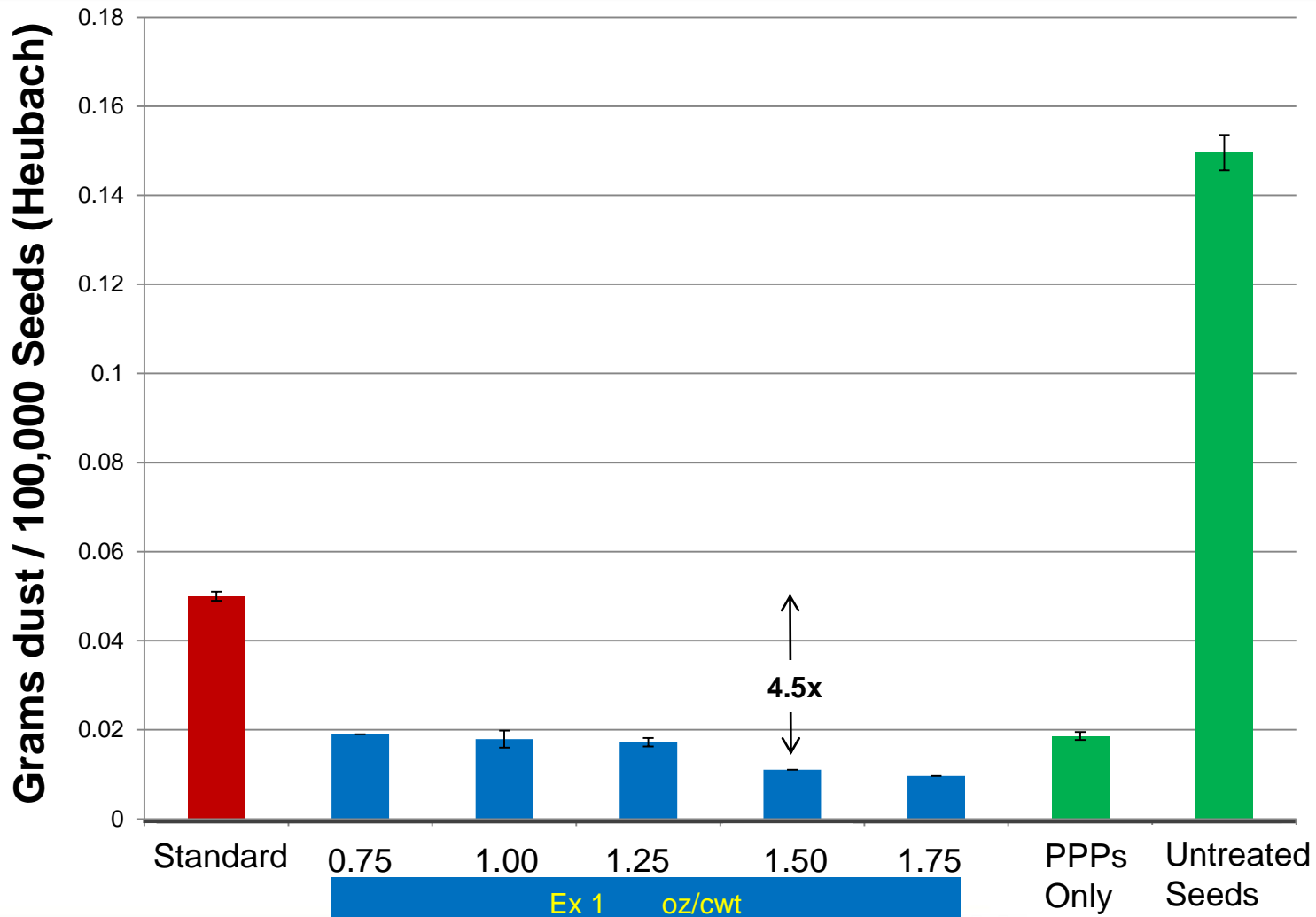
Improved Dry Flow

Treatment: CruiserMaxx[®] Vibrance[®]



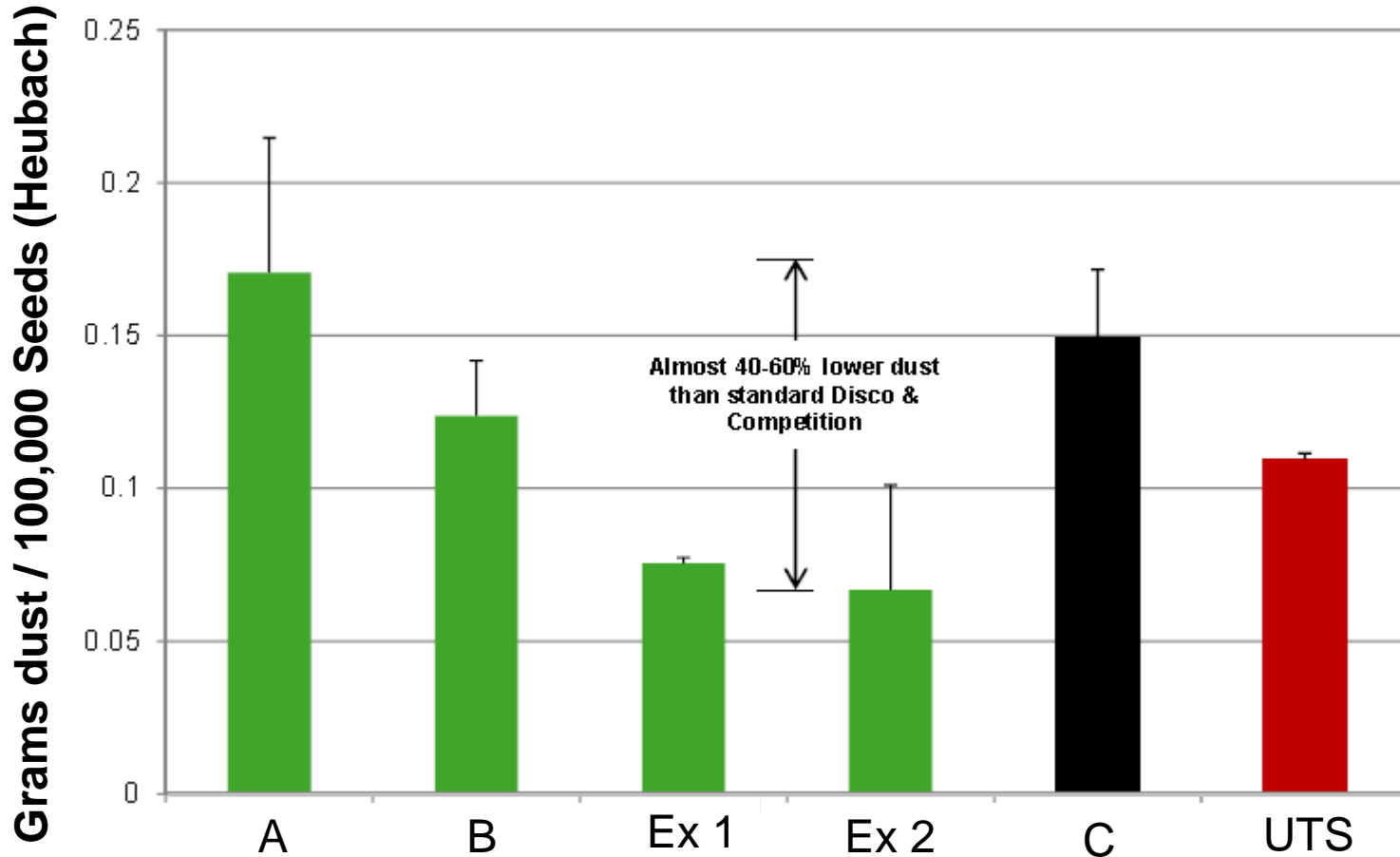
Significant Dust Reduction

Treatment: CruiserMaxx® Vibrance®



New Technologies Bringing More Effective Coatings

Example: Lower Dust and Abrasion For Corn



Post Abrasion



New Generation Seed Treatment Must Haves

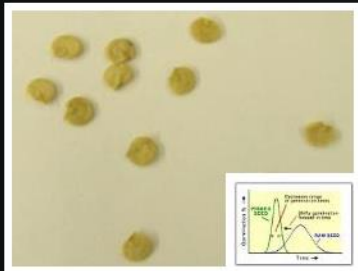
- Significantly improve tack and clumping
- Decrease dust-release and abrasion (retain value on seed)
- Improve flow time and plantability
- Robust to variation in mixtures, seed phenotype, and ST conditions
- Excellent cosmetic coverage
- Stability of shelf life, biologicals, and germination
- Enable full potency of actives against target pests and pathogens
- Customer choices for colorant, treatment combinations
- High material and slurry capacity
- Faster dry times → Reduce processing time



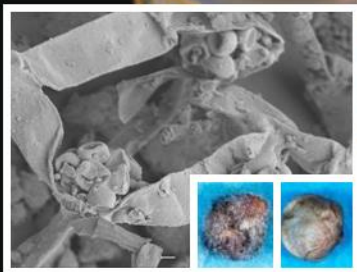
The world of INCOTEC



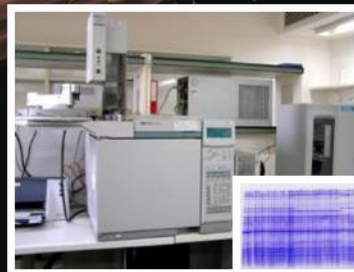
UPGRADING



PRIMING



DISINFECTION



ANALYTICAL SERVICES



APPLICATION ACTIVES & ADDITIVES



ENCRUSTING & PELLETING



FILM COATING

Thank you for your role in helping to improve agricultural productivity.

