

Why seed applied technologies are important and its impact on high quality seeds

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Table of contents:



Market Context/Trends



Insect Resistance Management IRM programs are critical



Quality seed production is key



Importance of SAA

Seed treatment market trends

Tough economic conditions



- Low commodity prices
- Currency volatility
- Trade barriers
- Increasing R&D costs

Technology evolution



- Seed treatment products complexity
- Resistance building
- Pest shifts
- Biologicals part of the offer
- Abiotic environmental stress

Political/regulatory pressure



- Political insecurity
- Changing regulatory landscape
- NGOs shaping perception

Market dynamics



- Market consolidation
- Intense generic activity
- International trade increasing

Research and development process: high level of investment and multidisciplinary project teams required

100'000 compounds



Discover

5000 compounds



Profile

30



Evaluate

1 - 2



Launch



\$260m



8-10 years



Uncertainty



Multidisciplinary teams

Resistance development and pest shifts remains key driver: requires evolving and complementary technologies



TRENDS

- Resistance development is a threat to all pest control options
- Loss of older chemistry puts increased resistance pressure on new chemistry
- Insect traits losing efficiency in some regions

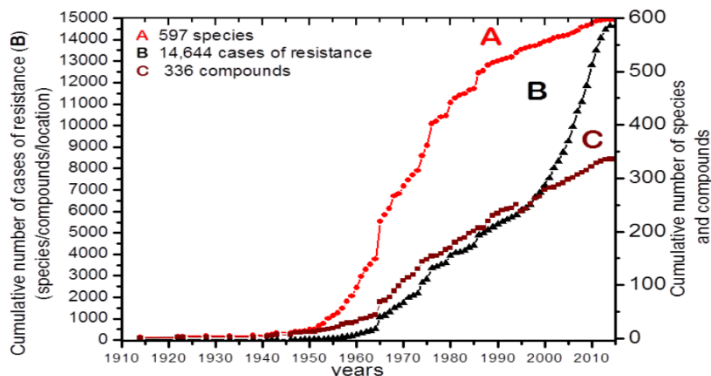


Fig 1. Evolution of arthropod insecticide resistance from 1914 to 2015. (species, compounds and total number of cases).



INDUSTRY IMPLICATIONS

- Innovative pest control products essential to fight ever evolving resistance
- Seed treatment is a critical element of pest and resistance management in many crops



NEEDS

- Diverse portfolio – Multiple MOA
- Proactive stewardship
- Promote resistance management including seed treatment for traits
- Adjacent technologies
- New AI

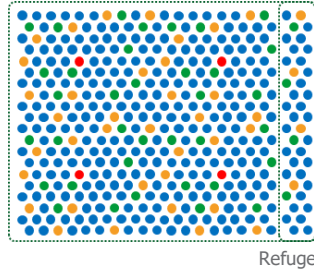
Importance of Resistance Management

Principle: A second non-Bt mode-of-action dramatically eases selection pressure

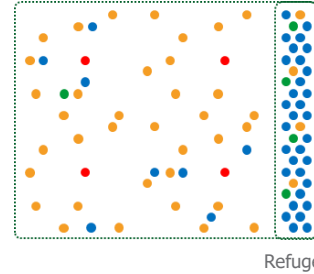
1. Crop Rotation
2. Refuge Adoption
3. Seeds + Seed Treatment + CP protocols



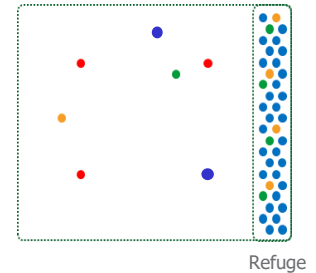
Before Bt selection



After Bt selection



After Bt + chemical selection



- Sensitive to both (Bt & chemical)
- Resistant to chemical
- Resistant to Bt
- Resistant to both (Bt & chemical)

Changing regulatory landscape with complex matrix of requirements: leads to License To Operate challenges



TRENDS

KEY REGULATORY CHALLENGES	EAME	NAM	APAC	LATAM
Bee guidance document – New requirements and criteria for pollinator assesment	●			
More stringent bird & mammal tox guidelines	●			
More challenging dust exposure and water risk assessments	●	●		
NGO's suing agencies	●	●		
Potential restrictions on free movement of treated seeds	●	●	●	
Restrictions on number of AI's in mixtures	●		●	



INDUSTRY IMPLICATIONS

- License To Operate in seed treatment is more challenging
- Poor stewardship quickly becomes a LTO issue!
- Tradeoffs between efficacy vs. registrability profile for new AIs
- Time and cost increasing



NEEDS

- Sound regulatory expertise for development, registration and maintenance of products
- Ability to tailor solutions locally
- Stewardship excellence

Source: Syngenta internal assessment

Impact of the NNI Suspension in Winter Oilseed Rape in EU



OBJECTIVE: IMPACT ON YIELD, QUALITY & QUANTITY, PRODUCTION COSTS AND DAMAGE CAUSED

KEY LEARNING #1

THE VAST MAJORITY OF FARMERS INDICATE THAT THEY WOULD USE NEONICOTINOID TREATED SEEDS AGAIN IF THE SUSPENSION WAS LIFTED

KEY LEARNING #2

GROWERS ARE REDUCING THE AREA UNDER CULTIVATION

KEY LEARNING #3

PRODUCTION COSTS HAVE RISEN FOR MOST GROWERS, 70% OR MORE

KEY LEARNING #4

MORE APPLICATIONS OF FOLIAR INSECTICIDES ARE APPLIED

KEY LEARNING #5

IMPACT OF THE SUSPENSION ON YIELDS IS CURRENTLY DIFFICULT TO QUANTIFY

79% SAID THE NNI SUSPENSION HAD AN IMPACT ON WOSR MANAGEMENT

	WAVE 1 (1/2 SEASON IN SUSPENSION; NOV/DEC 2014)	WAVE 2 (1 FULL SEASON IN SUSPENSION; OCT 2015)
GROWING AREA	→ -8%	↓ -18%
YIELD	↓ 34% <small>EXPECT A DECREASE</small>	↓ 13% <small>EXPERIENCED A DECREASE DUE TO NNI'S</small>
CROP QUALITY	→ 74% <small>EXPECT IT TO STAY THE SAME</small>	→ 73% <small>SAID IT HAS REMAINED THE SAME</small>
PRODUCTION COST	↑ 73% <small>SAID IT HAS INCREASED</small>	↑ 82% <small>SAID IT HAS INCREASED</small>
NUMBER OF FOLIAR APPLICATIONS (2013/2014 VS. 2014/2015 SEASON)	↑ 1,5 vs. 2,3 <small>HALFWAY THROUGH THE SEASON</small>	↑ 2,0 vs. 3,0
CABBAGE STEM FLEA BEETLE (2014/2015 SEASON)	↑ 31%	↑ 60%
MOST DIFFICULT TO CONTROL		

93% WOULD RATHER GO BACK TO NNI SEED TREATMENTS

Movement of treated seeds: unclear operational framework



TRENDS

- Significant seed export by global companies
- Limited clarity of regulatory frame applying to the movement of treated seeds



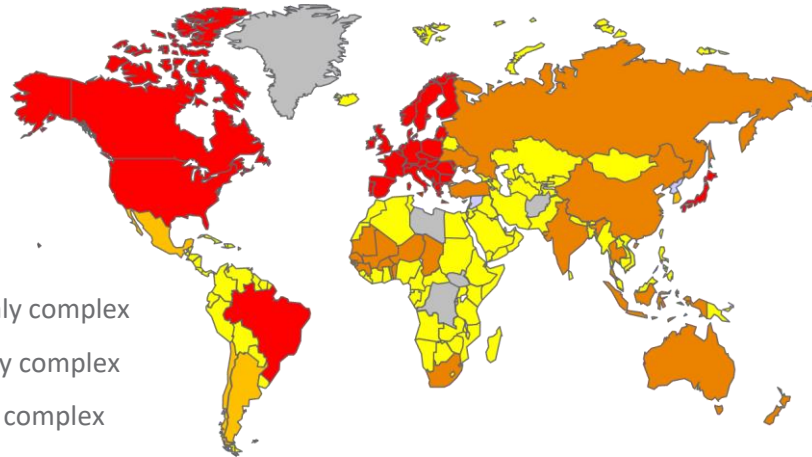
INDUSTRY IMPLICATIONS

- Difficult trade between countries
- Case by case guidance required
- Tedious documentation
- Hard to fulfill labelling requirements
- Operational compliance and liability



NEEDS

- Portfolio alignment
- Sound regulatory expertise and clarity about regulatory framework
- Shipment & import documentation
- Dedicated key account support



- Highly complex
- Fairly complex
- Less complex

Source: Syngenta internal assessment

Areas of collaboration between Seeds and Seed Treatment: Stewardship and application quality

Case study: Brazil, *Tratamos Melhor* program

- Seed Treatment quality certification program developed by Seedcare for soybean multipliers
- Promotes industrial Seed Treatment application quality
- Treated seeds with *Tratamos Melhor* label offer ability for differentiation at grower level for certified soybean multipliers



Areas of collaboration between Seeds and Seed Treatment: high quality seeds production

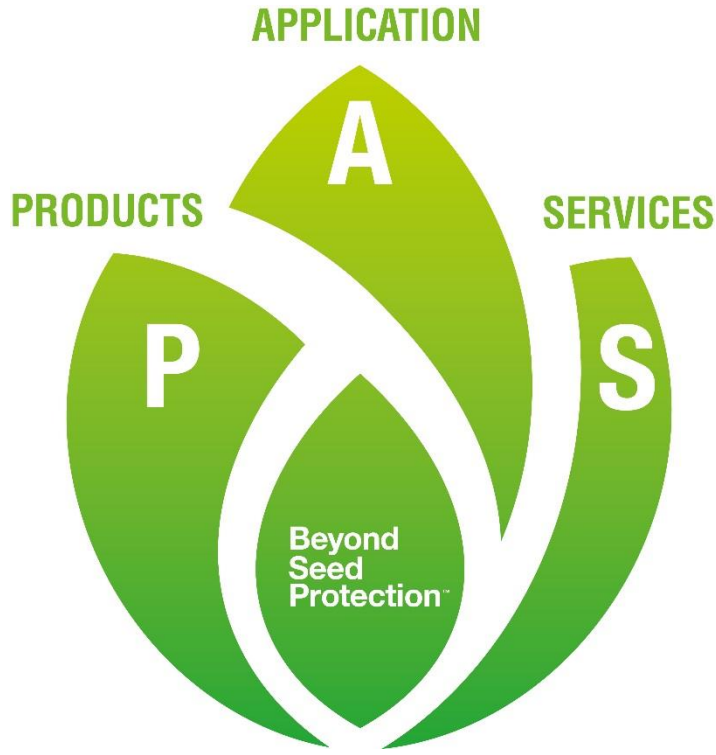
Case study: seed production/processing project in China with corn seed companies



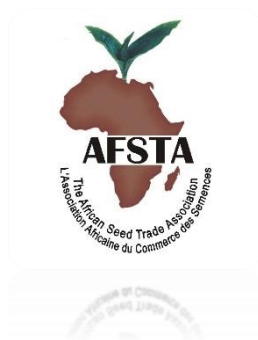
Steps to ensure your seed quality:

- Seed testing capabilities and the Seed production protocol
- The processing improvement step
- The Seed Treatment application part is crucial
- End-to-end continuous training brings it all together
- A multi-season journey

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PREGUNTAS?

Thank you for your attention!

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