New seed applied strategies to enhance establishment

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Introduction

- Stephen Beal spent over 25 years working in the Agrochemical industry before setting up his own independent consulting company in 2017 called Blue Shed Consulting Ltd. As a consultant, his knowledge and expertise in business development and adding value for the seed channel has enabled him to help 3 top 6 global seed treatment companies with strategic initiatives and many smaller companies looking to advance their technology into seed in a range of crops and geographies.

- **Industry experience**
- Global Marketing Lead Crop Establishment and Seed Treatment – Arysta
- European Commercial Lead Seed Treatment – Arysta/Chemtura
- NW Europe Portfolio Manager Seed Treatment and Diverse Field Crops – Syngenta
- Global, Regional and UK Product Manager Seed Treatment – Monsanto (UK and US)
- UK Business Lead Seed Treatments – BASF
- Various technical, commercial, sales and marketing roles in the UK for Rhone-Poulenc, Aventis and Bayer

Establishment is key to a successful OSR crop

- **Key risks factors affecting optimum early establishment**
  - ***Poor seed quality***
  - ***Soil-borne diseases***
  - ***Bird attack***
  - ***CSFB***
  - ***Weather conditions***
  - ***Soil nutrition and preparation***

UK oilseed rape seed treatments

Background

Early treatments used against pests and diseases

- Thiram, prochloraz, Gamma HCH
- More targeted and less hazardous insecticides introduced late-90's
- Neonic restrictions – 2014 (OSR)
- Prochloraz based fungicide withdrawn 2018
- Total ban on neonics - 2018
- Thiram non-inclusion on Ann I from 2019

The OSR crop is left with few currently approved products as seed treatments to control yield limiting pests and diseases

Impact of loss of actives

Reduction in the area of the crop grown since 2014

Driven mainly by flea beetle severe risk areas

But also by concerns over loss of key herbicides to control blackgrass

Growers ‘tempted’ to use own saved seed and drill at higher seed rates

Reduced focus from active discoverers and developers in OSR (seen as minor and in EU difficult to get approval)

Reduced value to the seed channel from lost margin

What is being used?

More focus on products approved as 'fertilizers' or plant stimulants

Phosphites (e.g. Take-off)

Micro nutrients (e.g. Radiate)

Growth stimulants

- Microbes (Integral Pro)
- Plant extracts (Sylas)

All claim benefits of germination, early vigour and establishment

Some new actives/products are scheduled

Scenic Gold

- Fungicide - fluopicolide + fluoxastrobin
  - Claim – *Phoma*, *Alternaria*, downy mildew, damping off
  - Approval – anticipated UK 2020 (already granted in Cz & Lith)

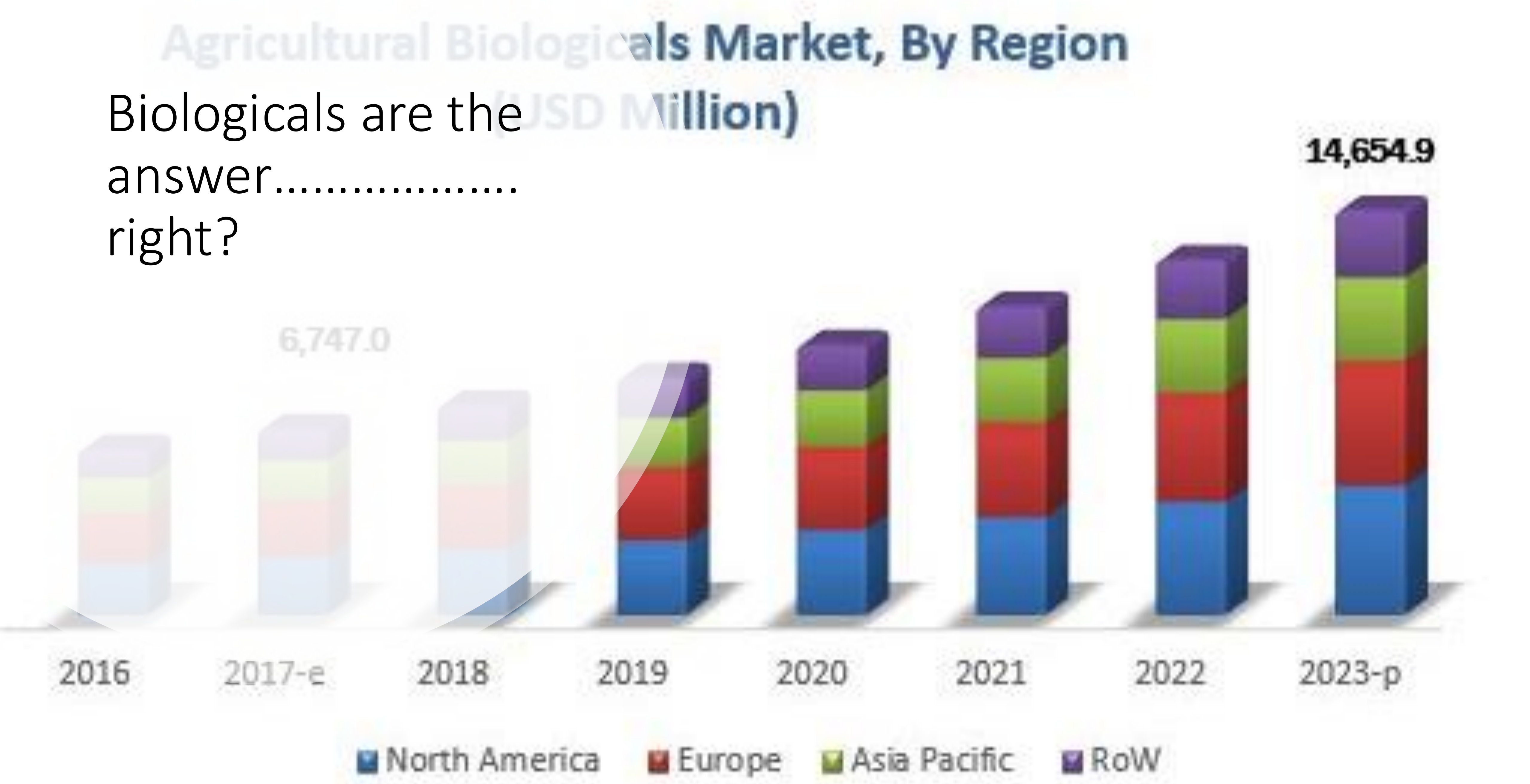
Lumiposa

- Insecticide - cyantraniliprole
  - Claim – CS flea beetle, cabbage root-fly, turnip sawfly. *Crucially <u>not</u> aphids*
  - Approval – anticipated UK 2020/1 (already granted in Pol, Ger, Hu)

Into the 2020's other new MoA's and active families are under investigation.

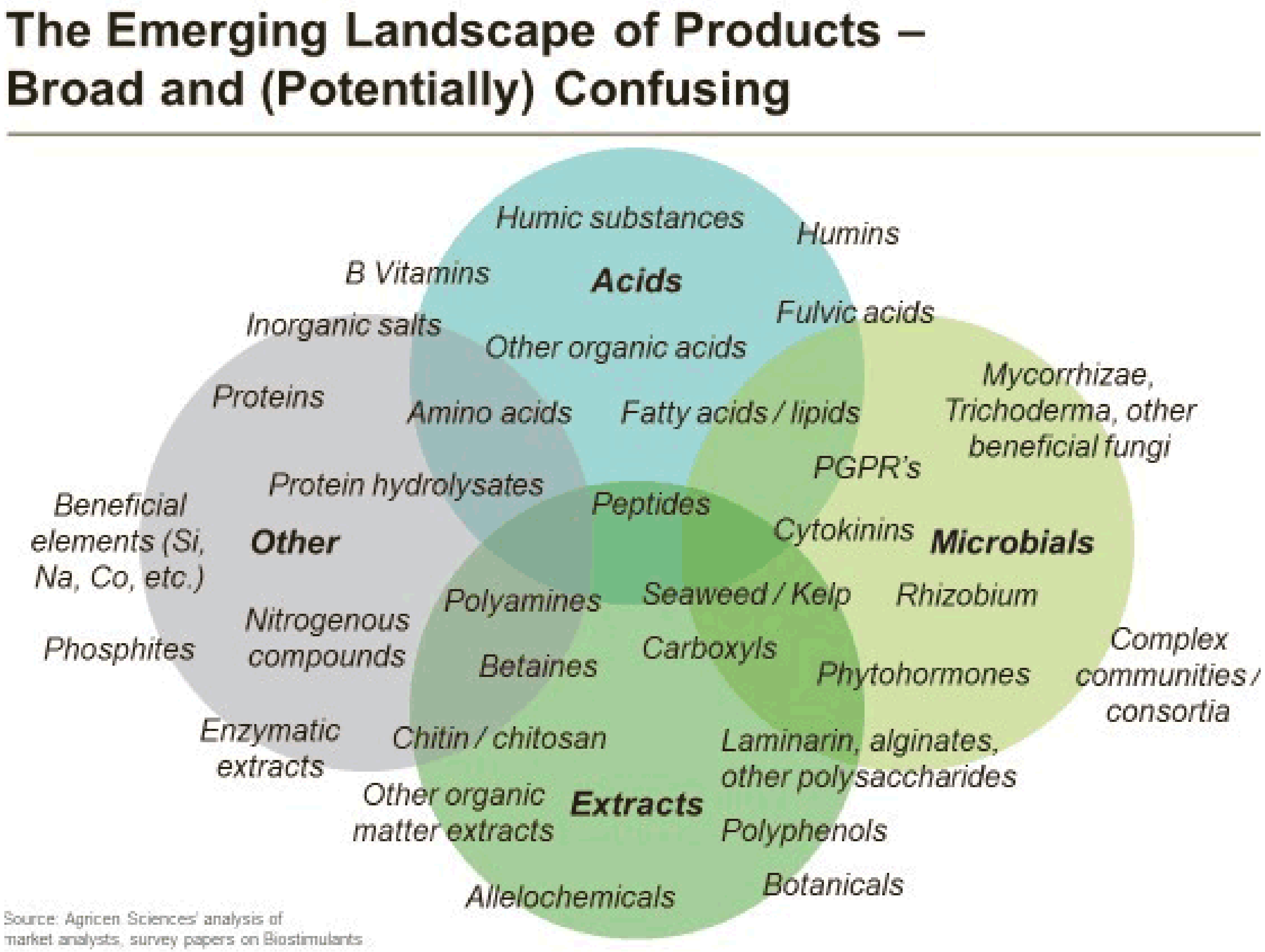
- SDHI's, novel insecticides, novel fungicides
  - Registrability, particularly insecticides on bee-attractive crops is unclear
  - OSR crop is unlikely to be a driver crop for new actives

Biologicals are the answer………………. right?



‘Bio’ confusion

- The predicted growth in’non’-chemical crop protection agents is significant.
  - Fastest growth area in the industry
- Some confusing descriptions are being used
  - Bio-control
  - Bio-stimulation
- Regulations are currently less strict than for PPP but this is under review
- There is political drive to encourage the use of ‘natural’ alternatives to PPP
- Demonstrating benefits consistently and gaining market acceptance and trust is key



Growing challenges/opportunities to new technology

Legislation

Further restrictions on existing actives

Tighter regulatory rules for new actives

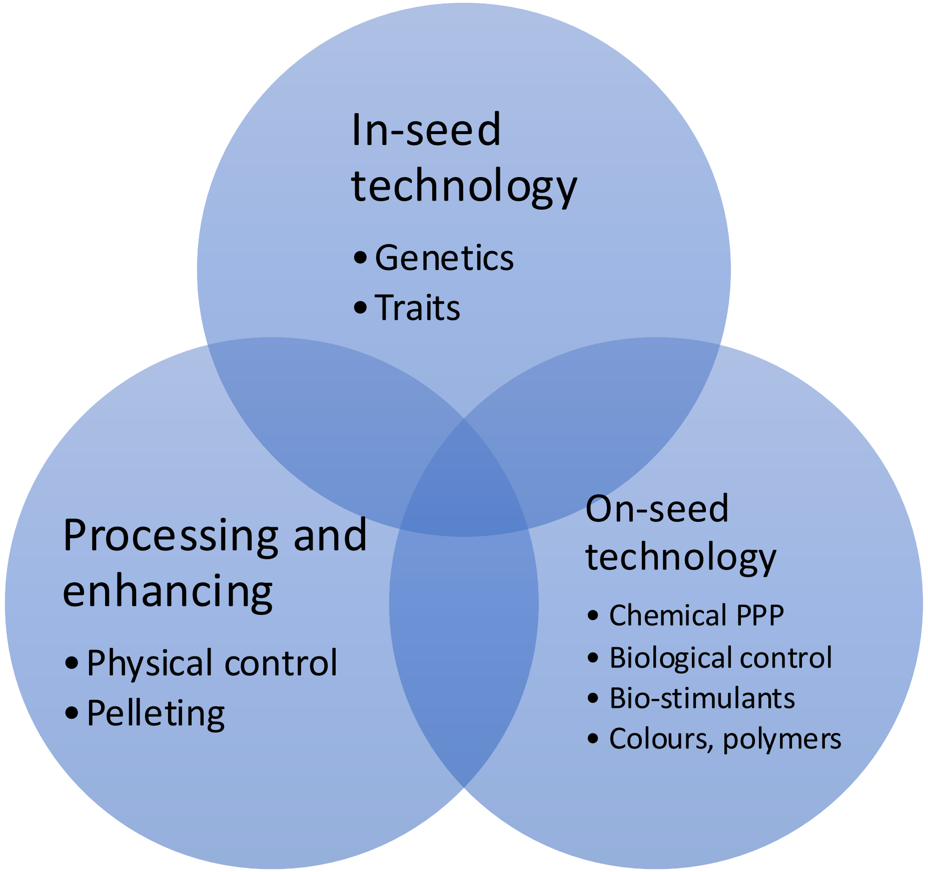
ECHA proposal on primary microplastic reductions – impact on use of polymers in PPP

Macro environment

Climate change

Global demand for plant-based oils/food

Meeting the future establishment needs of the OSR crop



The technology developed to provide control of key pests and diseases may become interchangeable

- Maximising the potential of seed to the grower and end-user will require closer linkages between the 3 channels in the seed production process.
- Losing the ability to control a disease with one method may create an opportunity with another.
- The end result is a product that meets the growers and end-users needs.

Closing thoughts

- The continued availability of '1107' approved products within the EU in OSR will remain challenging
- Will UK continue to follow EU approval process post Brexit?
- The use of micro-nutrient, biological and plant based stimulants is likely to increase
- The development of microbial control agents is a rapidly growing area but challenges of consistency, control mechanism and scalability need to be addressed

To develop solutions to enable valuable seed to reach its' potential requires industry-wide collaboration