Integrated crop protection for the future: Gaps, Threats and Opportunities

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Introduction

Who am I?

Aims of my talk are:

1. To identify the gaps in current crop protection programs
2. To identify issues outside of crop protection that threaten future production

… but its not all doom and gloom

3. To look further ahead to technologies and approaches which may provide opportunities to the industry in the future

Audience participation – Sli.do, (permission to play with your phones)

Instructions if you haven't voted already

1. Rummage in your pocket/bag and get out your ‘internet enabled devise’ – i.e. smart phone, tablet or laptop
2. Connect to the Wi-Fi – Code:
3. Open your mobile browsers, go to **www.slido.com** and enter the event code: #4049
4. Select polls and answer the question.

Sli.do also gives you the opportunity to ask anonymous questions at anytime during the presentation. So please feel free to submit these, and the audience can vote on which ones they want answered at the end

Poll Questions 1 – Gaps in currant control programs

Which of the following are the most difficult for you to control with your currant crop protection programs? (select your top 3)

Pests

- Gall mite (*Cecidophyopsis ribis*)
- Aphid Spp.(e.g. *Hyperomyzus lactucae*, *Aphis schniederi*)
- Moth spp.(*Tortrix* spp. *Operophtera brumata*)
- Leaf curling midge (*Dasineura tetensi*)
- Sawfly (*Nematus olfaciens)*
- Wooly currant scale (*Pulvinaria vitis syn. P. ribesiae*)

Diseases

- *Botrytis cinerea*
- Phomopsis die back (*Phomopsis ribicola/Diaporthe strumella*)
- Leaf spot *(Drepanopeziza ribis)*
- Reversion virus disease
- Powdery mildew (*Sphaerotheca mors-uvae*)
- Rust (*Cronartium ribicola*)

Weeds

- Perennial weeds
- Weed at establishment

- other

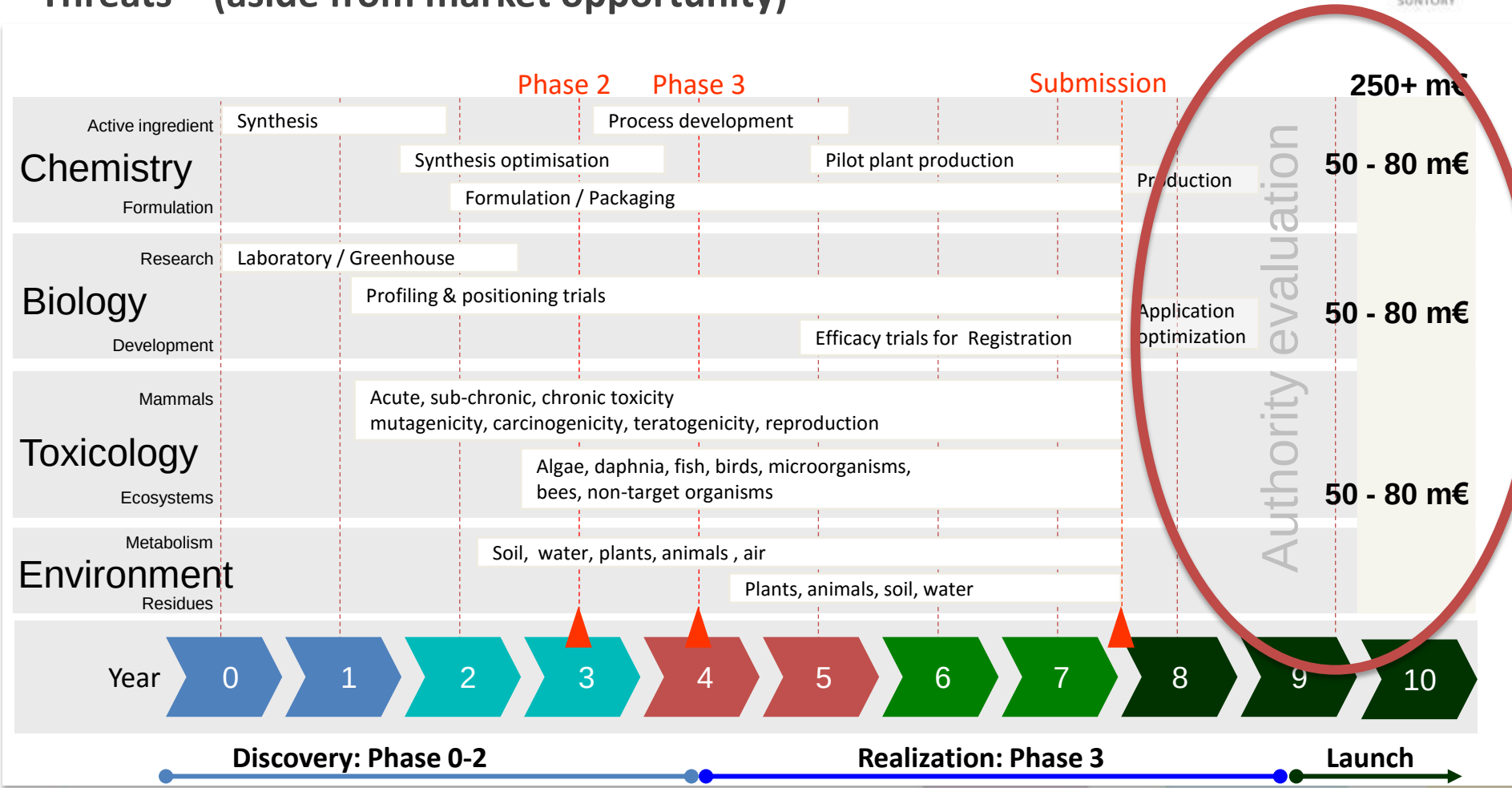
Our survey says…..

Gaps identified in the UK

Regional differences but broadly

- Weeds
    - Thistles – other perennial weeds
    - General weed management at establishment
- Pests
    - Gall mite
    - (leaf midge, aphid, sawfly, winter moth, currant scale local issues)
- Diseases
    - Phomopsis dead arm
    - Reversion

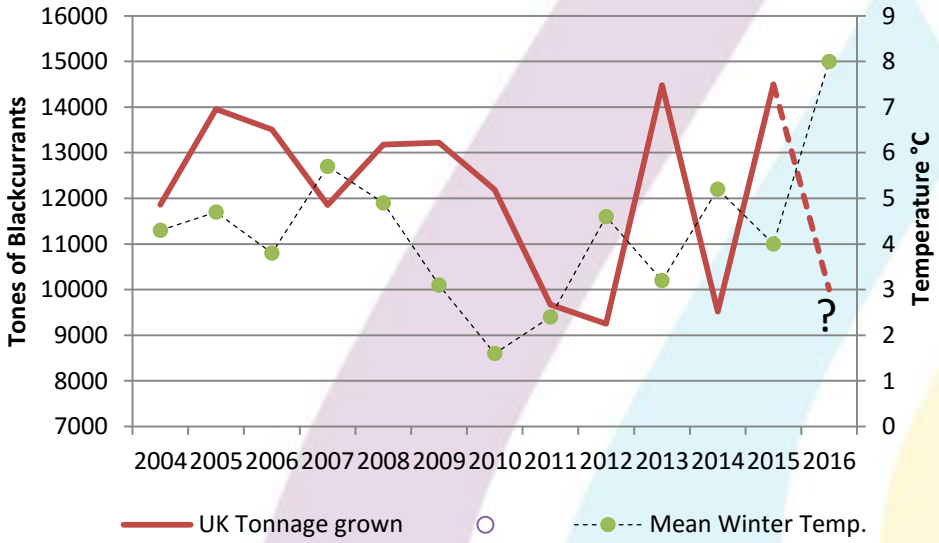
Threats – (aside from market opportunity)



Threats

- Climate change
  - Extreme weather events and increased uncertainty
  - Warm winters - poor bud break and uneven cropping

- Invasive pests & diseases
  - SWD
  - Brown marmorated stink bug??



Opportunities – Crop protection

- Breeding
    - For pest and disease resistance
    - For climatic tolerance
- Bio-pesticides
    - Making the most of sub lethal effects to supplement existing programs
- Novel technologies
    - Attract and kill
    - Physical control means
    - Plant elicitors and strengtheners

Opportunities – Pesticide approval process

Collaboration

- Efficacy and program information sharing for minor use/speciality crops
  - IBA a great forum!
  - Organisations to bring pesticide regulators together are out there – encourage your country to be part of it - *Global minor use portal/EPPO - EU Minor Uses Coordination Facility*

EUMUDA

European Minor Use Database

Pesticide approval process - How improve it?

- Zonal authorisations and Mutual Recognition are starting to be used - but some difficulties at member state level
- EU Commodity Expert Groups are working together to share data and collaborate with some successes

Opportunities – Precision farming and agricultural engineering

© AHDB SCEPTRE project

Rise of the agricultural robot

- Pest and disease scouting using imaging technology
- Driverless tractors
- Electrical or laser weeding
- Imaging and targeted micro dot herbicide application technology
- Selective harvesting technologies
- Soil mapping – variable rate nutrition application

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© https://www.engineersaustralia.org.au/portal/news/sydney-uni-unleashes-rippa-weed-killer

Seems futuristic but prototypes are out there……

Opportunities – Integrated crop management

Growing the best plant possible

- Resilient varieties
- Utilising natural and acquired plant defense mechanisms
- Reducing abiotic and biotic stress – foliar feeding and plant elicitors
    - Soil and nutrient management, mycorrhiza
- Bush management – open canopies, continuous renewal and removal of deadwood – keeping things clean

Optimising biological synergies

- Nutrition and weed suppression – options for alleys
- Predator attraction, pest deterrent companion planting
- Learnings from other sectors – Organic/permaculture

Conclusions

- All lovely stuff – But developments have to be economically sustainable……
- There will be fewer actives in future and it will take time to evolve to less chemically reliant programs and have to accept higher P&D levels initially
- Have to get the basics right first – Soil, nutrition, water, bush management, IPM approaches
- Piggy back on advances in wider agriculture

‘The early bird may get the worm, but it’s the second mouse who gets the cheese’


LUCOZADE RIBENA
SUNTORY