

Biologicals for disease and pest control in combinable crops: a farmer led case study

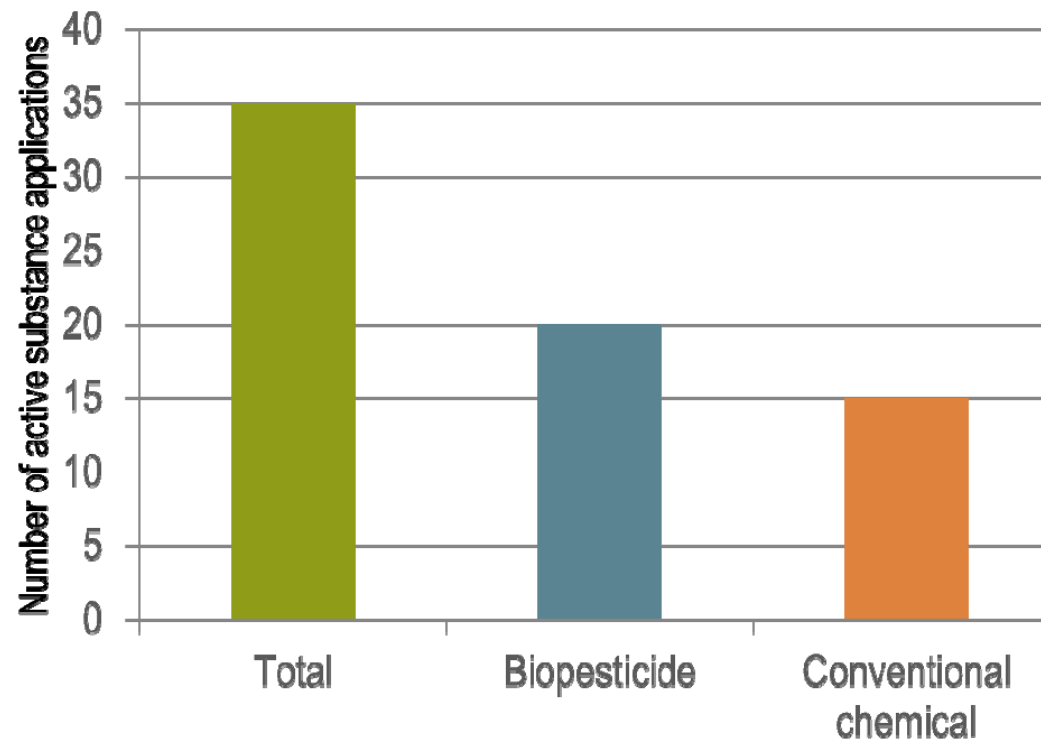
CROP HEALTH
— NORTH —

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Rationale

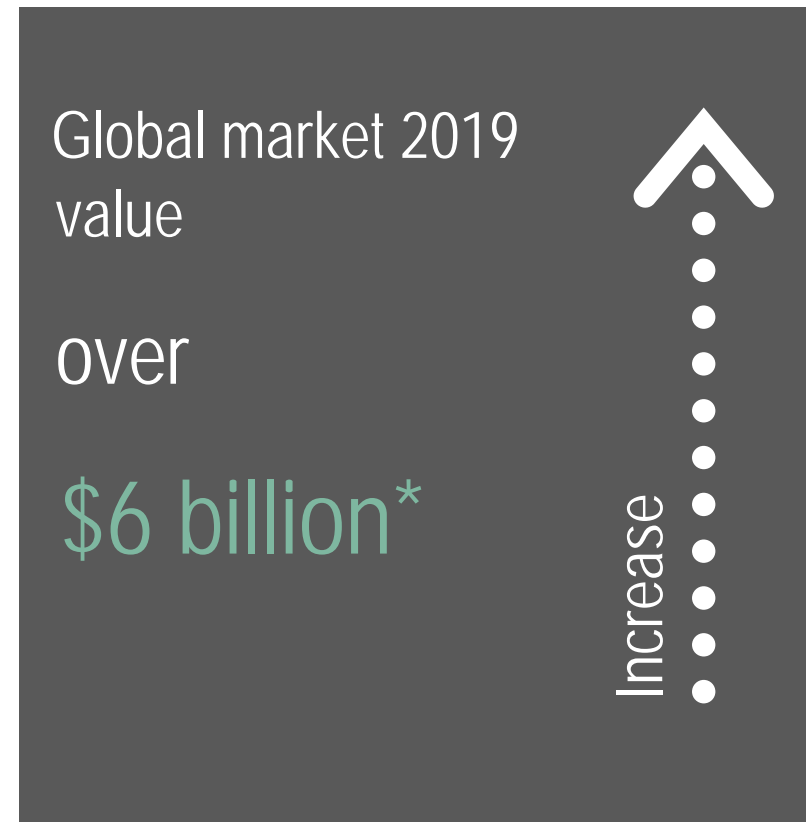
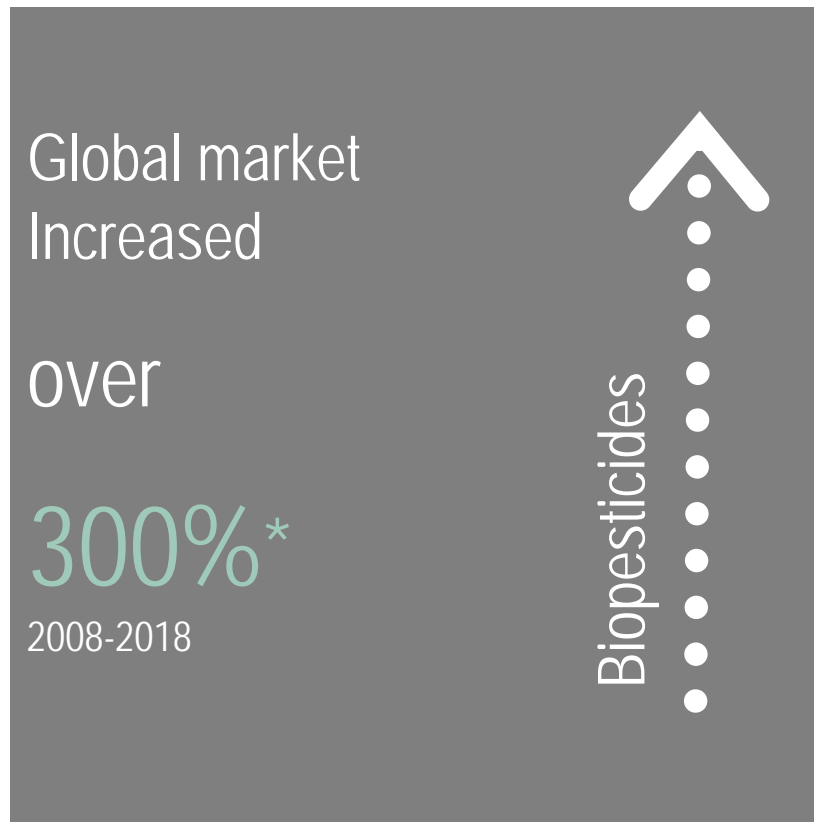


A shift to Biologicals - EU plant protection products pending registration*



* October 2016

A shift to Biopesticides - Global markets



* DunhamTrimmer, 2018

The end of industrial agrochemical spraying?

Environmental & health concerns

The precautionary principle

Decline in new MoA discovery (commercial)

Resistance

UK projects to support biopesticides traditionally focused in horticulture

SCEPTREPLUS

£1.4m AHDB investment

2017 2021 4 year programme

21
new trials confirmed for 2018

6 weed trials on 8 different crop targets

9 pest trials

6 disease trials

Over **20** Crop protection companies have contributed financially or in-kind



22 trials undertaken in year one

4 EAMUs secured & further applications submitted to CRD

Over **135** products being evaluated so far

104 conventional products	12 botanicals
8 biopesticides	11 biologicals

AHDB
AGRICULTURE & HORTICULTURE DEVELOPMENT BOARD



Factsheet 18/14
(HDC project CP 077)

Cross Sector

Getting the best from biopesticides

Tim O'Neill, ADAS and Roma Gwynn, Biorationale Ltd

The number of plant protection products based on micro-organisms, botanicals and semiochemicals is gradually increasing. Such biopesticide products generally require a greater deal of attention during use than conventional chemical pesticides to obtain best effects. This guide describes the biopesticides registered as plant protection products and outlines how they can be used successfully as part of integrated pest management (IPM) programmes in horticultural crops. It discusses the types of biopesticide available and how they work, and their advantages and limitations. A list of biopesticides currently available in the UK is provided.

Action points

- Follow guidance on product storage; the effectiveness of biopesticides, particularly those based on micro-organisms, may be reduced if they are stored incorrectly.
- Always use biopesticides at the label or Extension of Authorisation for Minor Use (EAMU) recommended rate and spray volume.
- Follow label or EAMU guidance on timing and frequency of spray applications; many biopesticides work best when used preventatively and at a short spray interval, often seven days.
- Biopesticides may be adversely affected by other plant protection products. Conversely, it may be possible to tank mix or alternate a biopesticide with other biopesticides and/or a conventional chemical pesticide; always check the label or seek advice from a qualified consultant or the supplier.
- Adjuvants have been shown to improve the efficacy of some products but follow label or suppliers' advice.
- Some biopesticides may require application equipment to be adapted such as removal of in-line filters. Check the label advice carefully.
- Check that spray nozzle and pressure are appropriate to achieve good coverage throughout the target crop, including where appropriate the undersides of leaves; many biopesticides are contact acting and require good coverage for efficacy.



1. Progressive colonisation of vine weevil larvae by Met52 Granular Insecticide (Metarhizium anisopliae)

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Crop Health North – led by YAS, co-designed with arable farmers

Fusarium ear blight



Can we reduce our dependence on synthetic fungicides in wheat production using biologicals ?

Farmer Scientist Network

WELCOME TO

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The Farmer Scientist Network has successfully secured grant funding through the European Innovation Partnership (EIP-AGRI) to deliver a spring wheat trial over a two year period.

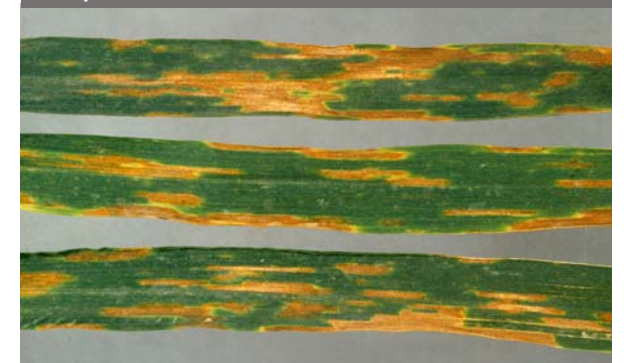
Yellow rust



Powdery mildew



Septoria tritici



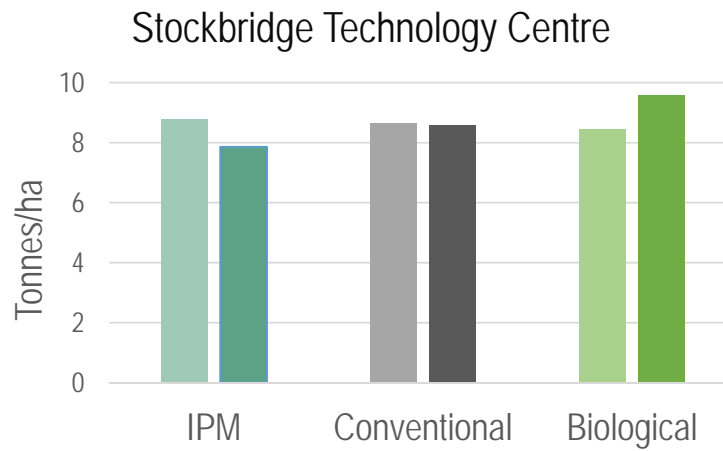
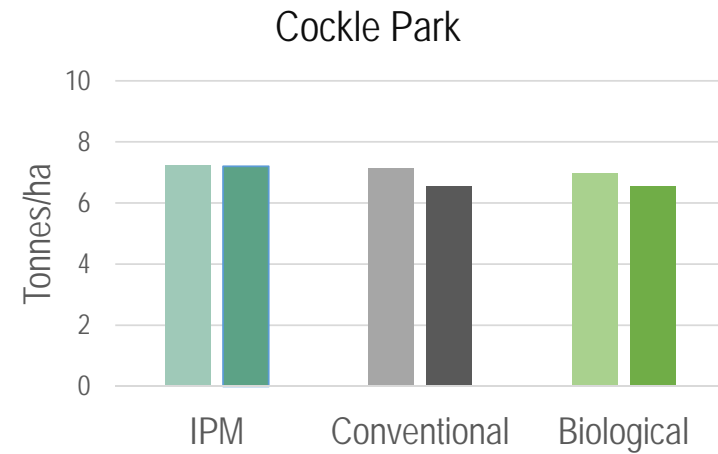
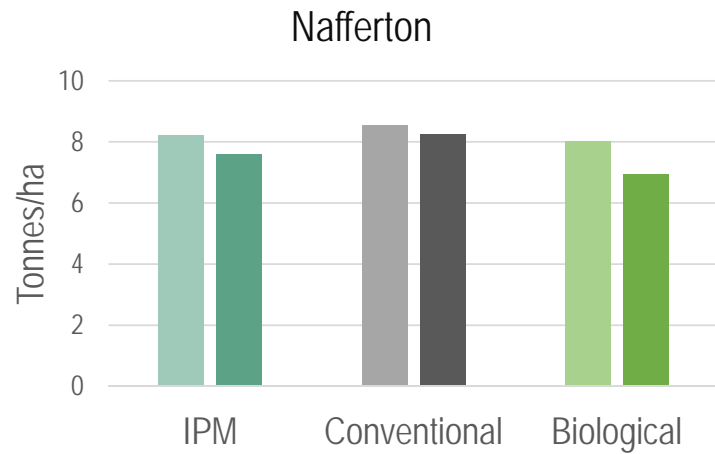
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Trials 2017-2019

- GLP trials/ORETO standard
- Multiple winter wheat varieties with varying disease resistances
- Three treatment regimes:
 - IPM – microbial seed treatment, conventional chemistry at high pest pressure, biopesticides at low pest pressure at standard spray timings if needed
 - Biological – microbial seed treatment, biopesticides only at standard spray timings if needed
 - Conventional chemistry – chemical seed treatment, conventional chemicals only at standard spray timings
 - (no untreated)
- Replicated, randomised block design
- Multiple trial sites at NU and STC

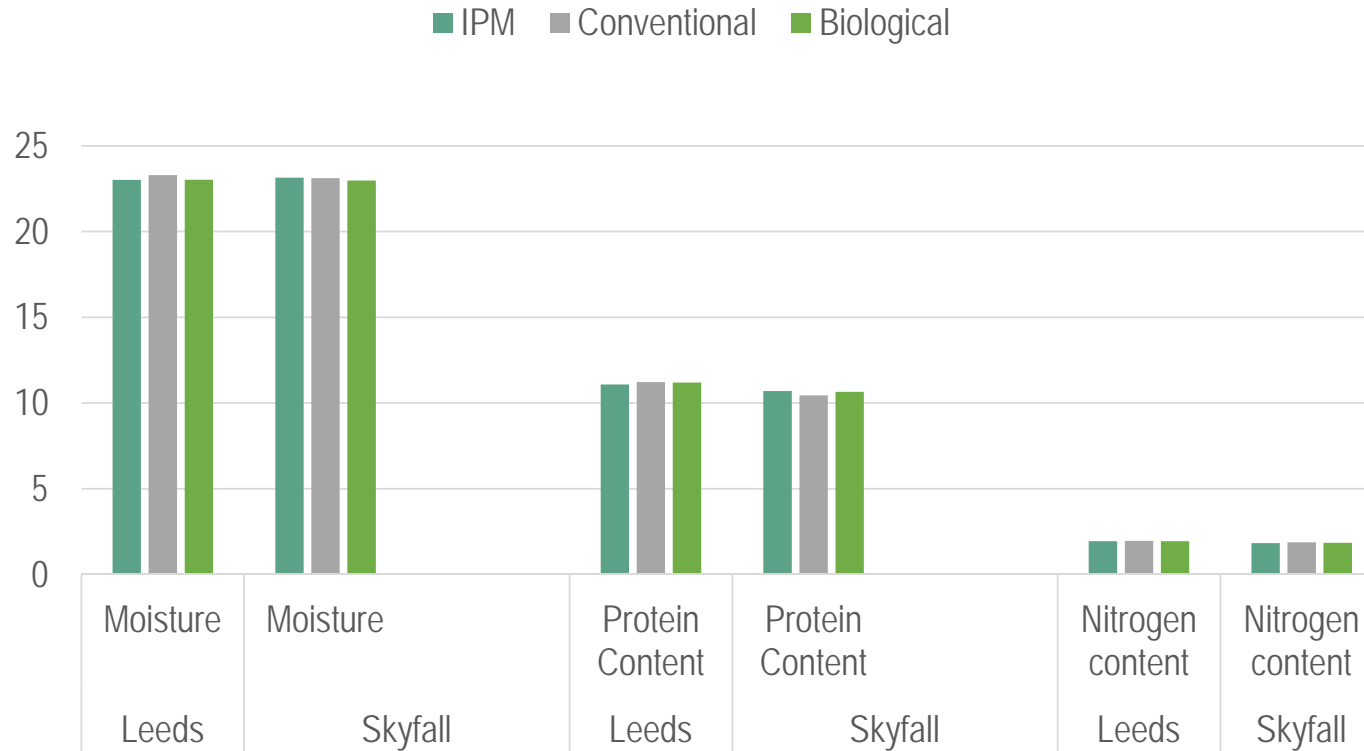


Yield data - 2018

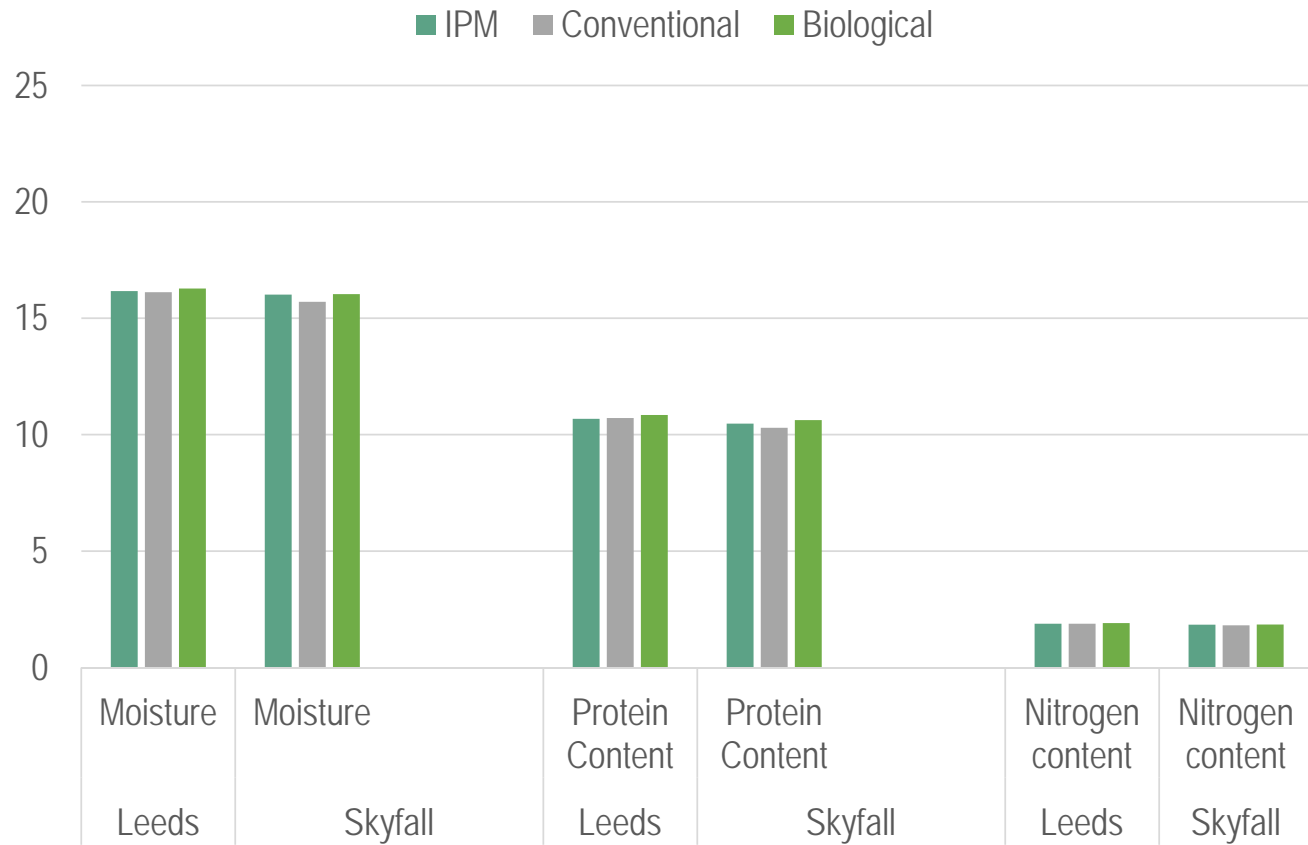


Variety
Left column = Leeds
Right column = Skyfall

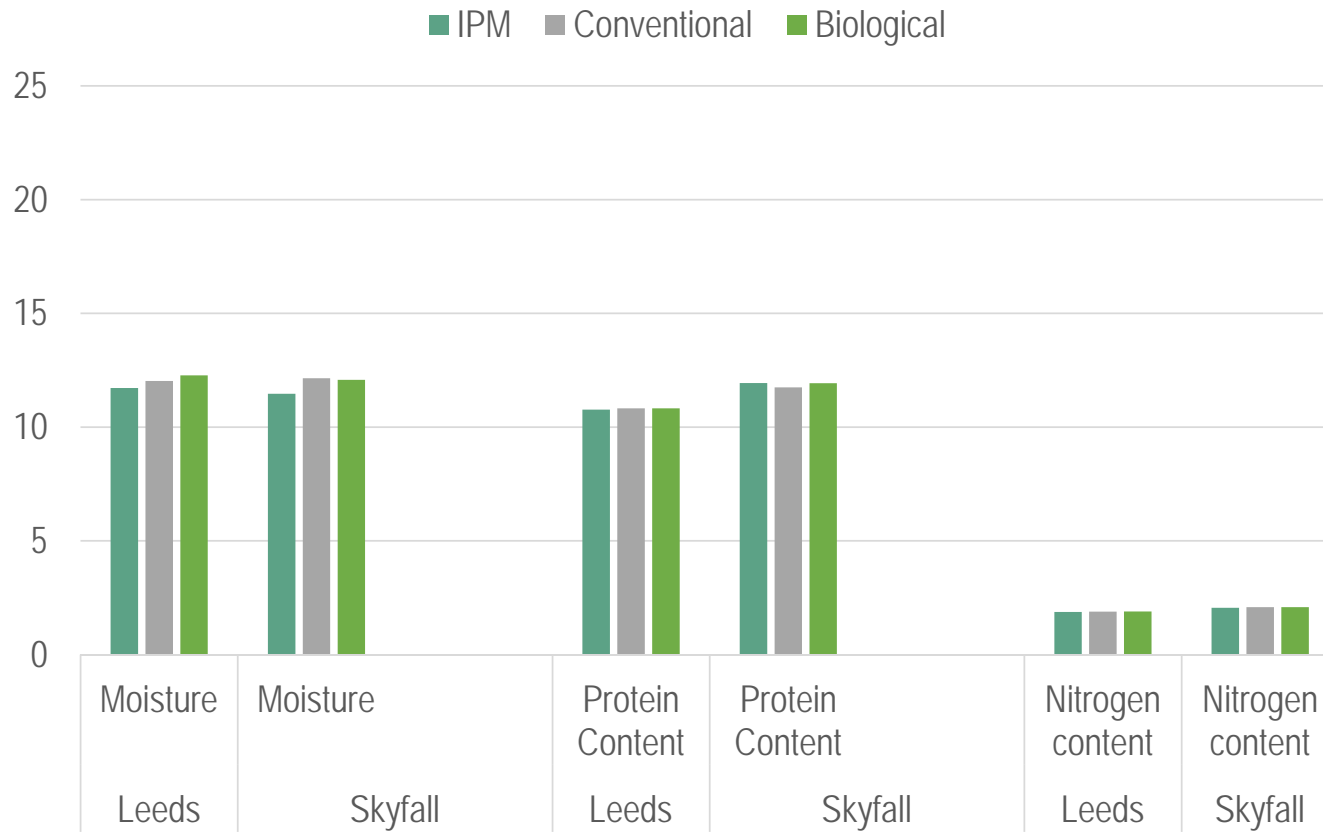
Quality data – 2018 Nafferton



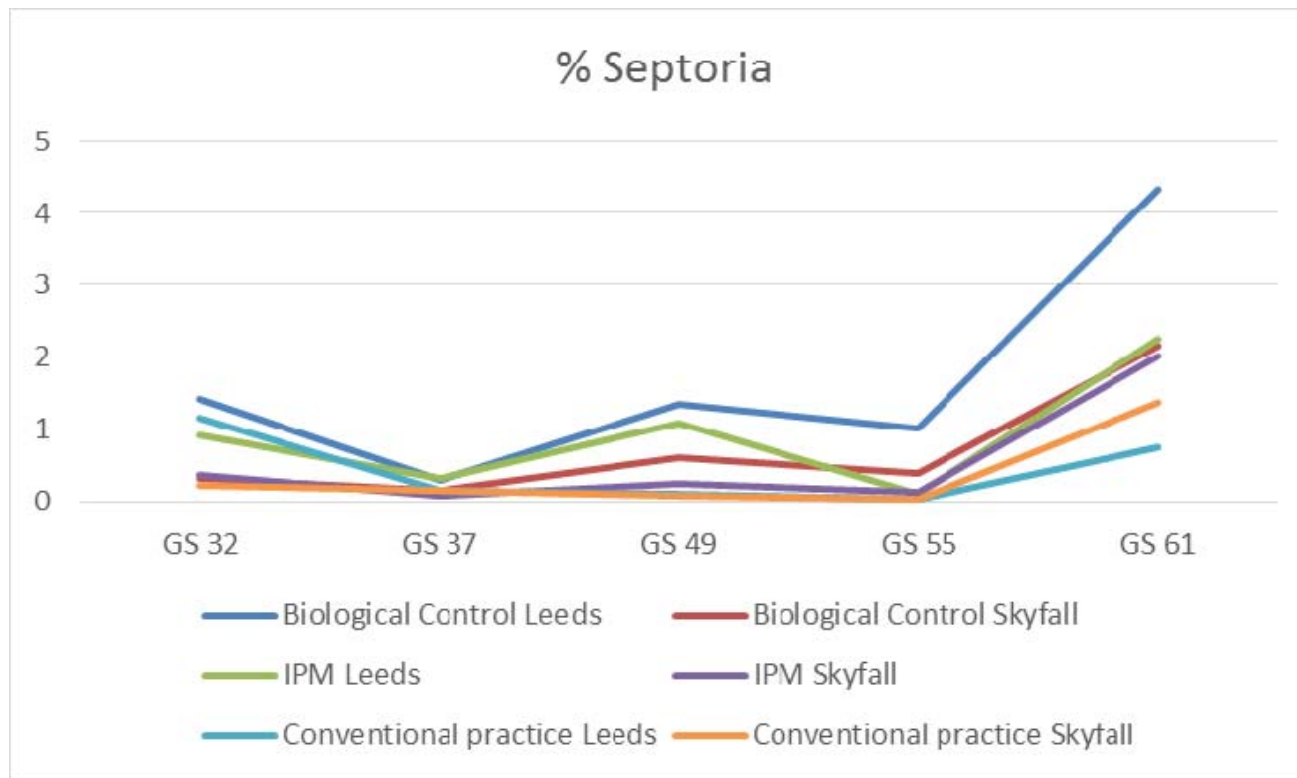
Quality data – 2018 Cockle Park



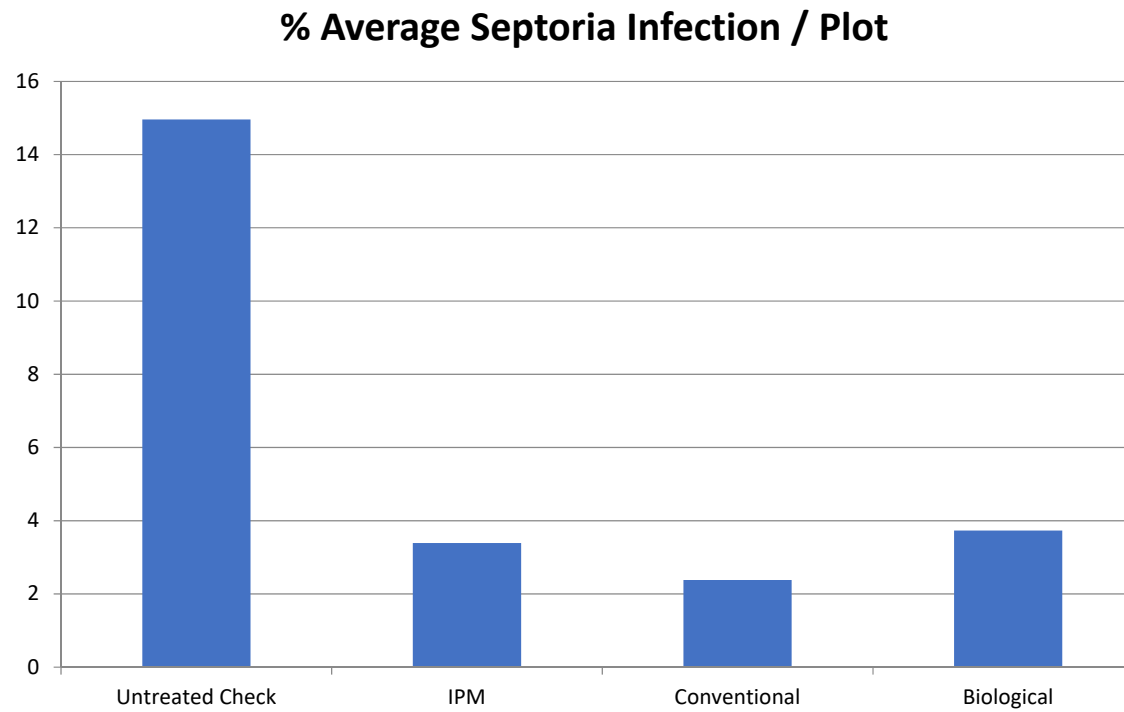
Quality data – 2018 Stockbridge Technology Centre



Disease data – 2018 Stockbridge Technology Centre

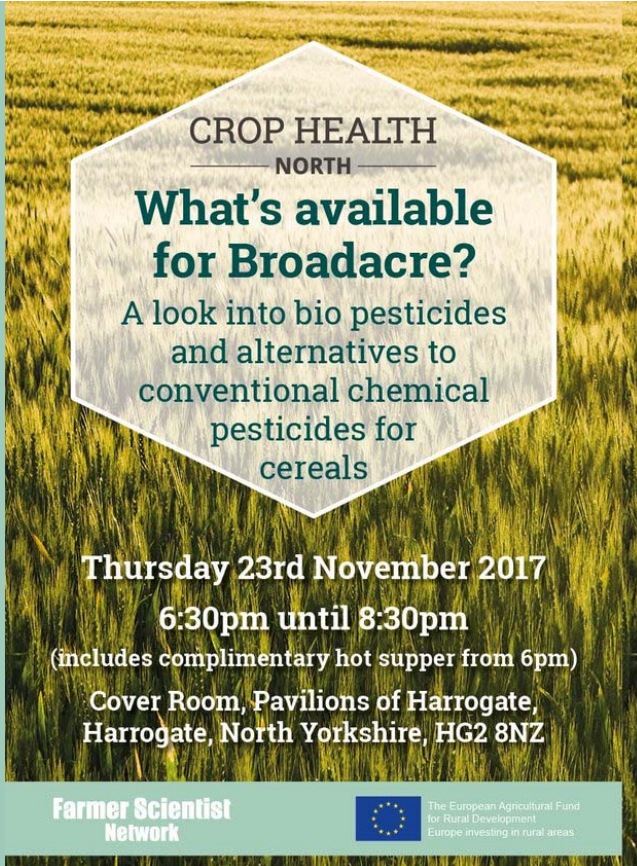


Disease data – 2019 Cockle Park



Biologicals – knowledge exchange

- Open days – at all three sites in 2017 and 2018 and at STC and Cockle Park in 2019
- Evening meeting in 2017
- Seminar – Great Yorkshire Show
- Website: www.crophealthnorth.co.uk

The poster features a background image of a golden wheat field. A white hexagonal shape is overlaid on the field, containing the event title and details. At the bottom of the poster, there are logos for the Farmer Scientist Network and the European Agricultural Fund for Rural Development.

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**What's available
for Broadacre?**

A look into bio pesticides
and alternatives to
conventional chemical
pesticides for
cereals

Thursday 23rd November 2017
6:30pm until 8:30pm
(includes complimentary hot supper from 6pm)

**Cover Room, Pavilions of Harrogate,
Harrogate, North Yorkshire, HG2 8NZ**

**Farmer Scientist
Network**

 The European Agricultural Fund
for Rural Development
Europe investing in rural areas

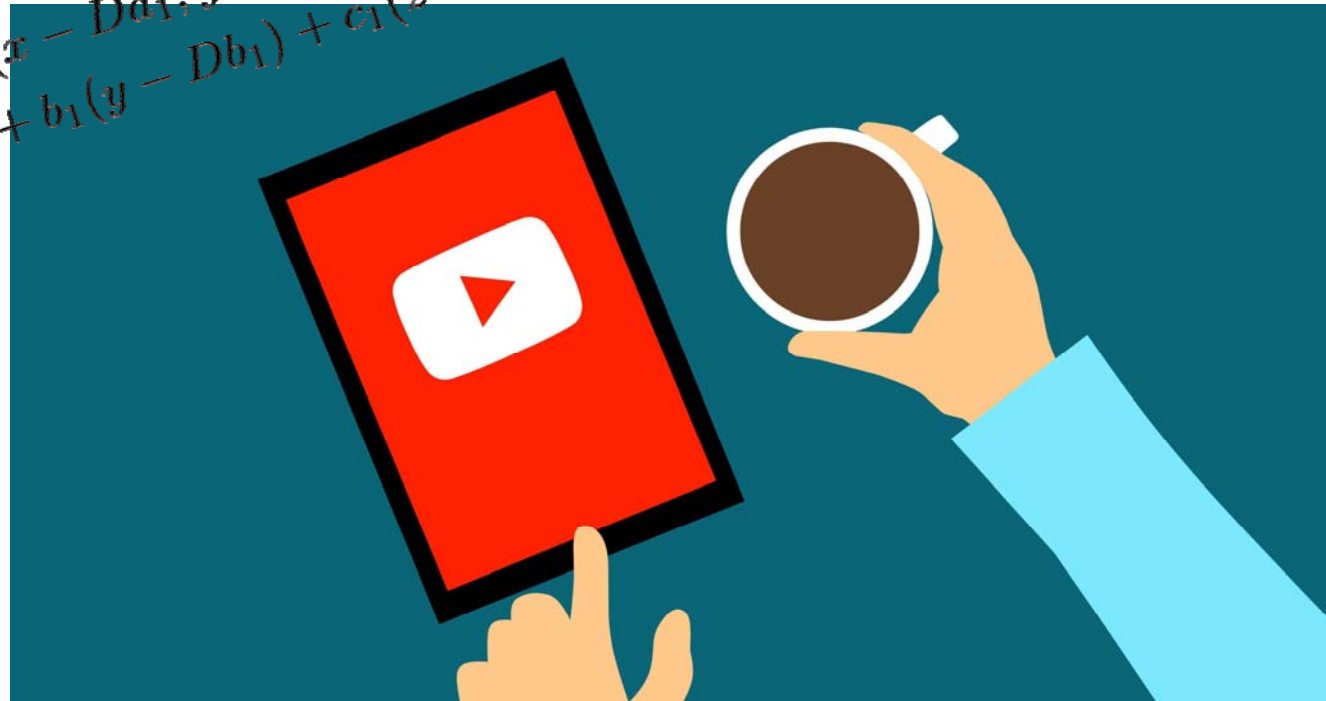
Education

Knowledge transfer to advisors, farmers, consumers, food suppliers, government, regulators:

- New technology – education / costs/ value to business
- Understanding risks (or lack of risks?)
- New approach to crop protection – changing mindsets

Next steps: full data analysis and dissemination

$$(a_1, b_1, c_1) \cdot (x - Da_1, y - Db_1, z - Dc_1)$$
$$a_1(x - Da_1) + b_1(y - Db_1) + c_1(z - Dc_1)$$



Next steps: incorporating new technology to optimise field use

Next steps: integrating Biopesticides with other biologicals

Next steps: integrating Biologicals with predictive diagnostics

Next steps: considering the benefits of precision placement technology



www.crophealthnorth.co.uk

Thank you for your attention

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