Implementing IPM in UK arable production systems

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- NIAB is a major international centre for plant science, crop evaluation and agronomy, with headquarters in Cambridge and regional offices in the UK.
- Internationally recognised reputation for independence, innovation and integrity.

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NIAB is active at all points along the crop development pipeline, with effective linkages and partnerships in place to ensure first class research and service provision

IPM principles of the EU-directive

1. Measures for prevention and/or suppression of harmful organisms
2. Tools for monitoring
3. Threshold values as basis for decision-making
4. Non-chemical methods to be preferred
5. Target-specificity and minimization of side effects
6. Reduction of use to necessary levels
7. Application of anti-resistance strategies.
8. Records, monitoring, documentation and check of success

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UK Current situation / progress

- IPM is not a final destination that has to be reached.
- IPM is a journey on which all farmers are engaged.
- Everyone is at a different stage but all are moving in the same direction.

- Most UK farmers would not recognise what they do as IPM – they would regard it as good farm practice.
- Many government initiatives – mostly voluntary, but good evidence of success.

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1. Measures for prevention and/or suppression of harmful organisms.

- Crop Rotation
- Cultivation techniques
- Resistant varieties
- Certified seed
- Balanced fertiliser use
- Prevention of spread of harmful organisms
- Enhancement of beneficial organisms

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Cultivation techniques – conflicts

Minimum tillage

+ Soil moisture conservation
+ Reduced energy costs (lower C-footprint)
+ Reduced labour costs.

- Increased grass weed problems. (*Alopecurus*)
- Increased disease problems. (*DTR, Fusarium*)
- Higher pesticide use

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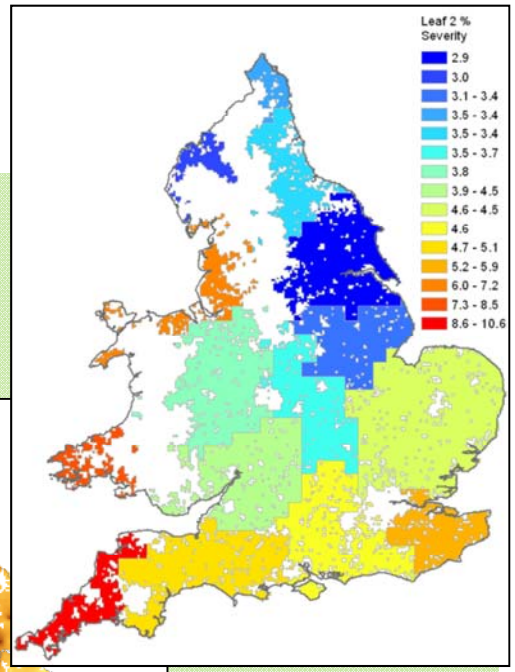
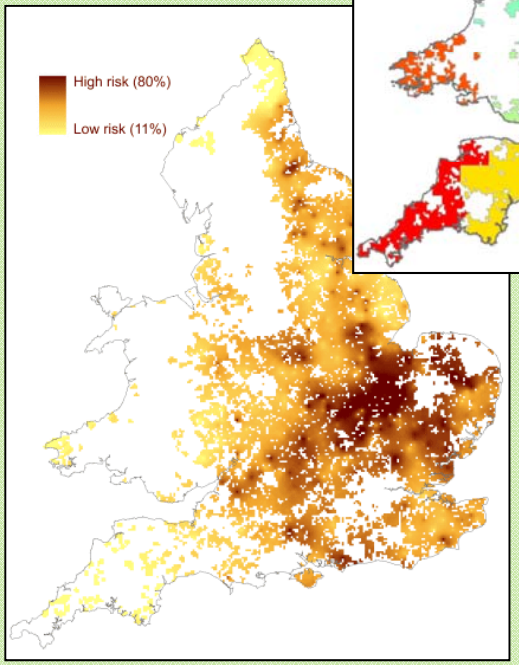
2. Tools for monitoring

- National surveys
- Historic monitoring
- Real-time monitoring
- General risk models
- In-season risk models



Septoria



Phoma

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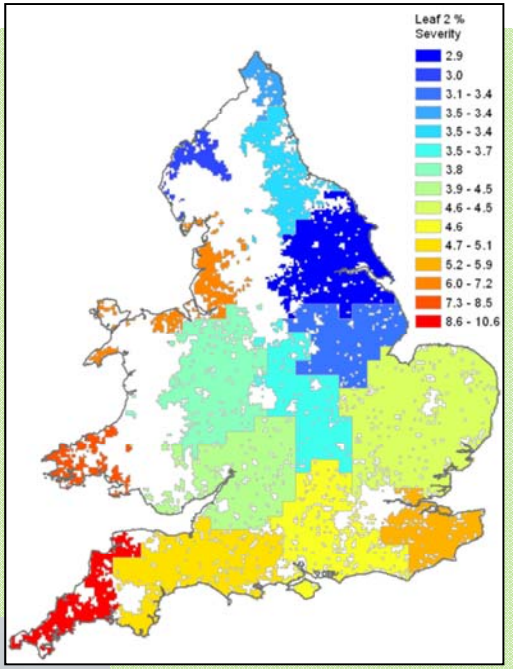
2. Tools for monitoring

Challenges –

- How to convert risk into advice.
- How to modify on-farm decisions based on risk.
- Farmers generally risk-averse



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3. Thresholds as basis for decision-making.

Thresholds commonly used:

Wheat Bulb Fly (*Delia coarctata*)
Pollen Beetle (*Meligethes aeneus*)
OWBM (*Sitodiplosis mosellana*)
Phoma leaf spot (*Leptosphaeria maculans*)

- Need regular and frequent crop monitoring.
- Farmers and advisers very risk averse.
- Major financial losses if advice is 'wrong'
- Difficult / dangerous to advise 'NO SPRAY'

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4. Non-chemical methods to be preferred.

- Pest and disease-resistant varieties, rotations, cultivations all key tools.
- Consumer demand for blemish-free produce.
- Biological control of insect pests common, particularly in protected crops.
- Rare in arable crops. (Ineffective/poor control, hence little uptake).
- Crop production in arable crops in the UK has a high dependency on pesticides. (e.g. Wheat)

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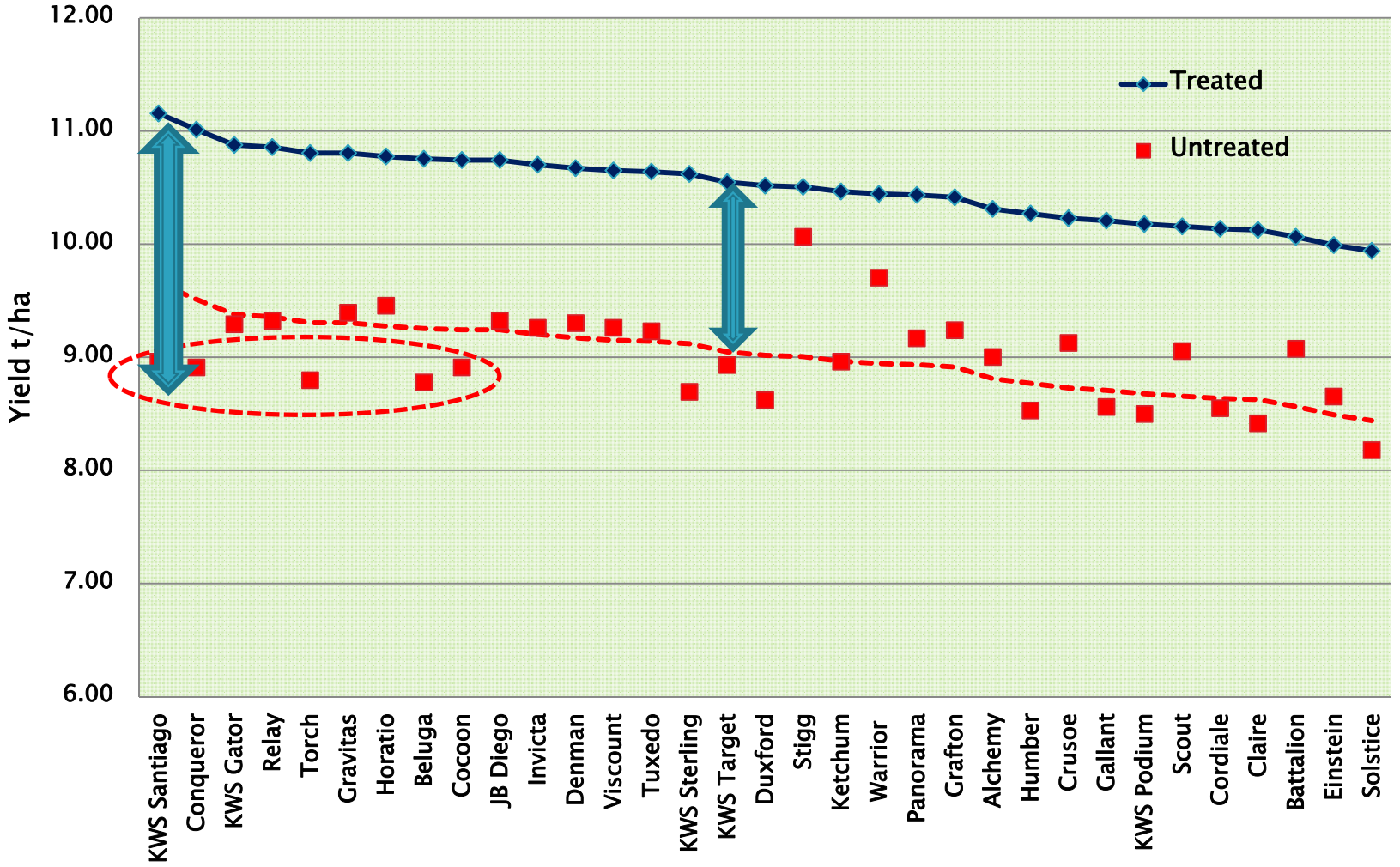
UK Recommended list 2012-2013



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Voluntary Schemes

5. Target-specificity and minimization of side effects.
6. Reduction of use to necessary levels.

7. Application of anti-resistance strategies.
   (Statutory labelling more stringent)

8. Records, monitoring, documentation and check of success.
   (Many assurance schemes demand these)

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5-8 Government Schemes

- **2006 – UK Government issued:**
  A Strategy for the Sustainable Use of Plant Protection Products.

- Minimising risks from pesticides residues in food;
- Minimising exposure to pesticides (users and bystanders);
- Reducing water pollution pesticides;
- Reducing the impact of pesticides on biodiversity;
- Maintaining the availability of crop protection for minor crops;
- Encouraging cost-effective alternative approaches and greater use of integrated crop and pest management.

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5-8 Government Schemes

- Agri-environment schemes (AES)

  AES are voluntary agreements that pay farmers and other land managers to manage their land in an environmentally friendly way.

  Over 58,000 voluntary AES agreements, covering over 6 million hectares (66% of agricultural land in England)

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5-8 Government Schemes

- **Voluntary Initiative (VI)**: 4 schemes

  National Sprayer Testing Scheme (NSTS)
  (NSTS tested machines now cover 86.8% of the sprayed area).

  National Register of Sprayer Operators (NRoSO)
  (NRoSO has over 20,000 members)

  Crop Protection Management Plan (CPMP)
  Target for 2011was 1.7 million hectares – demonstrate the implementation of IPM.

  BASIS BETA programme
  Agronomists to gain understanding of the interactions between production and the environment. (over 850 agronomists who have completed training).

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Summary

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IPM Journey

EU legislation

High yielding
Low input
Pesticide free
GM?

World hunger

Environment

Food security

Healthy food

Farm incomes

GM crops

Water quality

Food safety

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