Pre-emergence Application - #LowSlowCovered
Why is Application Important

- Weed, Pest, Disease Control: Only 1-5% difference in product performance between all CP products.
- Tuning
- Mechanical
- Timing / Weather
- Product
Pre-em: ON TARGET

REDUCING SPRAY DRIFT

OPTIMISE APPLICATION AND MINIMISE DRIFT

EFFICACY

EFFICIENCY

ENVIRONMENT
Pre-ems at high risk of drift - Bare Soil

• No crop to catch small droplets
• Lack of wind break
• Small droplets travel further >100m
• Bare soils releasing stored heat causing air/spray to rise
Is this a very good application?
Pre-em: ON TARGET

#LowSlowCovered

**WEATHER**
Even in perfect conditions drift can occur

**FORWARD SPEED**
Forward speed needs to balance work rate and efficacy

**BOOM HEIGHT**
Boom height is the single biggest controllable factor to prevent drift

**NOZZLES**
Nozzles which produce coarser droplets will help reduce drift and increase accuracy
NEW FARM TECHNOLOGIES

Forward Speeds & Boom heights
FORWARD SPEED

The turbulence factor – drift increases as you drive faster.

Improved boom stability at optimum speed.

BOOM HEIGHT

Single biggest controllable factor in reducing drift

A boom height of 50cm is optimum to minimise drift and achieve best coverage of the target.

Effects of forward speeds on black-grass control

Increasing forward speed increases drift through greater turbulence behind spray boom
Forward speed - drone scan

*Note – more red indicates greater black-grass population
Effects of boom height on black-grass control

Increasing boom height from 50 cm to 1 m increases drift by up to 10 times.

Larger droplets help compensate for increased boom heights, however 50 cm is the optimum boom height both with 90% DR and flat fans.
Pre-emergence Application – Water Volumes
Water volume and coverage

- **Flat fan**
  - 100l/ha: 23.1%
  - 200l/ha: 36.2%
  - 400l/ha: 64.4%

- **90% DRT**
  - 100l/ha: 18.8%
  - 200l/ha: 29.2%
  - 400l/ha: 56.4%
2018 water volumes effect on black grass control across 3 trial sites

DEFY @ 4l/ha + 0.6l/ha Liberator Syngenta trials 2018
Liberator is a registered trademark of Bayer CropScience Ltd.
Stats not just trends....

Control t Grouping for Means of Water (Alpha = 0.05)

Means covered by the same bar are not significantly different.

<table>
<thead>
<tr>
<th>Water</th>
<th>Estimate</th>
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<tr>
<td>400</td>
<td>91.5140</td>
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</table>

LSD – 10.491%
3 years trials work – 6 trials
Water Volumes Drone Scan

Note – more red indicates greater black grass population
Nozzles

James Thomas
New Farming Technologies Lead
Difficult weather conditions are common at autumn pre-em timing

In a 1.5 month period there were only 5 good spray days at our Barton IC. It is inevitable therefore that pre-ems are sometimes applied poor weather conditions because timing is so important
Weather – Wind Speed

Spraying in high wind speeds with incorrect nozzles choice
Nozzle choice

90% drift reduction nozzles deliver equivalent Black-grass control to market standards
Angled 3D Nozzle – 200 l/ha

90% Drift Reduction Nozzle – 200 l/ha

Untreated

Pre-em = DEFY 4.0 l/ha + Liberator 0.6 l/ha.
Barton Innovation Centre. Application Trials 2017
Liberator is a registered trademark of Bayer CropScience Ltd.
Nozzle choice - drone scan

*Note – more red indicates greater black-grass population
NOZZLES CHOICE
The influence of nozzles on drift reduction
90% drift reduction nozzles minimise the risk of drift

Wind tunnel testing at Silsoe Spray Application Unit demonstrates how some 90% nozzles mitigate the risk of higher wind speeds.
Application on target  
#LowSlowCovered

Reducing spray drift

**WEATHER**
- Double the wind speed
double the drift
- 1-2 m/s or 3-6kph

**FORWARD SPEED**
- Increase in turbulence and boom instability at faster forward speeds increase the drift
- Speed under 12 kph

**BOOM HEIGHT**
- Double the boom height
- 10x the drift
- 50 cm for minimum drift
- 50 cm for even coverage

**NOZZLES**
- High pressure increase in drift
- Reduce pressure
- Coarse to extra coarse droplet size
- 200 l/ha