

HGCA




Maximising the control achieved from pre and post emergence herbicides

**Paul Miller, Head of Silsoe Spray Applications Unit
The Arable Group**



HGCA



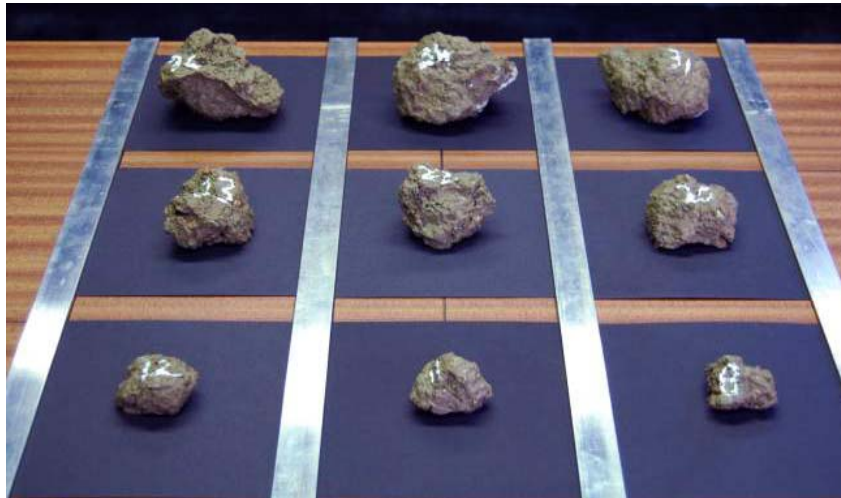
Pre-emergence applications

- **Issues relate to:**
 - **Uniformity of coverage at the soil surface – with implications for:**
 - ❖ **droplet size distribution/spray quality**
 - ❖ **delivery pattern – including angled sprays**
 - ❖ **quality of the seed bed**

 - **To account for changes in:**
 - ❖ **modes of action – shoot or root uptake**
 - ❖ **development of resistance**
 - ❖ **the availability of products**

HGCA

Studies of spray distribution around clods

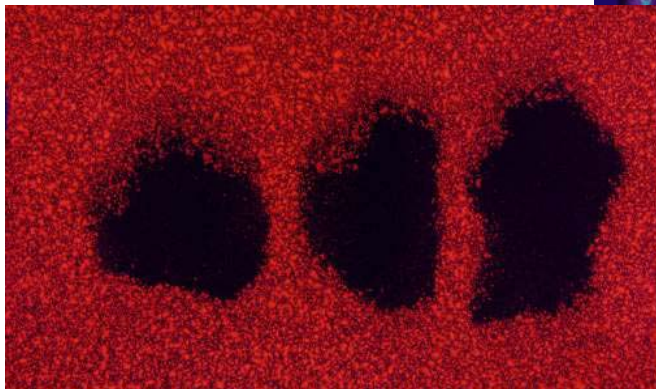
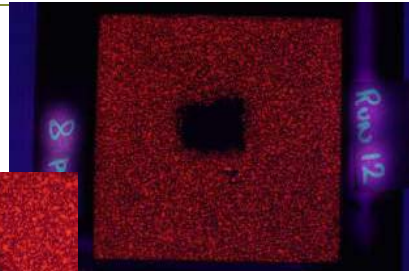


HGCA

Assessments of coverage around clods



Tracer dyes used to examine spray deposits around sprayed clods



Coverage assessed by image analysis

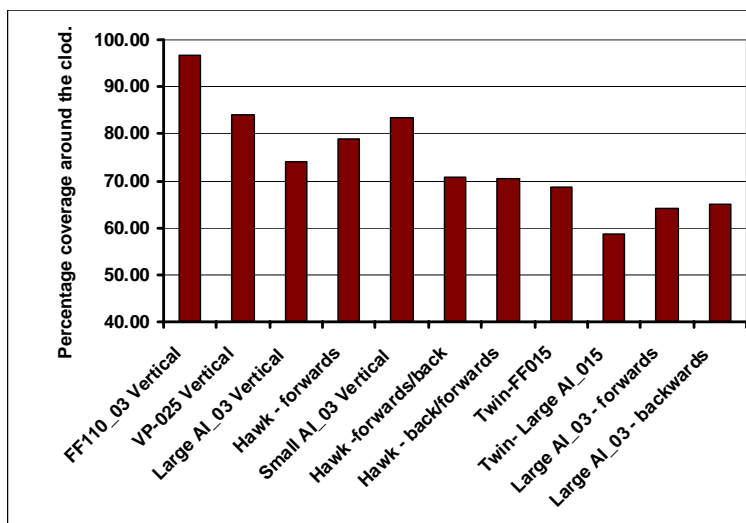
HGCA

Views of a (large) treated clod




HGCA

Measured coverage around clods in wind tunnel tests

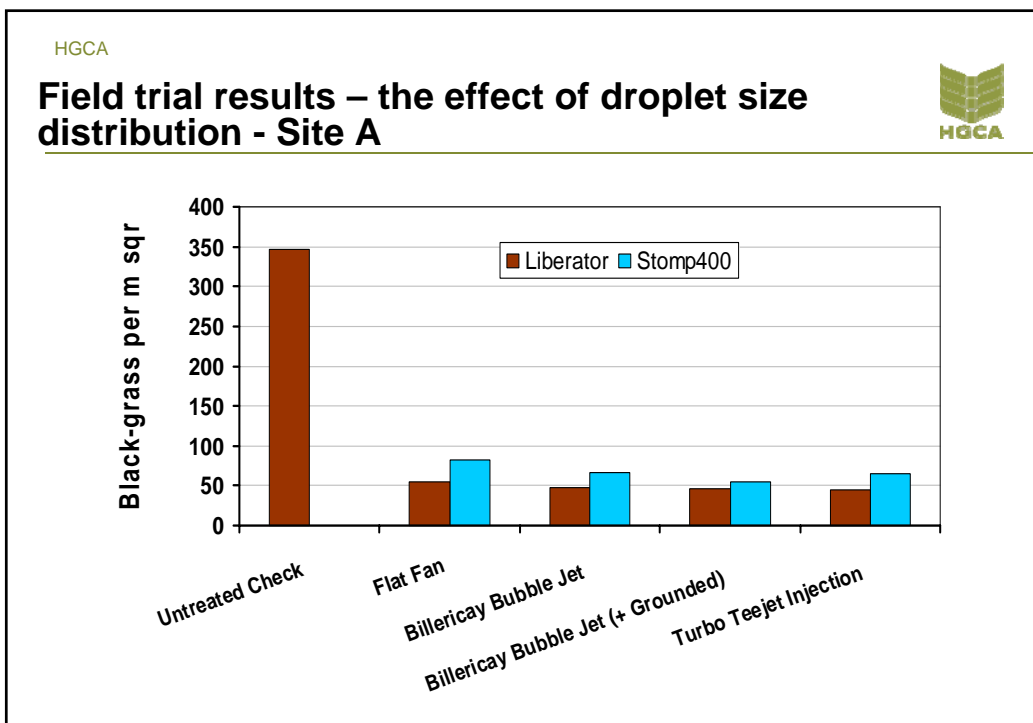


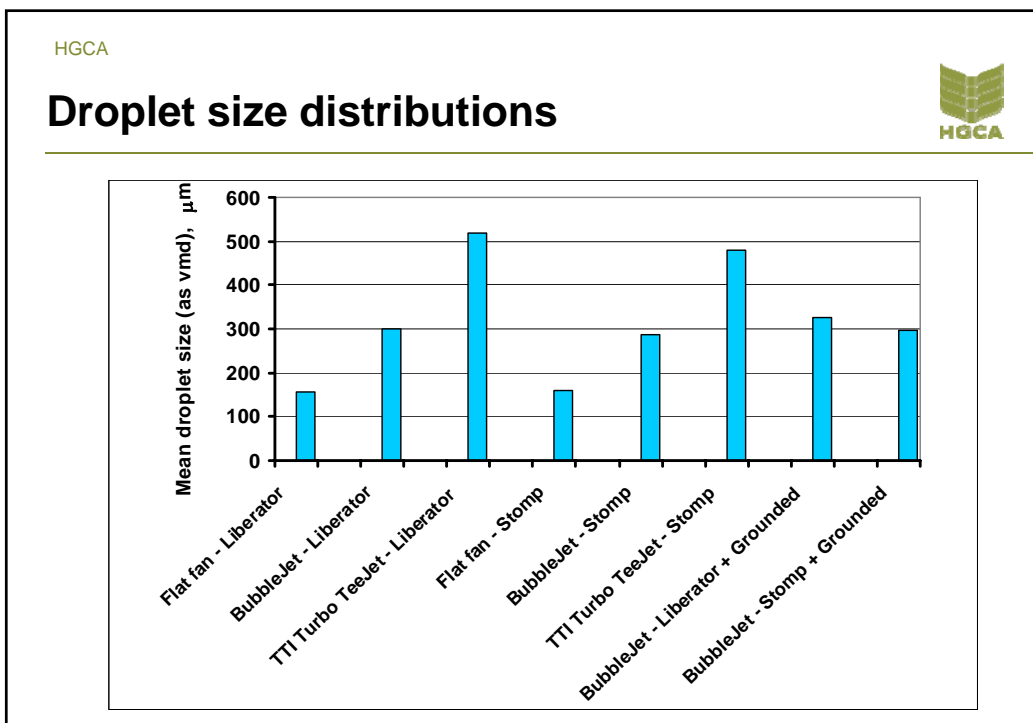
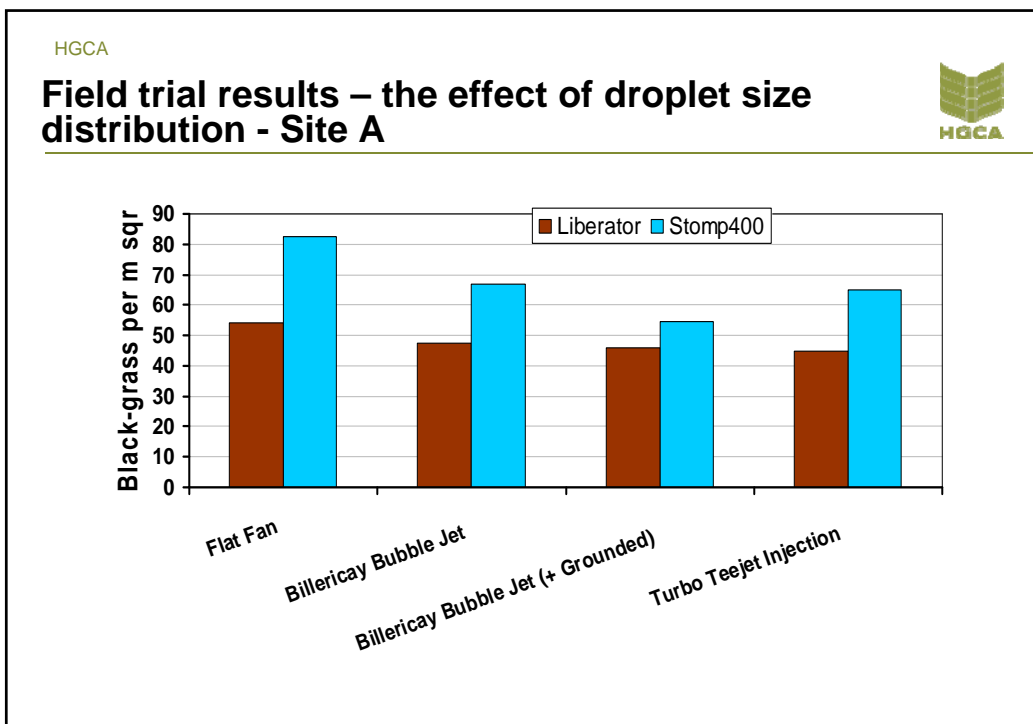
HGCA

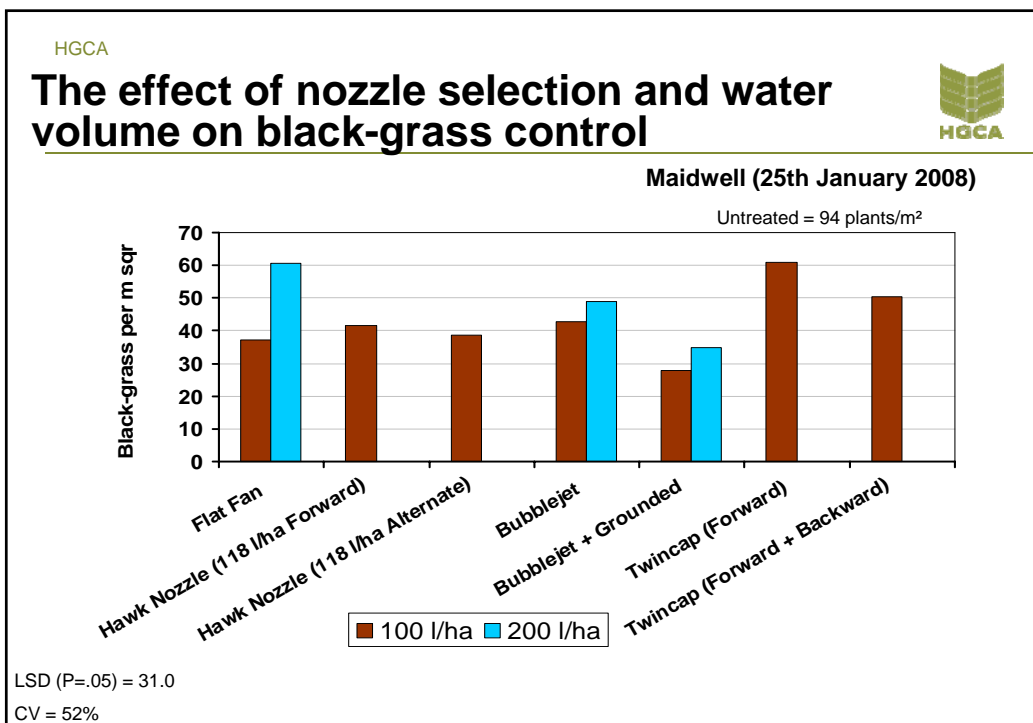
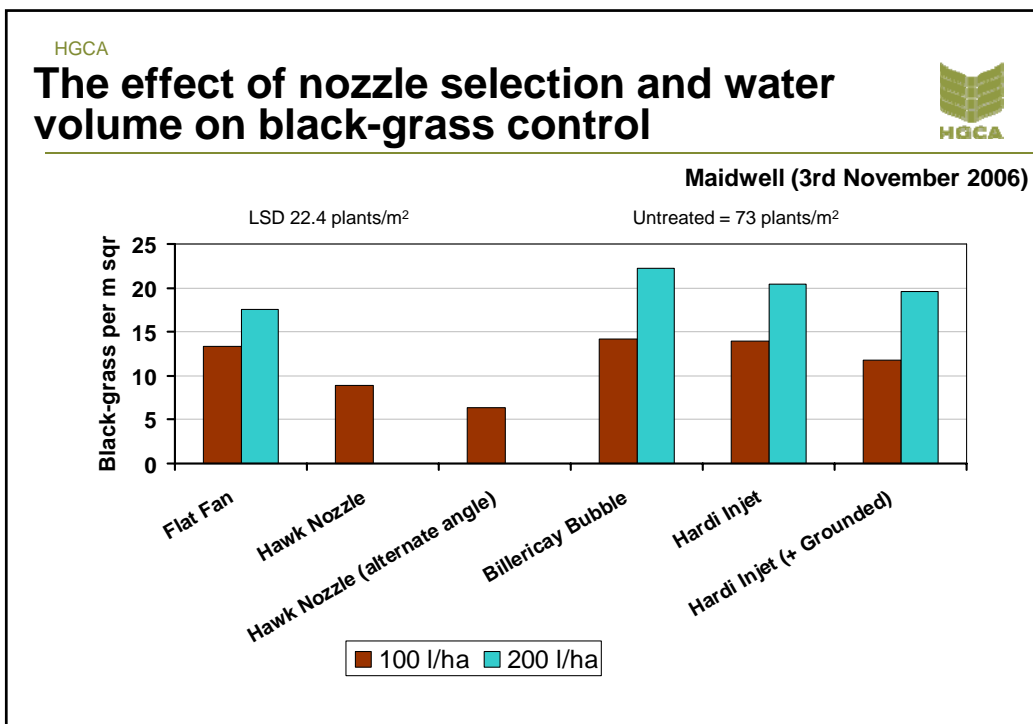


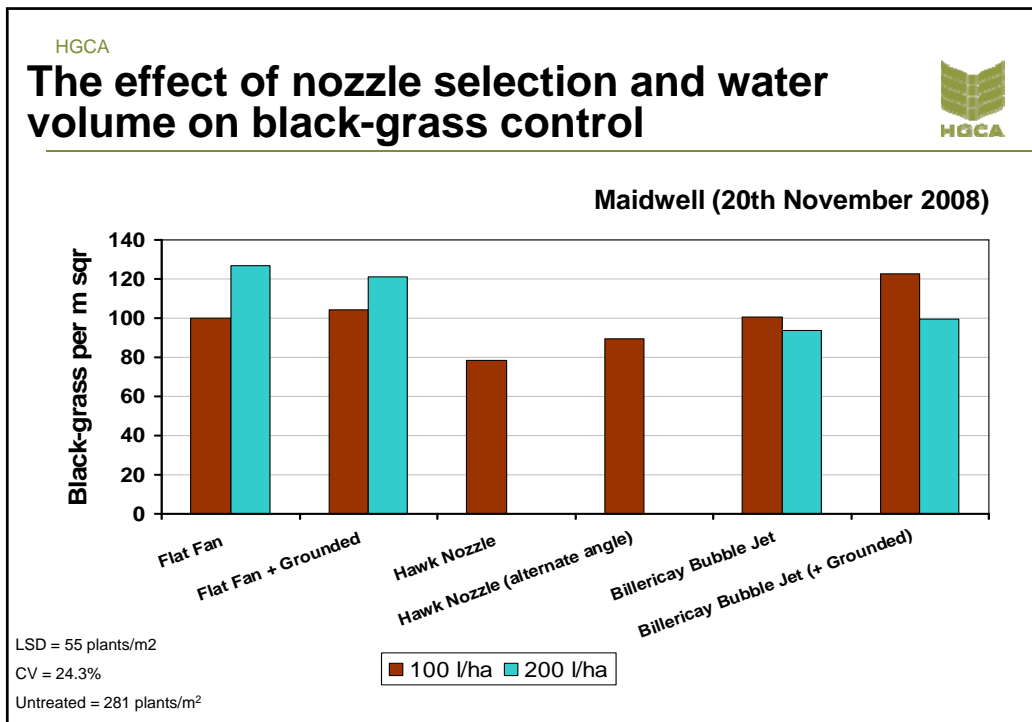
Summary of results from wind tunnel study

- **Better coverage around clods from (generally):**
 - using finer sprays
 - angled delivery
- **As expected**
- **In field conditions these parameters will increase the risk of drift**









HGCA

Pre-emergence application - Summary

- Consistent differences in response to water volume with 100 L/ha generally giving better control than 200 L/ha
- Nozzle effects have been more variable:
 - the angled 'Hawk' nozzle has done well particularly in the 2006/7 season when nozzles were used at 2.0 bar pressure
 - conventional nozzles have given an intermediate level of control compared with other nozzle designs
 - some evidence that a 'small droplet air-induction nozzle' may give acceptable control with less drift in many situations



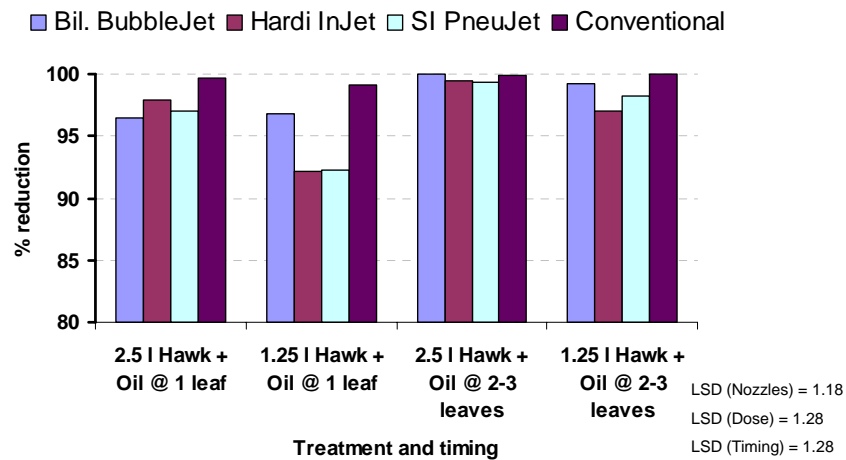
Spray application to small weeds

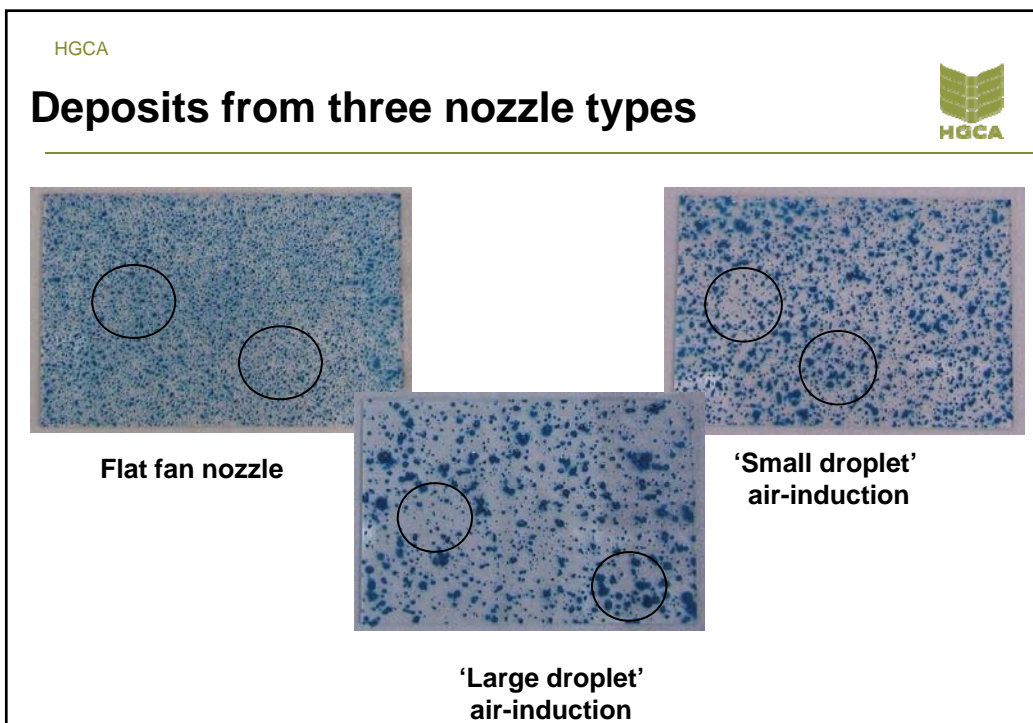
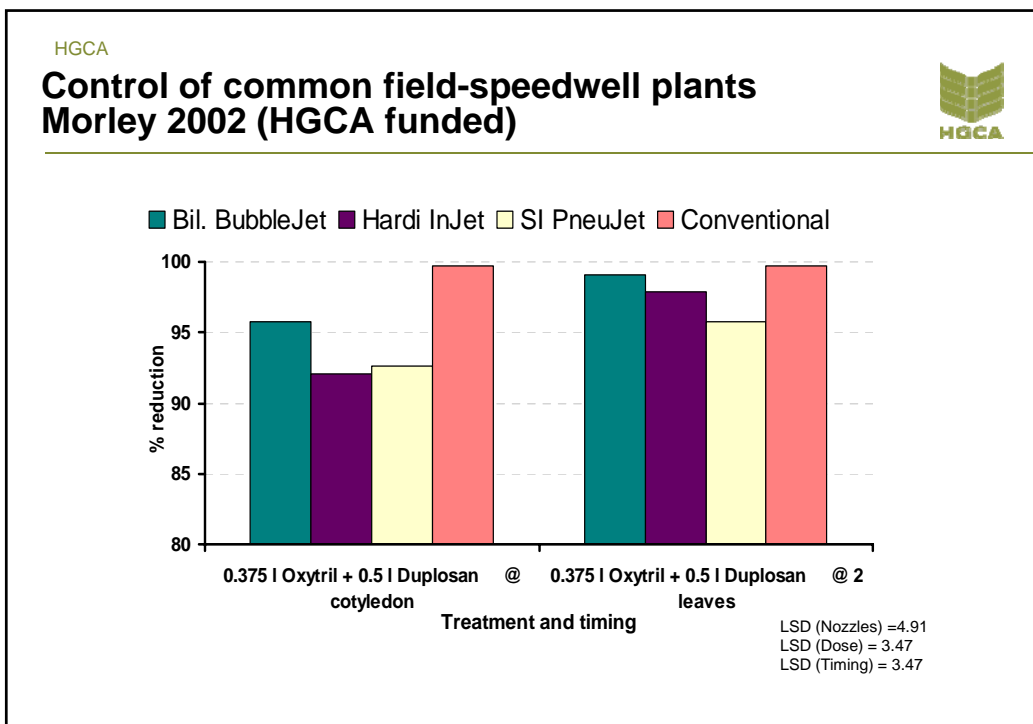
- **Main issues**

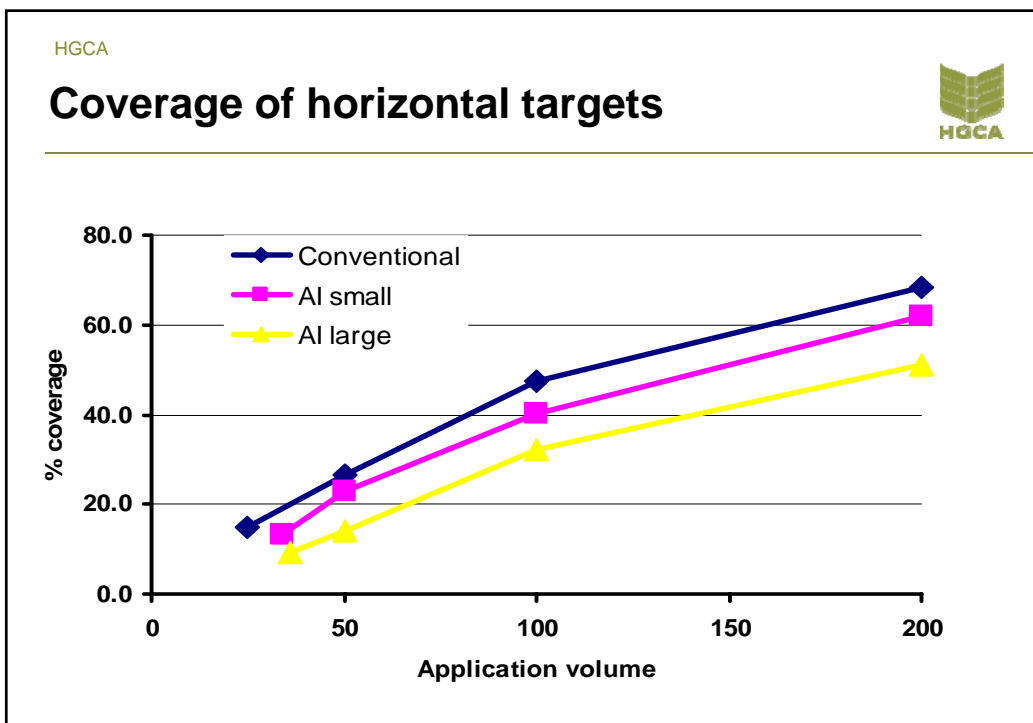
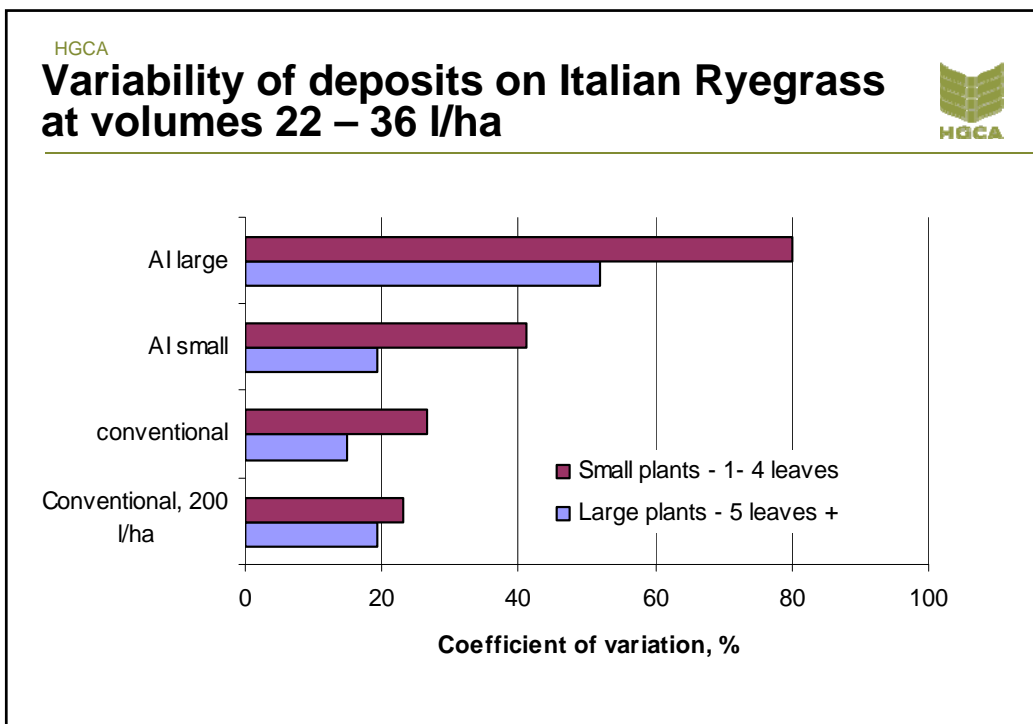
- **small target size – needs:**
 - ❖ **fine/medium spray quality – small droplet size distribution**
 - ❖ **horizontal spray movement – via angled nozzles or the effect of wind**
 - ❖ **need to control spray drift – little target canopy to capture spray**
 - ❖ **appropriate application volume for:**
 - *Dose transfer*
 - *Target coverage*

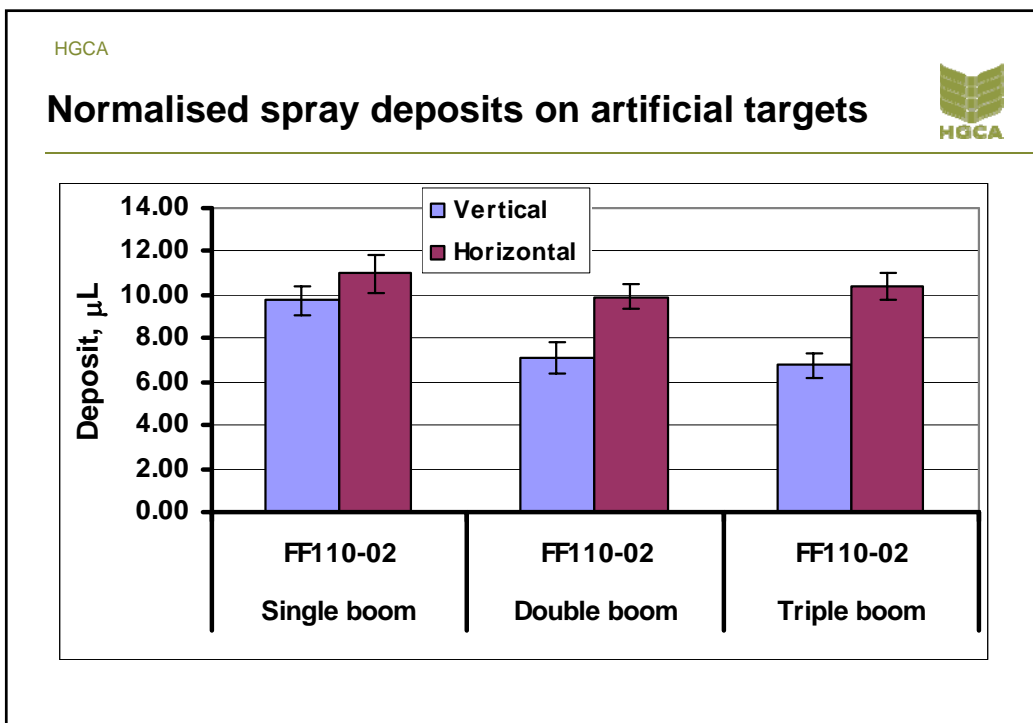
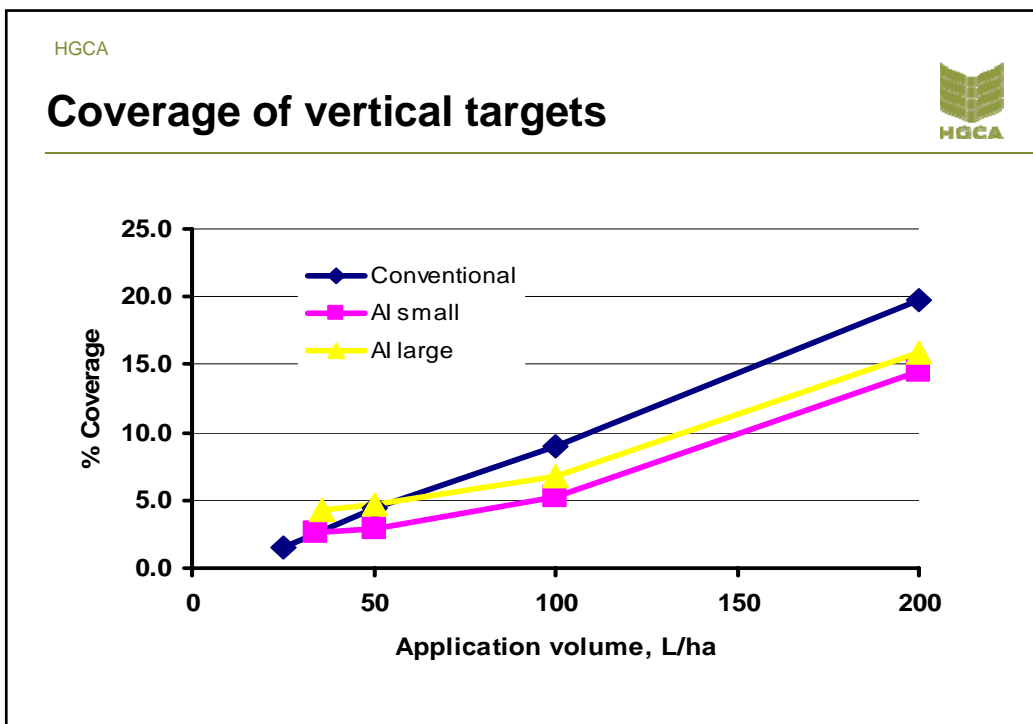


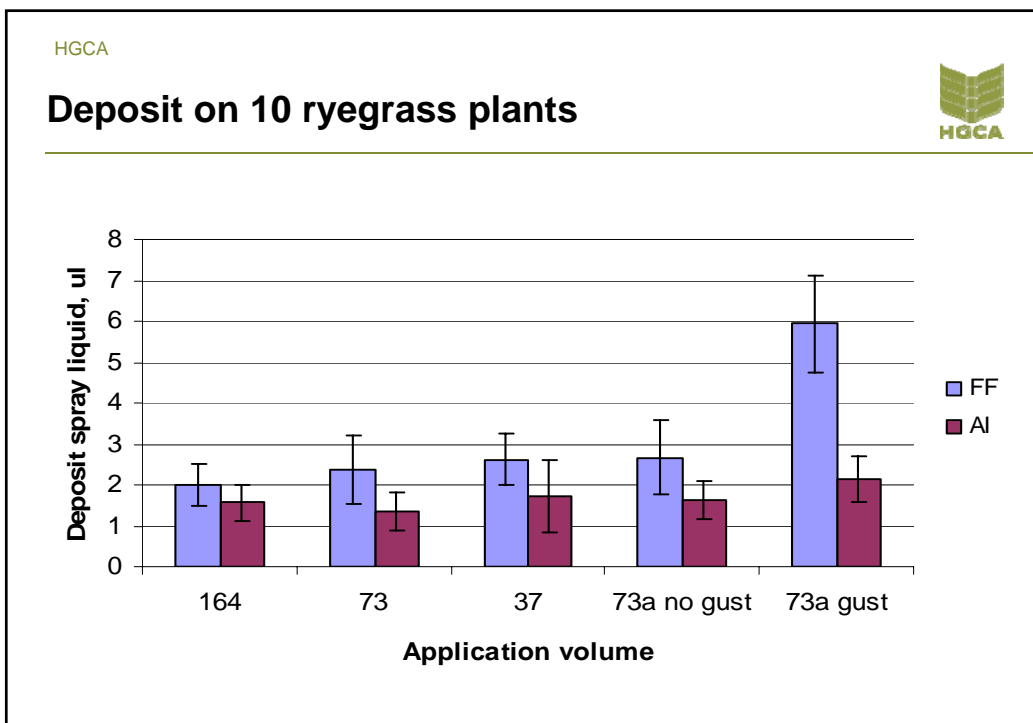
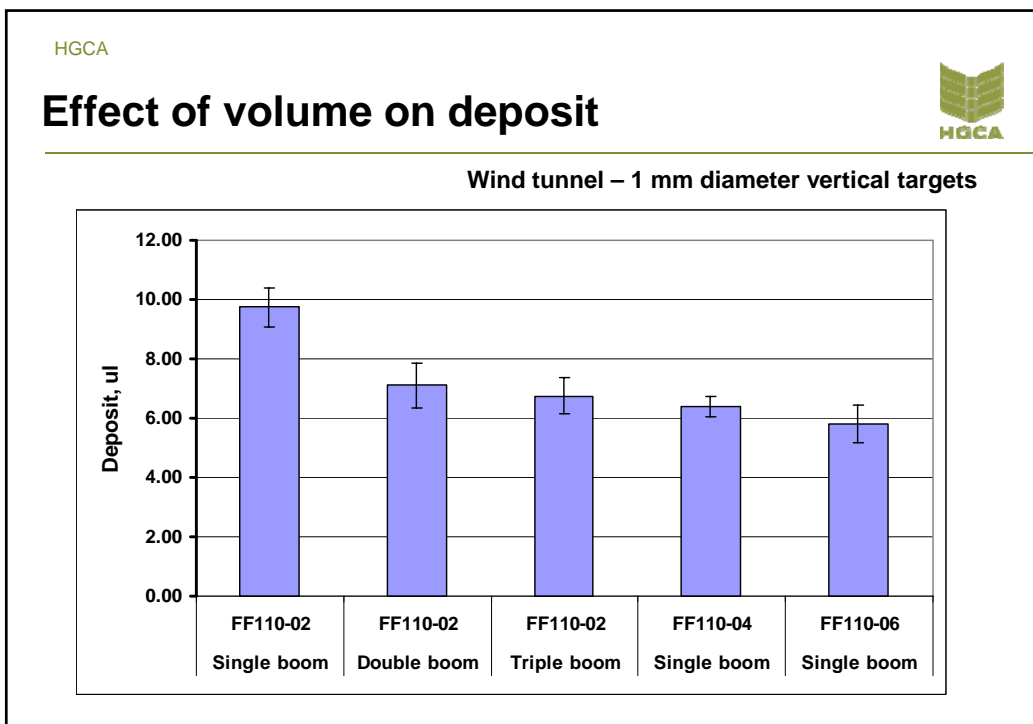
Droplet size/spray quality is important when treating small targets (e.g. Black-grass)

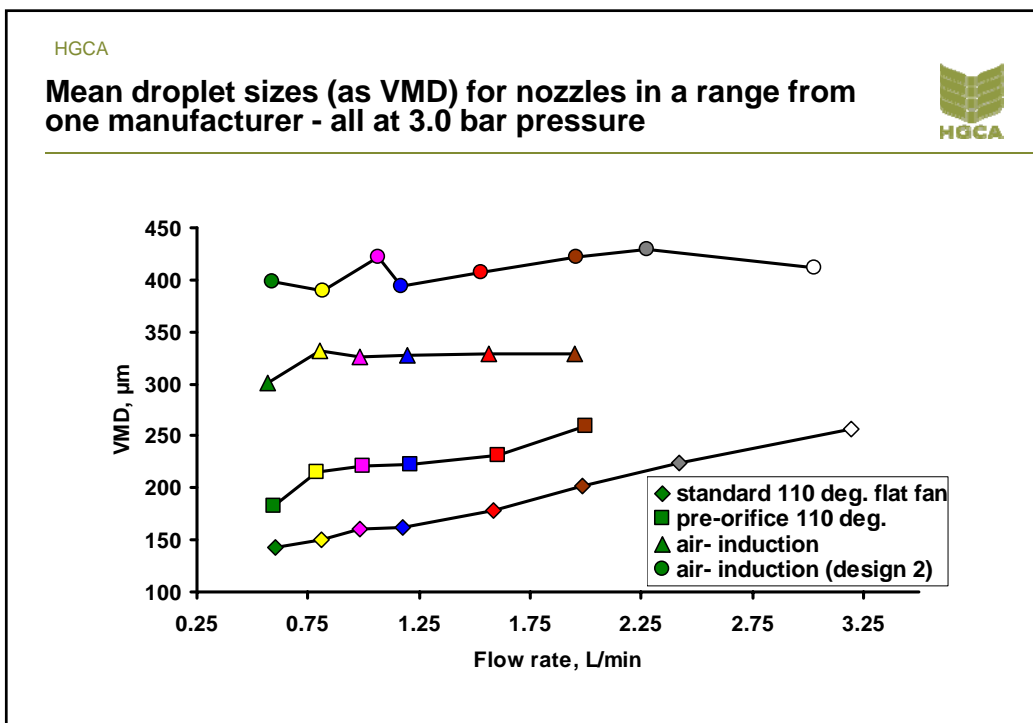
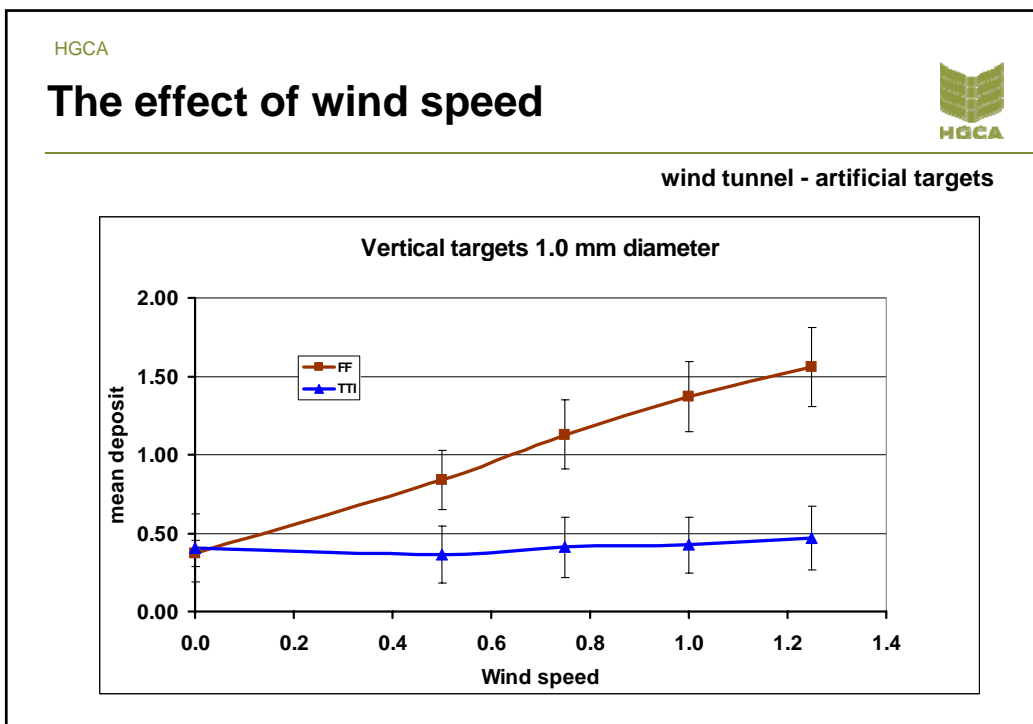


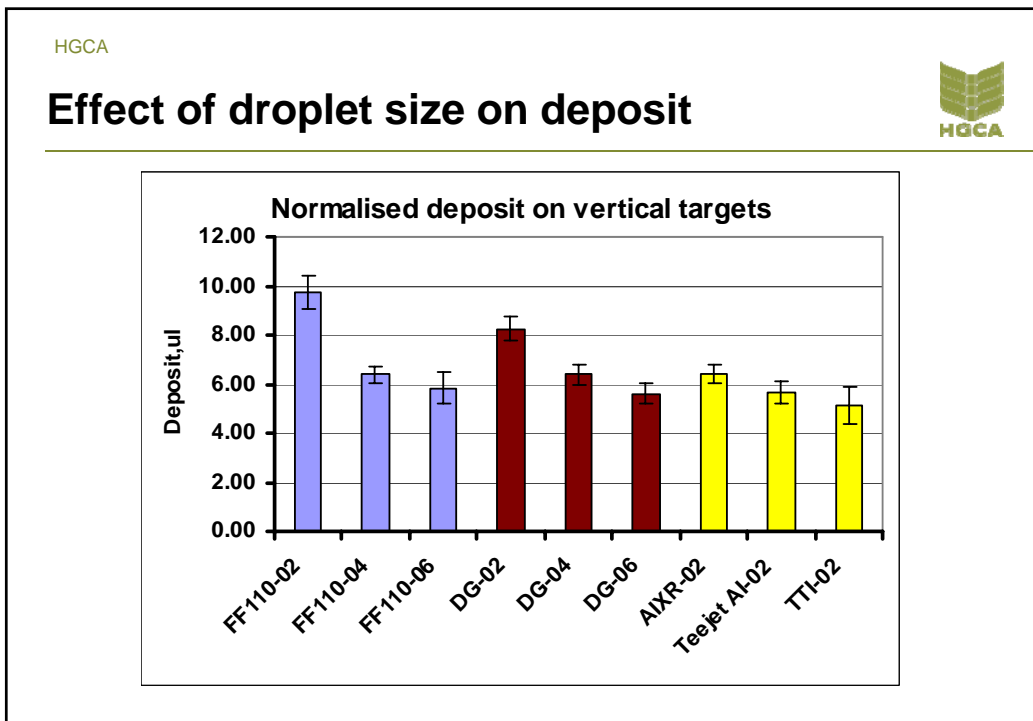
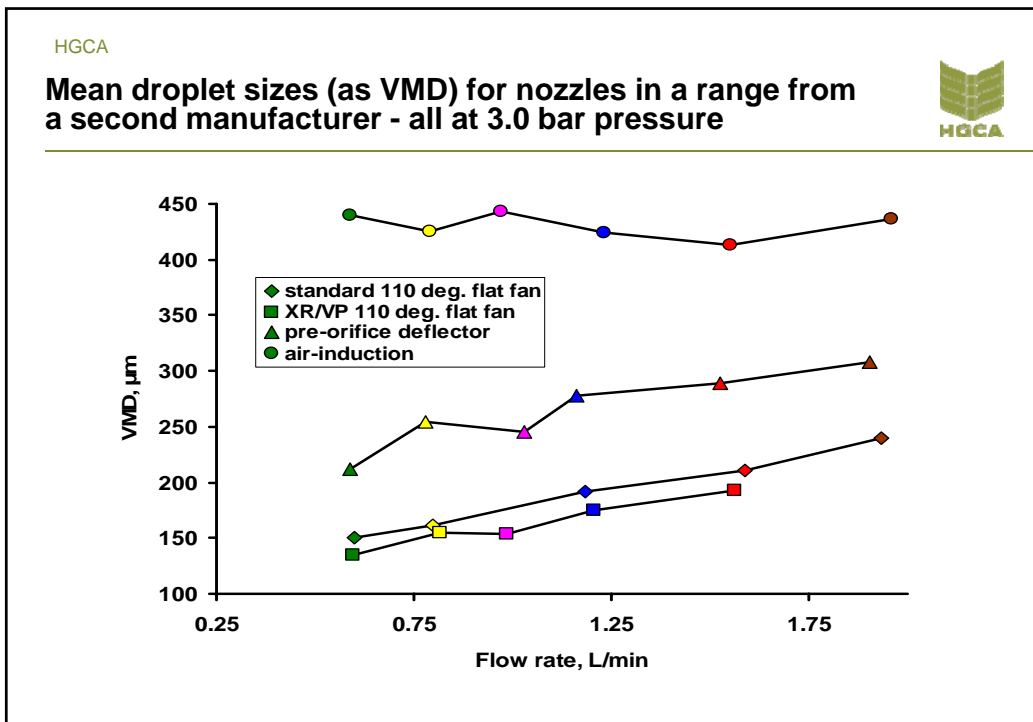












HGCA

Application to small weeds - Summary



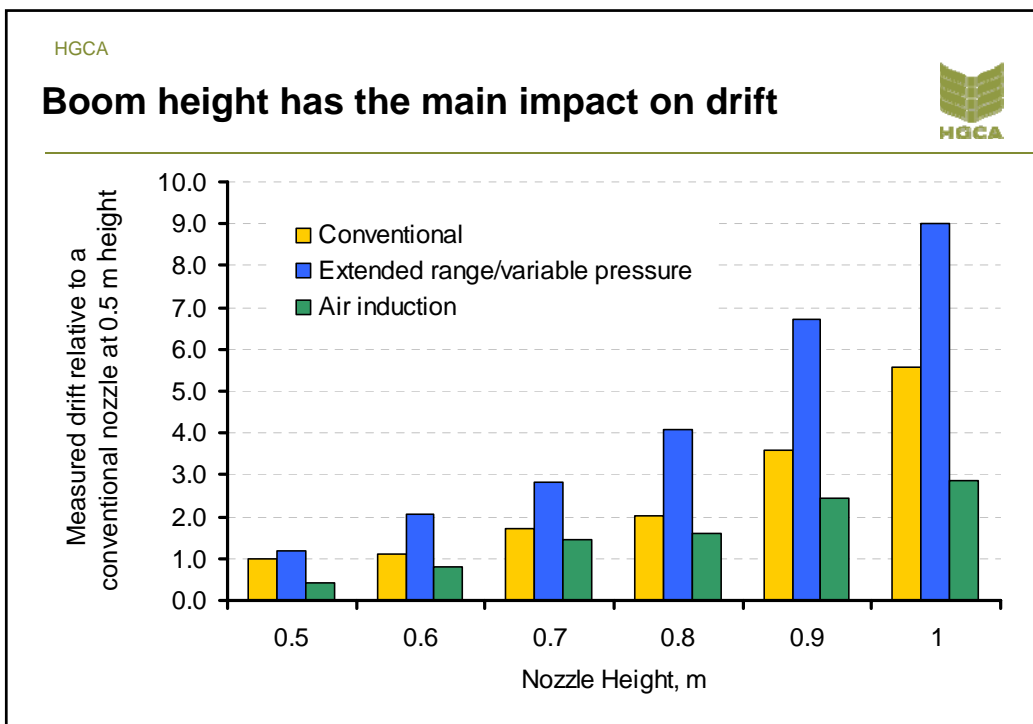
- **Use a fine or fine/medium spray quality**
 - *From a conventional nozzle design*
- **Use 100 L/ha to give good dose transfer unless target coverage is definitely required**
- **Take care to control the risk of drift**

HGCA

Drift control is important



- **Keep boom as low as possible**
 - **Stable boom to maintain uniformity of height and give uniform deposits**
 - **Use of automated height controls on wider booms**
- **Use angled nozzles forwards and backwards along the boom**
- **Take care when setting the nozzle pressure**



Thank you

Thanks to:

- you for listening
- my colleagues for help in putting this presentation together
- organisations involved in the work

agrovista

THE MORLEY AGRICULTURAL FOUNDATION

NAC NATIONAL AGENCY CENTRES