PACE

Pesticide dose Adjustment to the Crop Environment
Pace

• Based on adjusting the ‘ground’ dose for different orchard canopy sizes (height, spacing, density).

• It is important to understand the difference between dose expression and dose adjustment.

• Dose expression e.g. grams a.s./ha or concentration per unit area.

• Dose adjustment is guidance on how to use the product effectively taking into account things such as canopy density, tree height, spacing etc.
Initial work under pinning PACE

- Real UK orchard data were collected by the use of LiDAR (light detection and range).
- The optical measurements obtained were interpreted to inform the likely spray capture by the target i.e. the tree canopy.
- Work was also undertaken looking at spray deposition on leaves in relation to LiDAR measurements for a range of orchards to enable further development of the PACE scheme.
PACE scheme

- Enables the grower to adjust the label rate to orchard conditions without compromising efficacy.
- Uses a pictographic key with a simple formula (height and spacing) to calculate the dose.
- This has been further simplified so it is practical and simple for growers to use.
- Data were collected on effectiveness for both pests and diseases showing generally acceptable levels of performance.
PACE adjustment of the maximum dose per ha for constant deposit at full-leaf in different orchards.

- **Label dose rate adjustment**
- **Ratio of tree height to row spacing (h/s)**

- **high density**
- **standard density**
- **low density**

- **apple**
- **cider**
- **pear**

![Graph showing PACE adjustment with different orchard densities and tree height to row spacing ratios.](Image provided by PJWRC)
PACE dosage model

Adjustment of the maximum dose per ha

(From Walklate & Cross, 2012)
**PACE dosage model**

**Adjustment of the maximum dose per ha**

- **Safe product use limit**
- **Label dose rate adjustment**
- **Tree height / row spacing**
- **Maximum**
- **Standard 0.85**
- **Real orchards: points placed according to the dose adjustment for constant orchard deposit = deposit for standard orchard at full dose**
- **Standard tree on which product is efficacious at full dose (ex. 3 m tall, 3.5 m row)**

(From Walklate & Cross, 2012)
• **Labels being amended**

Where tree height and/or canopy density is reduced, the dose (and water volume) should be adjusted in accordance with an appropriate dose adjustment scheme and **label advice for water volumes**. Consult your specialist advisor for further information.

Further information on the PACE scheme is available from HDC, or see the HDC leaflet (Orchard Spraying: Opportunities to reduce rates) available on the CRD website at http://www.pesticides.gov.uk/HDC.pdf.
Making PACE dose calculations

- Dose adjustment calculator web site (F.O.C)
  
  www.pace.pjwrc.co.uk/Default.htm

- Select V4

- Use Google Chrome browser or Microsoft Edge

- HDC best practice guide pears, stone fruit, cider (Best Practice Guide)
Thanks for listening

Many thanks to the UK specialists Jerry Cross and Peter Walklate who provided the majority of slides and support for this talk.
My lurcher pups to cheer us on our way!