# University of Hertfordshire

Determination of the Key Parameters Influencing Dislodgeable Foliar Pesticide Residues 'DFR'

<sup>1</sup>Mohamed Badawy, <sup>1</sup>Kathleen Lewis, <sup>2</sup>Neil Morgan, <sup>2</sup>Robert Mason <sup>1</sup>School of Life and Medical Sciences, University of Hertfordshire, UK <sup>2</sup>Syngenta Ltd.,UK

Email: mb18ado@herts.ac.uk



### What does dislodgeable foliar residue mean?

Dislodgeable foliar residue (DFR) is the amount of pesticide residue deposited on plant leaves after pesticide application which may be dislodged by people during the performance of various tasks. This can subsequently be transferred to human skin and clothes that may cause potential risk.



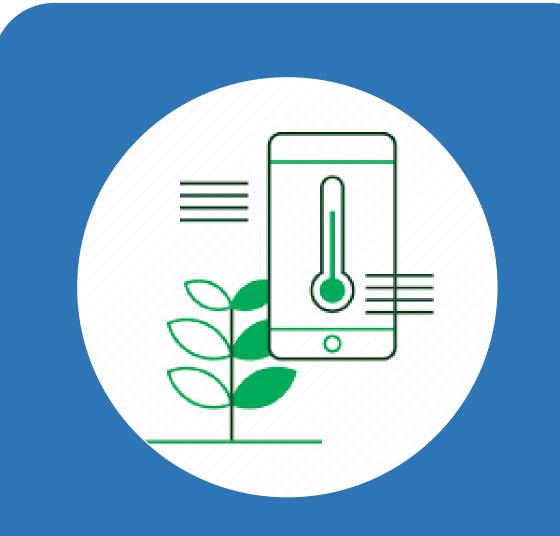
### What is the current challenge with DFR data for industry?

The default values for DFR and other parameters in the risk assessment have become more precautionary in the regulatory landscape and the requirements for specific DFR studies are increasing. These studies are costly, time consuming and limited by the crop's seasons due to the unacceptability of extrapolation between DFR studies amongst crops.

Dissipation data from DFR studies are used to evaluate the risk associated with post-application exposure to pesticides and to establish a chemical transfer coefficient (TC). This is used to determine restricted entry intervals for cultivated crops.









### Factors that may affect DFR

### Application rate

Addresses the relationship between the application rate and deposition rate, which may increase the potential accumulation of residues on leaves

### Rainfall

Pesticide residues on plant leaves may be influenced by different precipitation intensities

## Formulation type

The role of different formulation types and coformulants, plus the range of active ingredient particle sizes may have an impact on dislodgeability

### Temperature

Temperature may have an effect on the persistence of foliar pesticide residues

### Leaf texture and shape

Different leaf shapes
(ovate, oblong, linear,
cordate, Reniform etc.)
and textures (from smooth
to hairy) may have an
impact on dislodgeability

Developing a Lab method for testing the effect of formulation types on DFR

#### EC Formulation

WP Formulation

EC + Adjuvant
EC+ co-formulants

WP +Adjuvant
WP+ co-formulants

### Micro-pipetting Application



### **Track Sprayer Application**

