

# in focus

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## Crop residue levels

Why there is room for manoeuvre in a shifting fresh-food marketplace







## A new market strategy emerges

In the ongoing supermarket battle for commercial supremacy, much of the brand equity and reputation is earned (or lost) in the fresh fruit and vegetable aisles.

And it is here that a new marketing strategy has emerged. In Germany, food retailers routinely pay farmers more for produce that contains the least amount of pesticide residues. In fact, there is a drive towards 'zero' crop residues, with premiums paid to growers for reducing their reliance on pesticides.

The regulatory mechanism, known as Maximum Residue Levels (MRLs) is set to establish appropriate residue levels for produce being sold.

But actual residue levels often come in much lower.

**As we highlight in this paper, trial analysis data can demonstrate that many plant protection products achieve residue levels that come well within the standards being demanded by this new, emerging market driven by European food retailers.**

## MRLs primarily set as a trading standard

MRLs have little to do with setting human health standards. While dietary safety is an important part of the process for proposing and establishing MRLs, they are more importantly seen as a mechanism to establish an acceptable trading level for pesticide use across borders.

MRLs ensure that farmers adopt good agricultural practice (GAP) when applying pesticides to a crop. They are calculated using data from residue trials that follow the critical GAP (cGAP) under worst case conditions for a given crop, including: the highest rate; highest number of applications; and shortest pre-harvest interval (PHI) (the wait time between a pesticide being applied and when a crop can be harvested).

Usually, the MRL represents the highest residue likely if you spray crops according to the product label's approved conditions of use.

Calculated using good laboratory practice (GLP) and good experimental practice (GEP), residue trial data which support the approved conditions of use and

the Organisation for Economic Co-operation and Development (OECD) MRL calculator, MRLs are set high enough to accommodate all types of legal use and to account for variability in farming practices and weather impacts.

They do, therefore, provide a mechanism to verify that produce has only been treated with pesticides according to authorised agricultural practices, both for produce treated within the EU and for imported produce with import tolerances.

However, MRLs are set relatively high compared to the data that are generated from residue trials.

MRLs are not set at the same level across the world. In general, the European Union has much lower MRLs than in the US, for example, where MRLs are known as tolerances.



## Room for manoeuvre

MRLs are set on the basis of established statistical methodologies leading to an MRL proposal in the 95th percentile of the residue trials data distribution.

### OECD MRLs are calculated by using three values, and taking the maximum of

*The mean residue value  
from the trial data*



*four standard  
deviations (base  
proposal)*

*The highest residue (used as  
a 'floor' to ensure that the  
MRL proposal is always*



*the highest residue observed in  
the residue trials)*

*3 times the mean  
residue value*



*the correction factor  
(providing an additional  
floor to the calculation)*

The highest of the three calculated values is then rounded according to predefined rounding classes to define the proposed MRL.

Therefore, residue data from regulatory residue trials are usually much lower than the eventual, legally established MRL. But as the MRL tends towards zero, this difference obviously disappears. However, in most other cases there is room for manoeuvre.

#### **This happens for a number of reasons:**

- In normal farming practice, the proposed label rate for foliar sprays is sometimes reduced, with growers using a permitted label-use pattern that is below the cGAP defined for residues
- Agricultural commodities are rarely consumed on the day of harvest and residue levels may continue to decline during transport and storage
- Non-EU residue data and cGAPs can support import tolerance applications to raise the EU MRL. EU produce would then contain residues at a lower percentage of the MRL, but this will take up to two years from the date of submission if data are available to support a raised MRL

Supermarkets, particularly those in Germany, are becoming increasingly aware of such variations in MRLs. Some have started to set secondary or private standards of only 3-5 permitted residues of 50% or 33% of the established MRL, for example.

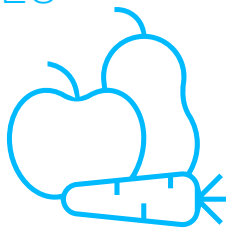
With so much brand equity attached to the quality of their fresh fruit and vegetables, it is not surprising that supermarkets continue to drive down residue levels, motivated by public perception, rather than safety concerns.

But there are ways to show that there is a big difference between residue data from regulatory trials and the eventual MRL of food that ends up on our shelves.





Data shows that many growers are nowhere near exceeding EU or US MRLs



## A new lens on old data

Take active substance x, for example. It is a fungicide used to control soil, root and leaf disease.

- Field data for tomatoes sprayed with the active substance shows a median EU residue value of 0.55 and 0.18 mg/kg for trials conducted according to the northern and southern EU cGAP, respectively
- Yet the EU MRL is set at 4 mg/kg, with a US tolerance of 2 mg/kg, meaning that just 10% of the EU tolerance level is being used, and 20% of the US tolerance

Of course, there will be variations in the actual data; farmer practices vary, as does the weather. But the data shows that many growers are nowhere near exceeding EU or US MRLs, and this is evidence that could prove valuable as buyers continue to reward farmers whose produce contains the least crop residue.



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## In summary

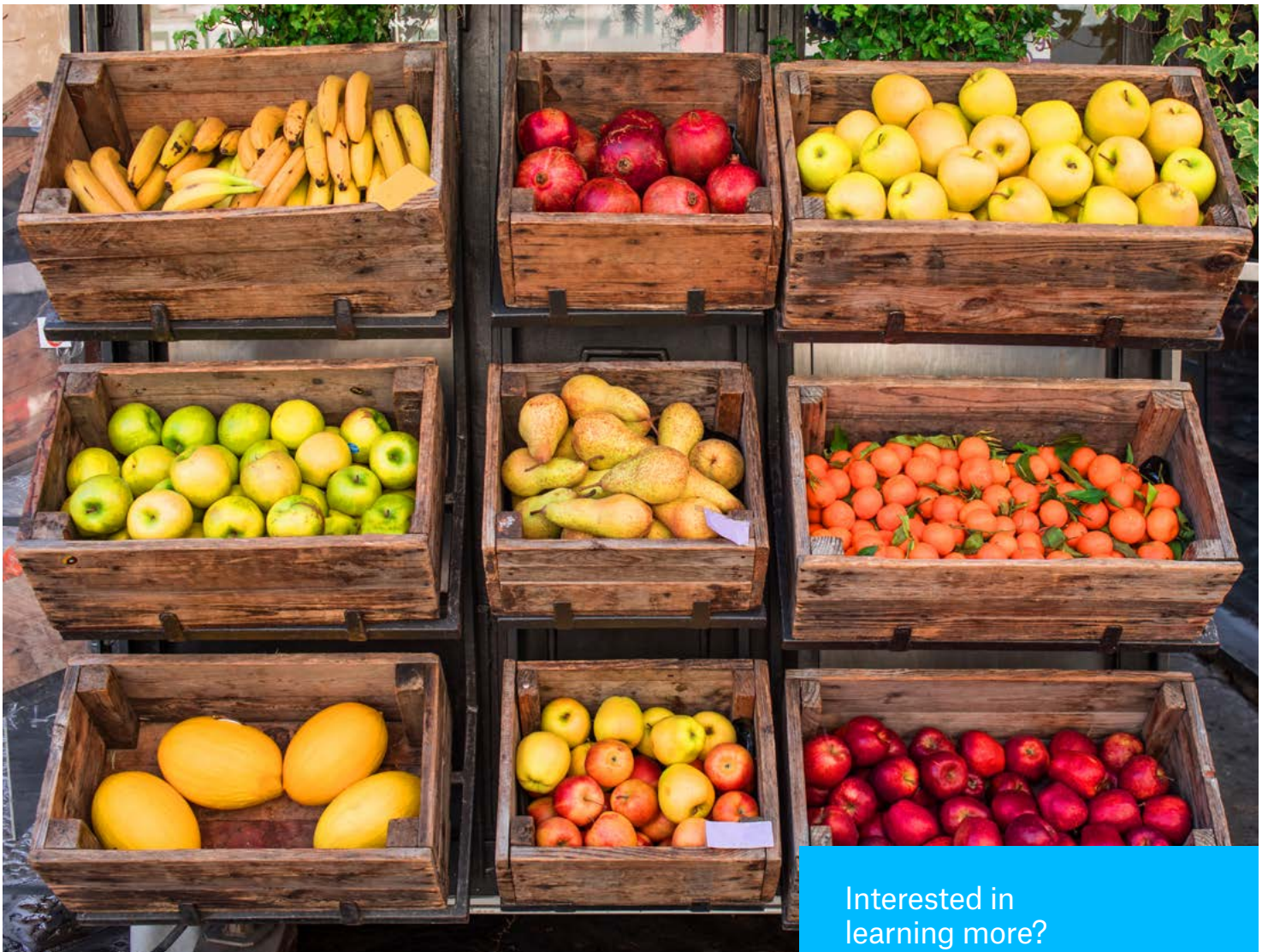
MRLs currently being used across the world are set to cover worst case scenarios, generally atypical of residue levels found in general farming practice.

Due to a number of reasons previously mentioned, actual residue testing levels often come in much lower.

While limiting the number of permitted residues (some supermarkets are demanding three residues, while apples, for example, typically have up to five residues) could be problematic, meeting the demand for sub MRL secondary standards is achievable.







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learning more?

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## How TSG can help

While it is not being driven by safety demands or human health protection, more retailers are demanding premium fresh fruit and vegetables that contain less and less crop residues. TSG can help manufacturers of plant protection products work with growers to demonstrate that pesticide residue levels are much lower than the MRL / permitted tolerance, either by the MRL being raised via import tolerance, or by enhanced consideration of the underlying residue trials data. This will help sustain market share and future-proof farmers in an ever-evolving marketplace.

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We help clients worldwide address the technical and regulatory issues in taking their products to market in multiple jurisdictions. Our scientific expertise, regulatory knowledge and understanding of local nuances enable our clients to navigate the complex and ever-changing regulatory landscape across the globe.

We serve a number of key markets and industry sectors including agricultural, industrial, consumer, food and beverage, animal health, and medical. Our teams comprise scientists and regulatory experts – many of whom have previously held positions at regulatory agencies, departments, and in industry.

This combination of science, regulatory expertise and knowledge of how institutions and industry operate provides our clients with superior and well-rounded guidance.

TSG Consulting has offices in France, Germany, Spain, UK, USA and Canada. TSG is a Science Group (London listed) company.

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