



# Mitigation and Management of Arable Spray Drift: Communication, Expansion and Reinforcement Activities in the SETAC DRAW workshop

N. Mackay, DuPont UK Ltd., UK  
G. Azimonti, ICPS, Italy  
C. Kuester, Bayer AG

A. Alix, Dow AgroScience  
E. Güsken, SciBasics  
D. Mason, Syngenta

For further information please contact: neil.mackay@dupont.com



## Overview

The recent SETAC MAGPIE Workshop collated the current range of risk mitigation options available as measures to manage spray drift. The regulatory role for such mitigation measures varies considerably across the European Union. The SETAC MAGPIE inventory revealed that differences in national policies as well as in the acceptance of techniques and measurement standards currently limit the opportunities to exploit the efficiency of a harmonised framework of risk mitigation. This, however, may be overcome through a combination of improved access to information, flexible risk assessment options and labelling, allowing the implementation of local policies.

The subsequent SETAC DRAW workshop has considered how practical efforts may be undertaken to support these aims:

- Development of readily accessible tools to summarise the effectiveness, implementation and regulatory status of risk mitigation measures in the MAGPIE drift mitigation toolbox;
- Summarise existing certification methods and standards for risk mitigation measures to support technical comparisons and to potentially facilitate mutual recognition;
- Summary of options for more effective integration of diverse methods in combination into the risk assessment process;
- Development of a multi-stakeholder network to support information exchange and reinforce the scientific, technical, professional and legislative/regulatory aspects of the toolbox.

## SETAC DRAW Drift Mitigation Website

<https://www.spraydriftmitigation.info/>



- Background on SETAC DRAW and MAGPIE workshops
- Technical background on spray drift and its management
- Outline summary of the SETAC MAGPIE toolbox
- Summary of guidance related to spray drift:
  - Environmental risk assessment
  - Human health risk assessment
  - TOPPS guidance for product users/applicators
- Member State and zonal policies on drift mitigation
- MAGPIE recommendations for labelling and safety phrases

## Certification and Testing

- Summaries of certification scheme in key Member States
  - Wind tunnel protocols differ and can result in divergent DRT classifications
  - ISO 22856 allow for differences in standards for testing
  - Short-term: Summarise precedents for mutual recognition
  - Long-term:
    - Compare performance under different test conditions
    - Present proposals/options for harmonisation of protocols
    - Expand use of DSD (droplet size distribution) profiles with modelling

## Integration into Risk Assessment

- Summaries of precedents for acceptance and representation of efficacy of individual measures
- Scope for more direct representation via modelling:
  - Modeling reference standards and scenarios
  - Direct representation of SDR nozzle drift profiles
- Supporting discussion of adoption of drift mitigation and management for bystander risk assessment:
  - Harmonised acceptance of existing drift mitigation options (e.g. 50% SDR nozzles, 5-10 m in-crop buffer zones)
  - Introduction of new drift data in current and upcoming guidances.
  - Appropriate statistical analysis of existing databases taking into consideration significant parameters that influence drift
  - Longer term options for introduction of further mitigation options (e.g. 75%-95% SDR nozzles)

Examples of risk mitigation measures	Status	Risk Assessment Notes
No spray zone	Well established tool	<ul style="list-style-type: none"> <li>• Wide variation in accepted standards for buffer widths currently limits harmonisation opportunities</li> <li>• Readily represented in current risk assessments</li> </ul>
Wind direction – dependant no spray zone	Promising tool implemented in some Member States	<ul style="list-style-type: none"> <li>• Taken into account in local user risk assessment as a means of reducing reliance on buffers (e.g. Swedish "helper" or Hjälpredan scheme)</li> </ul>
Drift reducing spray nozzles (incl. adjusted spray pressure, etc)	Promising tool implemented in some Member States	<ul style="list-style-type: none"> <li>• Precedents available for how techniques may be incorporated into regulatory risk assessment to reduce reliance on buffer zones</li> </ul>
Special equipment/machinery (Wings-/Tunnel-/Band sprayer etc)	Well established tool	<ul style="list-style-type: none"> <li>• Precedents available for how techniques may be incorporated into regulatory risk assessment to reduce reliance on buffer zones</li> </ul>
Directed spraying techniques (one-sided spraying, forward-speed, reflection shield, boom-height adjustment etc)	Well established tool	<ul style="list-style-type: none"> <li>• Precedents available for how techniques may be incorporated into regulatory risk assessment to reduce reliance on buffer zones</li> </ul>
Precision treatment (as sprayers' equipment)	Under development	<ul style="list-style-type: none"> <li>• Representation of impact of proportion of area treated likely to be case by case</li> </ul>
Forest aerial application - max. 50% area treated, no spray on the forest edges, standard buffer zones	Promising tool implemented in some Member States	<ul style="list-style-type: none"> <li>• Aerial drift models utilised to provide input into standard regulatory models</li> <li>• Representation of impact of proportion of area treated likely to be case by case</li> </ul>

## Examples:

Summary of surface water mitigation measures currently applied by Member States in the Central Zone for fruit crops



Member State	Maximum No Spray Buffer Zone	Drift Reducing Nozzles	Maximum No Spray + Drift Reduction Combination	Specialised Application Technology	Compounded Mitigation Schemes (Y/N)	Additional Drift Management Policy and Tools
Germany	20 m	50%, 75%, 90%	20 m + 90% drift reduction	Yes – as long as it is registered in the "Register of loss reducing equipment" <a href="https://www.julius-kuhn.de/en/application-techniques-in-plant-protection/fields-of-activity/testing-of-plant-protection-equipment/register-of-loss-reducing-equipment/">https://www.julius-kuhn.de/en/application-techniques-in-plant-protection/fields-of-activity/testing-of-plant-protection-equipment/register-of-loss-reducing-equipment/</a>	Y	N See "Register of loss reducing equipment"
Netherlands	9 m	75%, 90%, 95%	95% drift reduction	For herbicides there are differential representation of drift potential for bare soil strips ("zwartstroken") and grass vegetation ("grasstroken") between trees. Options to include shielded sprayers and end nozzles.  Other techniques: • Tunnel sprayers • Windbreaks • One-sided sprayers • Sensor controlled sprayers • Reflection shields	Y: Various options – Examples:  Standard orchard sprayer in combination with windbreak at edge of the driving track and one-sided spraying of the last tree row.  KWH k1500-3R2 VLOS 3-row sprayer with variable air support system and 90% spray drift reducing nozzles and low air setting (400 rpm).	In large fruit a 75% drift reducing technique is compulsory, in combination with a crop free zone of 4.5 m. A crop free zone of 3 m is only allowed when a drift reducing technique of at least 90% is used. These reduction percentages apply to the full leaf stage.  Drift representation in fruit applications for aquatic risk assessments is currently under review with modelling factoring in landscape and hydrology influences for potential regulatory scenario development.

## Regulatory and Technical Stakeholder Network

- Continuation of SETAC MAGPIE discussion as a means of:
  - Addressing practical questions of regulators and legislators to risk assessors, technical experts and equipment manufacturers
  - Providing training on the mitigation toolbox and its implementation
  - Providing a forum for the discussion on the correspondence between national toolboxes and mutual recognition of newly developed tools

## Conclusions

- The SETAC DRAW workshop aims to undertake a detailed review of spray drift behaviour to seek a better understanding of causes and implications of variability to seek a more effective and confident regulatory drift representation.
- To more effectively accommodate potential for change, and allow for greater flexibility and harmonisation of strategies for drift management, SETAC DRAW has compiled an expanded, secure toolbox of risk mitigation measures and integrating drift modelling into environmental risk assessments.
- This platform is proposed as a resource to support multi-stakeholder engagement on issues such as expansion, harmonisation, mutual recognition and regulatory and technical reinforcement of drift mitigation.