

DECLARATION OF LJUBLJANA

The Impact of a Declining European Pesticide Portfolio on Resistance Management

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Abstract

Decline of the European Crop Protection Portfolio

Over the last decade, the number of pesticides registered for sale in Europe has reduced by more than 50%, with only about 400 active ingredients remaining on the market. It is predicted (EU Commission, 2008) that by the end of 2008 only 372 will remain on the market. The decline of the European pesticide portfolio is shown in Figure 1. The graph shows a cumulative count of Annex 1 inclusions and non-inclusions (community wide approval and removals of active ingredients, respectively), from 1998 to the end of 2008.

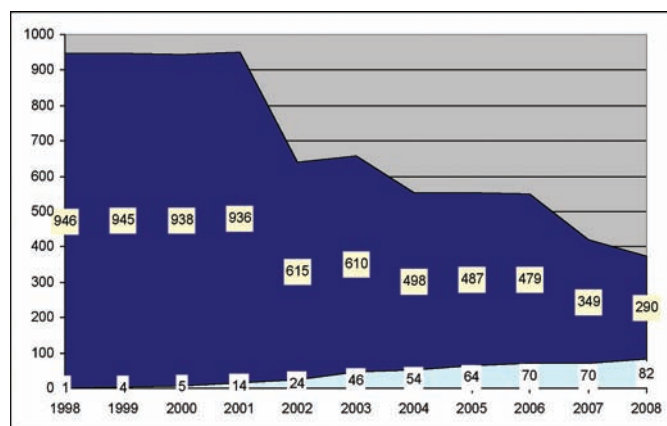


Figure 1: Decline in diversity of the European Pesticide Portfolio

“Existing” active ingredients are shown in dark blue, and new active ingredients in light blue.

While the number of active ingredients will have declined by an estimated 61% by the end of the year, it should be noted that many of the products which have already been removed from the market represent relatively specialised or less important uses. However, from a resistance management perspective, and especially from the point of view of minor crops, the decline in diversity of available chemistries for specific weeds, pests and diseases has in some cases been problematic.

Unfortunately the trend looks set to continue, with the

rate at which new active ingredients are being approved for use in Europe being ten times less than the rate at which “existing” pesticides are being removed from the market.

Revision of Directive 91/414/EEC

New European Legislation is currently under evaluation to revise Directive 91/414/EEC, of 15 July 1991, concerning the placing on the market of plant protection products. The legislative process is now in its advanced stages, with the EU Parliament’s second reading due to take place on 14th January 2009.

Importantly, the EU Commission’s original proposal, the EU Council’s common position of June 2008, represents a fundamental change from science-based risk assessment, to hazard-based regulatory cut-off criteria. In addition, the European Parliament voted in favour of additional regulatory cut-off criteria for honey bees, developmental neurotoxicity and immunotoxicity.

While fierce debate continues over the potential impact (PSD, 2008) which these additional regulatory cut-off criteria could have on pesticide availability and crop protection, the new regulation will inevitably reduce the diversity of available pesticides further. The key questions are: (a) to what extent will this diversity be reduced?; and (b) what will the implications be?

Increased Risk of Resistance

Maintaining sufficient pesticide diversity is one of the most important considerations for effective resistance management. This allows, for example, compounds with different modes of action to be alternated to avoid selecting continuously for one type of resistance mechanism. The potential impact of further reductions in the available diversity of pesticides in Europe was highlighted by the Fungicide, Insecticide and Herbicide Resistance Action Committees in the August 2008 issue of *Outlooks on Pest Management* (Nauen *et al.* 2008). This important contribution of the resistance action committees served to remind policy makers of the need to ensure that “sufficient” diversity of control techniques is available to manage resistance, and therefore to help ensure sustainable crop protection.

Declaration of Ljubljana

A group of resistance management experts met in Ljubljana on 22 April, 2008, to evaluate the potential impact of proposed legislation on the sustainability of resistance management in Europe. The workshop was hosted by Dr. Andrej Simončič, Director of the Agricultural Institute of Slovenia. Participants included:

- Dr Pablo Bielza, Universidad Politécnica de Cartagena (Spain)
- Dr Ian Denholm, Rothamsted Research (United Kingdom)
- Dr Udo Heimbach, Julius Kühn Institut (Germany)
- Dr Philippos Ioannidis, Plant Protection Institute of Thessaloniki (Greece)
- drs Guido Sterk, Biobest (Belgium)
- Dr Andy Leadbeater, Fungicide Resistance Action Committee (Switzerland)
- Paul Leonard, Insecticide Resistance Action Committee (Belgium)
- Dr Lise Nistrup Jørgensen, University of Aarhus (Denmark)

The scientists exchanged information on important resistance management issues being faced in their respective areas. They worked to reach a common opinion of how the legislation could impact resistance management, and what could be done to address these concerns.

Participating scientists expressed their strong concern that significant further loss of active ingredients could endanger the sustainability of European farming. They concluded that the increased risk of developing resistance to the relatively few remaining substances could make cultivation of many crops, including grapes, wheat, barley, cotton, fresh fruit, potatoes and vegetables, in Europe problematic, and/or uncompetitive.

In the past, new crop protection products have normally been available to solve emerging pest management and resistance problems. However, it takes an average of ten years and an investment of about 200 M to develop and register a new pesticide. Regulatory targets are already so stringent that the industry as a whole is only able to launch about five new active ingredients per year in Europe. The scientists, therefore, expressed their concern that the innovative capacity of the crop protection industry will not be able to replace products that are likely to be removed from the market by the proposed legislation, or those that could, as a consequence of reduced diversity, be lost rapidly to resistance.

The scientists called for European policy makers to address the need to retain sufficient product diversity with which to manage the increasing threat of resistance.

These resistance management considerations have so far been largely neglected in debates over the proposed new legislation. The scientists expressed their concern that these changes will result in farmers using fewer substances more intensively, thus increasing the likelihood of resistance developing to the few remaining pesticides.

The scientists' spokesperson, Dr Ian Denholm, Head, Plant and Invertebrate Ecology Division, Rothamsted

Research in the UK, presented the workshop's conclusions and recommendations to the Slovenian Agricultural Minister, Iztok Jarc, as the "Declaration of Ljubljana" (www.pesticideinformation.eu). Dr Denholm remarked that

"In order to safeguard the production of food at affordable prices, it is essential to provide farmers with access to sufficient diversity of crop protection solutions. This is essential to prevent or delay the development of resistant pests, and to maintain the efficacy of remaining crop protection products,"

Conclusions and recommendations of the Ljubljana Declaration were:

Conclusions:

- The most sustainable solution to pest control is continued access to a diversity of pest management tools that can be combined in IPM (integrated pest management) practices
- Chemical control is often an essential component of IPM. Pesticide resistance is, therefore, a continuing threat to IPM
- For many applications, competitive and effective non-chemical solutions are not currently available
- Resistance management requires access to a diversity of chemistries, with different modes of action. Fewer registered compounds would result in increased resistance problems with those which remain on the market
- Implementation of hazard-based cut-off criteria could:
 - have a disproportionate impact, resulting in loss of whole classes of chemistry
 - compromise the possibility to combat new pest problems, whether crop related or posing threats to human health
 - reduce further the rate of new active substance discovery and development
- An increasing lack of pesticide solutions will:
 - lead to reduced yield,
 - endanger food predictability and security
 - make production of certain crops uncompetitive in the EU
 - impact the environment, due to increasing application rates, reliance on single active substances, illegal use and increased land required for production

Recommendations:

- Sufficient chemical diversity (modes of action) must be maintained for sustainable resistance management
- Decisions to register or prohibit compounds should be based on scientific risk assessment and not hazard based criteria
- Special attention should be given to the limited availability of IPM compatible and low resistance risk pesticides

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- A fast-track process should be considered for innovative solutions for unfulfilled needs
- As minor uses will be most impacted by the revision of the directive, incentives should be provided for solutions addressing these needs
- Where available, cultural methods should be used, to minimise the need for chemical intervention

References

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