



Policy briefing: towards sustainable crop protection in Europe

Background

One of the objectives of the Sustainable Use Directive¹ (SUD) is to encourage the adoption of integrated pest management (IPM) and especially the use of low risk crop protection solutions for the control of pests, diseases and weeds. As such the move encourages reductions in the use of chemical pesticides to avoid any undesirable side effects they may have on human health or on the environment. The new regulation (EC 1107/2009) concerning the placement of plant protection products on the market introduces the concept of hazard criteria and comparative assessment with the objective of restricting the use of certain pesticides.

Why do farmers use pesticides?

Farmers apply pesticides to their crops to reduce losses caused by pests, diseases and weeds. Nonetheless, it is estimated that these unwanted organisms currently destroy about one third of the world's food during production or in storage. Furthermore, many current crop cultivars only produce economically acceptable yields if they are treated with pesticide².

Implications of new legislation

Implementation of the SUD will require provision of effective alternatives, e.g. resistant crop cultivars, biological control agents, plant defence activators and other non-chemical solutions. However, there is much uncertainty as to whether such alternatives can indeed be provided in a timely fashion as many are still under development and have not yet been commercialised. Implementation needs to be carefully managed. Reducing the availability of certain pesticides before alternative crop protection methods have been found would inevitably mean an increase in the use of the remaining pesticides. This would cause increased and



intense selection pressure for pests, diseases and weeds to evolve resistance. This would be further exacerbated by the reduced range of modes of actions available. Loss of control to resistance would make EU agriculture increasingly vulnerable to yield losses³. Pirimicarb is an example of an insecticide that was once a preferred option within IPM due to its selectivity and compatibility with biocontrol agents but is becoming ineffective against *Myzus persicae* aphids due to the evolution of resistance.

Consequences of reduced crop protection in Europe

Placed in the context of increasing global demand for food and current concern about food security there are serious consequences of leaving EU agriculture vulnerable to pests, diseases and weeds⁴. If the productivity of EU agriculture declined and yields became more unstable because of insufficient crop protection there would be a number of undesirable consequences:

- Food prices would increase.
- Human health would suffer as foods such as fruit and vegetables became more expensive.
- Food production companies would be driven out of Europe to countries where costs are less for agriculture and horticulture but the potential for environmental damage greater.



- More land would have to be used for agriculture to compensate for lower productivity and this could increase environmental damage.
- Greenhouse gas emissions would increase as agriculture became less efficient⁵.

Recommendations

To avert future problems arising from inadequate protection of EU agriculture from pests, diseases and weeds, the following points require attention:

- Caution is needed when reducing the number of active substances available for crop protection to ensure this does not have unintended consequences, e.g. overuse of permitted products leading to more rapid evolution of pesticide resistance which would result in loss of efficacy of the more benign pesticides.
- Research is urgently needed to secure EU agricultural productivity. R&D applied to agriculture has suffered from chronic underinvestment for the last three decades. We recommend that new funding schemes are set up to develop new solutions for crop protection. Existing funding (e.g. in the EU PURE project) is insufficient given the challenges faced. A levy on supermarkets should be considered.
- Farmers need easily digestible information on integrated pest management as alternative approaches are often more knowledge intensive than reliance on broad spectrum pesticide sprays. We recommend that new extension and information programmes are set up for farmers.

Potential role of UK Scientists and the AAB

IPM approaches often rely on combinations of pest control measures and are knowledge-based systems. They require a thorough understanding of the four way interactions between plants, herbivores, beneficial organisms and environmental conditions. The UK has world class scientists with great depth and breadth of expertise in these subject areas covering every aspect of classical biological control, IPM, conservation biological control and biopesticide product development. Through a number of key organisations, such as the Association of Applied Biologists, these scientists are uniquely placed to help British farmers and growers implement the SUD.

References

- ¹ Anon (2009) Regulation (EC) no. 1107/2009 of the European Parliament and of the Council of 21 October 2009 Concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC. *Off. J. Eur. Comm.* **L391**
- ² Oerke E, Dehne H (2004) Safeguarding production - losses in major crops and the role of crop protection. *Crop. Prot.* **23**:275–285
- ³ Nauen R, Denholm I (2005) Resistance of insect pests to neonicotinoid insecticides: Current status and future prospects. *Archives of Insect Biochemistry and Physiology* **58**:200-215.
- ⁴ Bruce TJA (2010) Tackling the threat to food security caused by crop pests in the new millennium. *Food Security* **2**: 133-141
- ⁵ Berry PM, Kindred DR, Paveley N (2008) Quantifying the effects of fungicides and disease resistance on greenhouse gas emissions associated with wheat production. *Plant Pathology* **57**:1000-1008.