Evaluation of the Performance of the Voluntary Initiative for Pesticides in the United Kingdom

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SCI Pest Management Group

Background

Programme of measures focussed on environmental improvement, which would ultimately reduce the impact of crop protection chemicals

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The VI is composed of three themes

- Protecting water
- Benefiting diversity
- Changing behaviour

Indicators and Targets

18 Outcome indicators and targets

29 Operational indicators and targets

Operational indicators and targets include a range of measures, both quantitative (e.g. reducing amounts of pesticides in water) and qualitative (e.g. increase biodiversity).

Membership of Schemes

Compliance with recently introduced or modified schemes lay at the heart of much of the VI activity.

Examples of such schemes are:

Crop Protection Management Plans (CPMPs)
National Register of Sprayer Operators (NRoSO)
National Sprayer Testing Scheme (NSTS)

Changing Behaviour

CPA sponsored surveys

- winter of 2001/2002
- summer and autumn of 2004.

Postal survey summer of 2006

Crop Protection Management Plans (CPMPs)

- Key to reducing the environmental impact of pesticides.
- Participation in the assurance schemes has increased uptake of CPM
- Often a requirement or recommendation of assurance schemes
- 95% of the arable area and 84% of grassland covered by the assurance schemes in 2006

Assurance Scemes

- ACCS (Assured Combinable Crops Scheme)
- FABBL (Farm Assured British Beef & Lamb)
- Reasons for joining
  - increased opportunity to sell produce (55% arable, 68% grassland).
  - compulsory or required by buyers.
- Reasons for conducting a CPMP related to assurance scheme or ELS requirement (91% of arable area)

National Sprayer Testing Scheme

- The target of 80% of sprayed area for 2005/6 was not achieved (75.9% reported by the AEA)
- The 2006 survey indicated that 89% of the arable area and 80% of the grassland area was treated with a tested sprayer. The survey of contractors indicated that all sprayers used had been tested.

National Register of Sprayer Operators

- VI Fifth Annual Report indicating that 80% of the arable area was treated by NRoSO members.
- The 2006 survey estimated 88% of the arable area and 68% of the grassland area treated by NRoSO members.
- However a target for all arable areas over 100 ha to be treated by NRoSO members does not appear to have been met.

Protecting water

- The VI has successfully developed and implemented measures to improve awareness and practice with respect to contamination of water by pesticides.
- Pilot catchments were established in the Blythe, Cherwell, Leam, Boston Park, Ingbirchwith and Ugie.
- Modelling suggests that the potential for contamination by pesticides in the period immediately pre-VI (1997/98 to 2001/02) was greater than that in the post-VI period (2002/03 to 2005/06).

Protecting water

- National-level target to reduce presence of nine compounds in surface water by 30%. EA monitoring data show target was met for isoproturon and atrazine
- Reduction less than 30% for four compounds.
- There was no change for one compound
- Increases in contamination by MCPA and chlorotoluron.
- The number of pollution incidents attributable to agricultural use of pesticides fell by 55% when comparing 1999-2001 with 2002-2004.

Protecting water

- UK usage data shows use of isoproturon decreased by 30% between 1997 and 2004, while levels of contamination decreased in all three of the pilot catchments (by 34 to 54%).
- However the use of the oilseed rape herbicides carbetamide and propyzamide increased (by 180 and 60%, respectively) and this was matched by similar increases in contamination in the Leam and the Cherwell.

Protecting water

- The decision tree system implemented in three pilot catchments informed farmers about suitable times for application of priority compounds in relation to future weather and hydrological conditions.
- Evidence suggests that the system is helpful in guiding usage provided that reasonable spray windows are available. Advice switched away from ‘do not spray’ to ‘think about alternatives’ reinforced by agronomists.
- There may be potential to target modification of usage at locations with the greatest potential for causing contamination. This is the approach being investigated in the Ugie.

Biodiversity

Biodiversity Measures

- A number of the projects listed in the Fifth Annual Report on the VI Steering Group related to biodiversity.
- Although other measures could have some impact on biodiversity, the nature of the impact would be difficult to assess.
- The Biodiversity Strategy and Action Plan (BSAP), and the appointment of the Biodiversity Officer provide the framework and mechanism for implementation.

Biodiversity

The Biodiversity Strategy and Action Plan (BSAP)

Appointment of Biodiversity Officer

The SAFFIE project

Voluntary Initiative Indicator Farms

BETA training for agronomists

Pathfinders training

POWER qualification

Crop Protection Management Plans

Environmental Information Sheets

LERAP

Insecticide Code of Practice

Biodiversity

Biodiversity Indicators

- VI classified indicators into five categories
- Stage 1 “awareness and attitudes”

…through to…

- Stage 5 “changes in ecological quality”

- Linking changes back to the VI becomes more difficult as one proceeds through the process
- Compounding effects of errors in estimation and other human and natural pressures on the environment.
- There is also the response time for detecting change, which is longer at the later stages of the process.

Biodiversity – field margins

- The indicator for *area of cereal field margins* is classified as a Stage 2 indicator.
- Expected to respond ‘quite quickly’ to measures being introduced by the VI.
- The Government’s UK Biodiversity Action Plan target to maintain, improve and restore by management the biodiversity of some 15,000 ha of cereal field margins on appropriate soil types in the UK by 2010 has already been met.
- However, there has been some concern that many margins in these schemes are sown to simple grass mixtures, which may not provide significant benefits for biodiversity.

Biodiversity – field margins

- It is clear that the main driver for increasing the area of field margins under environmental management is funding from agri-environment schemes
- The former Countryside Stewardship Scheme and more recently, the Entry Level Scheme.
- The contribution of the VI is difficult to assess.

Biodiversity

- Indicators for terrestrial wildlife population trends for grey partridge and corn bunting are classified as stage 5 indicators.
- Expected to respond very slowly to the measures introduced by the VI.

Biodiversity

- According to the 2005 reporting round, the target of halting the decline in grey partridge was met.
- BTO breeding Bird Survey indicate a further 15% decline between 2004 and 2005.
- The population target for 2010 is now considered unrealistic, and proposed targets have been revised downwards to 90,000 pairs in 2010, increasing to 120,000 by 2015 and 160,000 by 2020.

Biodiversity

- According to the UK BAP 2005 report, corn buntings continue to decline, the 2003 target was not achieved, and there has been no progress towards the 2008 target.
- Trend lines indicate that this species too appears to have stabilised over the last five years, though like the grey partridge, numbers fell slightly (by 8%) between 2004 and 2005.
- The trend for yellowhammers continues to be downwards, though numbers increased by 6% between 2004 and 2005. Field margin management techniques developed in the SAFFIE project may be beneficial to foraging birds during the breeding season.

Biodiversity

- During the five-year life of the VI, populations of grey partridges and corn buntings appear to have stabilised in comparison with their previous downward trends.
- CPMPs help to raise awareness of good practice in pesticide use and habitat management.
- However, herbicide use on most crops has continued to rise, as has insecticide use on wheat, whilst there is little evidence of a reduction in use on other crops.

Biodiversity

- The VI has undertaken many potentially valuable measures and activities likely to reduce the environmental impact of pesticide use.
- These involve reducing the contamination of non-target areas with pesticides and the promotion of the protection of biodiversity. They fall into two categories:
- promotion of good practice
- promotion of mitigation or compensation management (i.e. the provision of alternative resources/habitat to compensate for that lost through pesticide use).

Conclusions - biodiversity

- Evidence available to assess the impact of the VI measures is sparse.
- There is a lack of monitoring data in some cases, together with the presence of additional drivers and incentives.

Conclusions - water contamination

- There are no data available to separate the relative contributions of point and diffuse sources in the pilot catchments over time.
- The challenge for the VI is to change factors such as pesticide usage, the properties of the compound selected related to properties of soils in the catchments and weather conditions
- Aim to provide a large and sustainable reduction in contamination of surface waters by pesticides.

Conclusions - water contamination

- As the properties of soils are intrinsic, targeting change in usage on specific parts of catchments may allow farmers and advisers to modify treatment programmes.
- However, it depends on the circumstances in individual catchments.

Recommendations - monitoring

- Monitoring numbers of field margins is relevant
- More focussed approach, promoting and monitoring the specific habitats required by the indicator bird species, could provide an indicator which was more targeted towards the aims of the VI, rather than just using the existing BAP target

Recommendations - monitoring

- Rather than focussing on spraying practice, future surveys could be commissioned to examine specifically the use and impact of measures likely to influence environmental outcomes
- BETA training, CPMPs, EISs, Insecticide Code of Practice etc.
- Questions would relate to the use and impact on farm.

Recommendations - indicator farms

- The VI indicator farms will provide useful information on the impact of VI measures, but there are several drawbacks with the current structure of the project.
- It is suggested that a second phase of indicator farms could be established, chosen using a more random approach, with comparison farms as controls.

Recommendations - promotion of suite of compensatory options

- Implement habitat management that will provide compensatory resources to replace those which may be affected by pesticide use.
- Many farmland bird species, for example (including the VI indicator species), require nesting cover, summer foraging habitat and winter foraging habitat to maintain their populations.
- If one of these three is absent or present at an inadequate level, increasing the amount of another one will not result in a population increase, and indeed the population is likely to decline.

Impact of the VI

- In terms of economic impact, there is an inevitable impact on the farming industry.
- The introduction of the Entry Level Scheme (ELS) provides an obvious financial incentive to comply with many of the actions promoted by the VI.
- Similarly, the abundance of assurance schemes has a potential financial reward to the grower.

Strengths and weaknesses of the VI

- Measurable targets relating to membership of NSTS, NRoSO etc. and data for water contamination provide a quick and easy method of VI evaluation.
- With respect to biodiversity, it is difficult to assess the impact of the VI in the short term

Addressing gaps in the VI

- It is not sufficient to offset the effects of legitimate pesticide use within fields
- The VI could adopt a new indicator for take-up of suites of options under the ELS designed to benefit specific habitats and species
- The current indicator farm project suffers from a number of shortcomings
- There is a lack of evidence on the extent to which the VI has changed attitudes and practices on-farm in relation to environmental objectives

Finally

- How has the VI performed compared with the counterfactual of no VI?
- How has the VI performed against its original and revised targets?
- How does the VI fit with Defra's sustainable development objectives?