



Agriculture & Horticulture
DEVELOPMENT BOARD



New Project

FV 344a (LK 09114)

Combating Resistance to Aphicides
in UK Aphid Pests

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The following are members of the Consortium for LINK project LK 09114:

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DuPont (UK) Ltd

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Project Number:	FV 344a (LK 09114)
Project Title:	Combating Resistance to Aphicides in UK Aphid Pests
Project Leader:	Dr Steve Foster
Contractor:	Rothamsted Research
Industry Representative:	Not allocated
Start Date:	01 January 2012
End Date:	31 December 2014
HDC cash contribution (total cash)	£12,500 (£177,750)
HDC in-kind contribution (total in-kind)	£14,167 (£121,817)
Total HDC contributions (total project contributions):	£26,667 (£299,567)
Total Project Cost:	£592,386

The project, which is supported by the CRD on behalf of Defra and Industrial parties, will continue research on aphicide resistance management for the UK farming industries and provide up-to-date information for agronomic and regulatory procedures. The need for this work is heightened by the recent occurrence of control failures with neonicotinoids against *Myzus persicae* in southern Europe. The appearance of these resistant aphids at an initial hotspot and their establishment and spread mirrors the evolution of MACE resistance (to pirimicarb) in *M. persicae* in the 1990s (which caused control failures in the UK within a few years), and highlights a substantial new threat to aphid control in this country. The presence of resistant aphids in the UK would have very serious repercussions for neonicotinoid treatments on potatoes, sugar beet (particularly as there are no current viable alternatives to neonicotinoids on this crop), oilseed rape, other brassicas, salads and ornamentals. It would, in turn, accentuate the risk of the evolution of resistance to non-neonicotinoid compounds such as pymetrozine and flonicamid.

The project will monitor the response of field-collected live samples of *M. persicae* to a range of novel aphicides and also monitor for established forms of resistance. This close vigilance is essential to safeguard the contribution of these compounds to aphid pest management in the UK as resistant aphids that cannot be controlled will cause crop losses. Other important aphid pests (including cereal aphids) representing the interests of the project consortium will also be monitored, and baseline data established.

The response of *M. persicae* carrying different combinations of metabolic and target-site neonicotinoid resistance (and different genotypes of the latter) to seed- and foliar-treated plants will be characterised in laboratory-based field simulator chambers.

New screening tools for novel aphicides will be developed for use in regional laboratories or by advisors and growers.

The over-riding objective is to retain the availability of effective pesticides by developing appropriate Aphid Management Strategies and providing robust scientific support to the regulatory decision making process. Guidance will be available to advisors, growers and the scientific community through the Insecticide Resistance Action Group (IRAG-UK). Other routes of communication will include articles in the trade press, presentations to growers and agronomists, and papers in referred journals.

The ultimate end users of project outputs are agricultural and horticultural growers who are reliant on insecticides for controlling *M. persicae* and other aphid pests. Neonicotinoid resistance in *M. persicae* is highly likely to spread to the UK. As an example of the scale of the problem, failure to forestall widespread development of neonicotinoid resistance would result in yield reductions of up to 50% in sugar beet, rendering the industry uneconomic. The seed potato industry in Scotland is also heavily dependent on controlling *M. persicae*, an important virus vector. Annual losses to the UK potato industry from aphids and the viruses they transmit are around £12M, half of which is in the seed crop. Similar economic threats, and benefits, no doubt apply to oilseed rape production.

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