IRAC European Oilseed Rape Resistance Managment Guidelines v0.3 (2007)

Developed by the IRAC Pollen Beetle Working Group

This document provides a guide to managing insecticide resistance in European oilseed rape pests. The strategy outlined in this document, utilises all insecticide mode of action classes currently registered for the control of oilseed pests in European countries (September 2007). In some European countries not all insecticide modes of action are available to growers and in this case it is recommended that the strategy below is used as a guide to developing a managment strategy utilising all available insecticide mode of action classes available within that country and following the resistance management guidelines outlined by IRAC.

General Principles of Insecticide Resistance Management from IRAC Definitions of Resistance and Resistance Management Resistance to insecticides is defined as 'a heritable change in the sensitivity of a pest population that is reflected in the repeated failure of a product to achieve the expected level of control when used according to the label recommendation for that pest species' (IRAC). The key to managing resistance is to reduce selection pressure caused by the over-use or misuse, because this could result in the selection of resistant forms of the pest and the consequent evolution of populations that are resistant to that insecticide or acaricide.

Practical Principles of Insecticide Resistance Management (IRM) Consistent with IPM and ICM principles, IRAC recommends the following resistance management guidelines to keep valuable protection tools working effectively and minimise user costs.

1. Consult an advisor for insecticide resistance management and IPM strategies. Consider the pest management options available and map out a season-long plan to avoid unnecessary applications of insecticides. The best plans are those developed by local experts and farmers and adopted on a regional basis.

2. Before planting, consider the options for minimizing insecticide use by selecting early maturing varieties or varieties that are resistant to insect attack. Manage the crop for “earliness”.

3. Consider an integrated approach incorporating as many different control mechanisms as possible. IPM-based programs will include the use of synthetic insecticides, biological insecticides, beneficial insects (predator/parasites), cultural practices, transgenic plants, crop rotation, pest-resistant crop varieties and chemical attractants or deterrents.

For further information please contact the IRAC International Coordinator:
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4. Select insecticides with care and consider the impact on future pest populations. Avoid broad-spectrum insecticides when a narrow or specific insecticide will suffice. A wide range of parameters should be considered beyond simply cost and effectiveness. These should include:

- Beneficial insects: Maintenance of beneficials can keep pest populations below economic thresholds, thereby reducing the need for treatments or the number of applications.

- Product class: Follow label recommendations for rotating or mixing products from different classes based on modes of action, not just different brands (see IRAC mode of action classification document). When there are multiple applications per season, use alternate products from different mode of action classes so that only one generation per season is exposed to a class. If feasible, rotate products from different classes from year to year to reduce selection pressure when only one application is being made.

- Rates and spray intervals: Use insecticides and acaricides at labelled rates and spray intervals. Do not reduce or increase rates from manufacturer recommendations as this can hasten resistance development. Monitor subsequent pest levels to gauge control and the success of IRM programs.

- Application of products: If resistance develops, the margin for error in terms of insecticide dose, timing, coverage, etc., assumes even greater importance. In the case of aerial application, the swath widths should be marked, preferably by permanent markers. Sprayer nozzles should be checked for blockage and wear, and be able to handle pressure adequate for good coverage. Spray equipment should be properly calibrated and checked on a regular basis. Also, in tree fruits, proper and intense pruning will allow better canopy penetration and tree coverage. Use application volumes and techniques recommended by the manufacturers and local advisors

- Tank Mixes: It is often considered necessary to tank mix different chemicals for improved or broader spectrum pest control. If this is to be successful it is important to mix compounds which have different modes of action to maximize pest control and reduce the potential for development of resistance. Where possible compounds should also persist on the crop or surface for similar periods in order to expose insects to both modes of action for the same length of time. Use of multiple products of the same mode of action in the spray tank will do little more than using an increased rate of a single compound of the same chemical class.

- Timing of applications: Applications of insecticide and acaricides should be made against the most vulnerable life stage of the insect pest. Care should be taken to follow the recommendations of the manufacturer and local advisors.

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5. Watch the pest population during the growing season. Regularly monitor fields to identify pests and natural enemies, estimate insect populations and track stage of development. Insecticides and acaricides generally should be used only if insect counts exceed the local economic threshold or the point where economic losses exceed the costs of insecticide plus application. Time applications against the most susceptible life stages to gain maximum benefit from the product.

6. At the end of the season remove crop residues, as appropriate, to eliminate food sources and over wintering habitats for pests. Consider next years IPM/ Insecticide Resistance Management plans while planning and preparing for next year's crops.

7. Prevention is the best strategy, but if you suspect resistance, first eliminate other possible causes. In many instances, lack of control can be attributed to application error, equipment failure, or less-than-optimal environmental conditions. If these possibilities have been ruled out, work with local agricultural advisors and the manufacturer to confirm actual resistance to the compound applied. In the event of a control failure due to resistance, do not repeat the application with an insecticide of the same chemical class.

Further information can be obtained from the Insecticide Resistance Action Committee or from their website at www.irac-online.org

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Oilseed Pest Management Decision Tree

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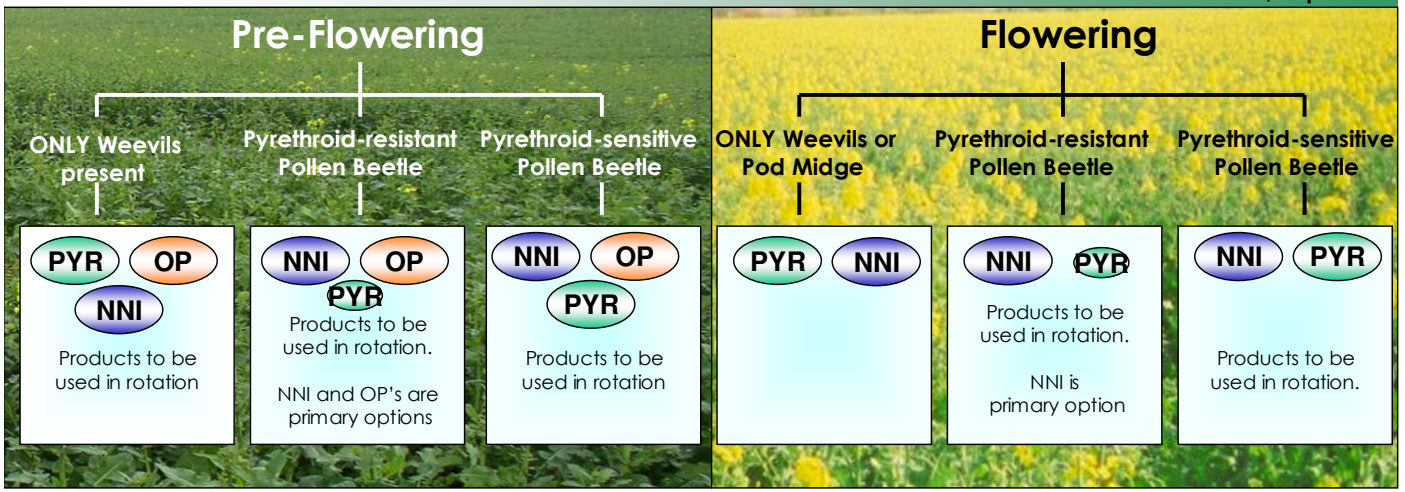

- ONLY apply insecticides IF locally recommended pest thresholds are exceeded.
- A maximum of two applications per mode of action (MoA) class should be utilised (excluding autumn applications).
- An application of a insecticide should NOT be followed by an application of an insecticide from the same MoA class.
- Utilise the most efficacious insecticide within its MoA class against INDIVIDUAL TARGET PESTS.
- If pyrethroid resistant pollen beetles are known to be present in the target crop then non-pyrethroid insecticides should be the primary choice for pollen beetle control.
- The use of insecticide mixtures containing pyrethroids for the control of pyrethroid resistant pollen beetle is not recommended. Where insecticide mixtures are used, it is recommended that the following insecticide application should be from a different MoA class than the mixture components.
- In countries where the insecticide spinosad is registered for use to control pollen beetle, it should be utilised in rotation with any other insecticide belonging to a different MoA class.
- If aphid control is necessary during the period when pollen beetle are present in the crop, insecticides not belonging to the neonicotinoid (4A), organophosphate (1B) and pyrethroid (3) MoA class are recommended when possible.
- Where possible alternative methods of oilseed rape pest management should be employed.

IRAC Insecticide Resistance Action Committee

CropLife International

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