

National Association of Cider Makers

Plant Protection Products and Pesticides in Orchards

A Review of likely limitations on use

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Appendix 2: NACM pesticides and current status, with potential EU law change - 4 variations (May 08), 4 variations (Dec 08), and effect on NACM use

Appendix 3: NACM pesticides list compared with selected retailers banned lists - for primary products not from whole supply chain, effect on NACM use and possible substitutes

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1 Introduction

1.1 Aim

The aim of the review is to ensure that the cider and perry industry understands, as part of its wider sustainable development agenda, how compliant it currently is with the emerging 'consumer' facing pesticide lists, how big a gap there might be, and the options and costs of closing any gap.

1.2 Scope

This study is a short, mainly literature based, review of the current issues facing the UK cider industry with respect to use of pesticides in orchards. The study is limited to those pesticides identified in a recent industry audit (2007 season).

1.3 Objectives

- To assess any known impending legislation which might affect the use of the pesticides in scope, and establish timelines for implementation, and from the literature and industry contacts assess any real issues.
- To identify any substitutes likely to be adopted by the industry and 'add' these to the list of in scope pesticides.
- To establish four 'approved' pesticides lists from the marketplace, to include, those published by the Co-op, M&S and Pesticide Action Network.
- To compare the in scope pesticides with those identified lists, and highlight any pesticides which are in use, but are not approved by those lists.
- To work with list authors, key industry and supplier contacts to establish viable alternatives for those exceptions, together with indicative costs.

2 Setting the scene

The National Association of Cider Makers (NACM) is the representative body of the cider and perry industry in the UK, and is the instigator of this review. It represents about 95% of UK cider makers by volume. Its purpose is to represent the cider industry to the government; it also works collaboratively with other alcoholic drinks industry bodies and is the trade association lobbying pro cider¹.

Unlike the wine industry that has a history of pesticide residues in its products², the cider industry does not have a history of pesticide residues³, however within a sustainable development context and potential European legislative changes this does not allow for complacency.

The NACM has undertaken a survey of its larger orchard fruit growers and their plant protection products use in the 2007 season. Appendix 1 lists the plant protection products in use in 2007⁴; plant protection products include pesticides plus fertilizers and foliar sprays. It is intended that the survey will be repeated annually and that all growers will agree to contribute.

It can be seen that NACM growers use up to 40 pesticides (or combinations of), these can be grouped under: fungicides, acaricides & insecticides, herbicides and growth regulators. Appendix 1 also gives an indication of how much by volume these were used in the whole of top fruit growing in 2004; where data is available⁵. This gives an indication of dependency on some pesticides more than others; but note this is for ALL top fruit growing in the UK, not just for cider making.

¹ http://www.cideruk.com/nacm/about_nacm, home page, accessed 12-11-08

² <http://www.wineanorak.com/pesticideresiduesinwine.htm>, accessed 10-11-08

³ 2007, Annual Report of the Pesticides Residues Committee, page 14, Crown copyright, (no records show residue back to 2000) http://www.pesticides.gov.uk/uploadedfiles/Web_Assets/PRC/2007_PRC_Annual_Report.pdf, accessed 10-11-08

⁴ Pomology Pesticides Survey Summary - NACM members 2007

⁵ From Nick Bradstock: Tables orchard NACM entries 17Sept08

3 European legislation

3.1 Draft regulation

The European Parliament and Council has proposed a draft Regulation concerning the placing of plant protection products in the market, this draft Regulation is intended to replace Directive 91/414/EEC and has been in development since at least 2006. It represents a move from a 'risk-based' assessment of plant protection products to a 'potential hazard-based' approach thus bringing much more stringent conditions.

The already strict measures proposed by the Commission were further intensified by the European Parliament in its first reading. The Parliament proposals include a single approval period for candidates for substitution of five years and could result in the loss of up to 85% of conventional chemical substances after that period. (The Pesticide Safety Directorate assessed this in May⁶).

The June Council reached a common position by qualified majority voting, on a revised draft maintaining most if not all of the Parliament amendments, this revised draft Regulation⁷ was presented to the Parliament for a second reading in November, further debate in Parliament has produced new amendments which would, if adopted, reduce the number of plant protection products at risk to 40%⁸, this will be put forward for voting in January 2009, however the original 85% at risk could also still be voted in if the new amendments are rejected.

3.2 General impact

The implications of this regulation if voted in are that; as opposed to a directive, it gives a short lead time to find alternatives, for example it can cost £150 million to register a new product, and can take 5 to 10 years to get from the lab to the field. The regulation would come into force with almost immediate effect, so it is likely that a ban on any particular plant protection product would itself come into effect when that product comes up for renewal of its registration. Because of the potential impact of this possible legislation there has been strong lobbying, and the UK Pesticide Safety Directorate is preparing an impact assessment prior to the voting (in addition to the one undertaken in May), and the Association of Cider and Fruit Wine Industries of the EU (AICV) and others are petitioning for one.

3.3 Contradiction

Various sources who have observed the draft regulation in progress have pointed out that if this were to be voted in; EU farmers would no longer be able to compete with non EU farmers; as outside the EU the banned chemicals could still be used. Some of the major retailers would find importing the cheaper products appealing for their consumers. This would reduce the potential for local produce and increase the

⁶ Assessment of the impact on crop protection in the UK of the 'cut-off criteria' and substitution provisions in the proposed Regulation of the European Parliament and of the Council concerning the placing of plant protection products in the market, Pesticide Safety Directorate, May 2008, from Nick Bradstock

⁷ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:266E:0001:0051:EN:PDF>

Accessed 27-11-08

⁸ <http://www.pesticideinformation.eu/2008/11/signs-of-change-in-ep-position-on-pesticides/>

Accessed 27-11-08, European Crop Protection Agency

carbon footprint from imports. EU Regulation 396/2005 for Maximum Residue Levels (MRL) has a specific section about import tolerances; these MRL will allow import from any chemical used abroad⁹. And to ban the use of those chemicals (their import on produce) from outside the EU would appear to be in contravention of the General Agreement on Tariffs and Trades (GATT). However investigating this in depth was outside of the scope of this review.

3.4 Impact on the cider industry

Initially this review had planned to identify any substitutes likely to be adopted by the cider industry and 'add' these to the list of in scope pesticides. However as outlined above as things are in such a state of flux with regard to EU legislation it was not considered productive to look for substitutes for so many permutations that are regularly changing.

As at the beginning of November the potential outcome of the regulation if brought in, for the cider industry, is that of the current forty pesticides, only five, see Appendix 2,^{10, 11}, would remain available for use within about five years.

Three of the remaining pesticides that could continue to be used are fungicides; Bupirimate, Pyrimethanil, and Fostyl-aluminium, no acaricides, insecticides or herbicides would be available, and two growth regulators; Ethephon and Prohexadione-calcium would continue. When compared to how much these were used by the top fruit industry in 2004 – Appendix 1, the first two although used a fair amount were not used as much as some other fungicides, the third fungicide is grouped with others so can not be assessed in this way, the two growth regulators have no data.

Appendix 2 also highlights that there are four pesticides that are already banned for use in the UK, which NACM growers used to use; and one that is awaiting re-registration, this restriction of pesticides is an on going trend that will continue. The potential worst case scenario effect of the EU legislative changes therefore, are that there would be an 86% reduction in pesticide availability, but this masks a 100% loss for acaricides, insecticides and herbicides. This is a severe impact.

As at the beginning of December the potential outcome of the regulations with the new amendments if brought in (if all the criteria were adopted), is that for the cider industry, of the current forty pesticides, twenty three, see Appendix 2,^{12, 13}, would remain available for use within about five years. The seventeen unavailable for use includes the four pesticides that are already banned for use in the UK, which NACM growers used to use, and one that is awaiting re-registration. Of the pesticides that could continue to be used are nine fungicides from the original fifteen; seven of the eight acaricides and insecticides, four of the nine herbicides would be available, and all three growth regulators.

⁹ From copies of various correspondence by email to which Nick Bradstock had sight.

¹⁰ Assessment of the impact on crop protection in the UK of the 'cut-off criteria' and substitution provisions in the proposed Regulation of the European Parliament and of the Council concerning the placing of plant protection products in the market, Pesticide Safety Directorate, May 2008, from Nick Bradstock

¹¹ http://ec.europa.eu/food/plant/protection/evaluation/stat_active_subs_3010_en.xls, Annex I to Directive 91/414/EEC, accessed 13-11-08

¹² Revised assessment of the impact on crop protection in the UK of the 'cut-off criteria' and substitution provisions in the proposed Regulation of the European Parliament and of the Council concerning the placing of plant protection products on the market, November 08, [http://www.pesticides.gov.uk/uploadedfiles/Web_Assets/PSD/Revised_Impact_Report_1_Dec_2008\(final\).pdf](http://www.pesticides.gov.uk/uploadedfiles/Web_Assets/PSD/Revised_Impact_Report_1_Dec_2008(final).pdf), accessed 5-12-08

¹³ http://ec.europa.eu/food/plant/protection/evaluation/stat_active_subs_3010_en.xls, Annex I to Directive 91/414/EEC, accessed 13-11-08

Therefore the potential worst case scenario effect of the amended EU legislative changes, are that there would be a 34% reduction in pesticide availability. However these figures should be read with caution as UK PSD warns that there is still uncertainty over the criteria being used by the EU. This reduction is a moderate impact (considering that 12% of the chemicals are already unavailable).

4 Best practice in the marketplace

4.1 The UK currently

In addition to this looming legislation, in the UK most large retailers have a list of chemicals that they have banned and/or restricted. Their suppliers therefore can not use them on their products; these banned lists are chemicals in addition to those banned by the EU or UK. Some retailers such as the Co-op make this information available to the public, however most don't; they often mention how many pesticides they have banned, but are very strict on only allowing their growers to have access to the lists.

Quote from the Co-op:

"In the UK, the use of all pesticides is already strictly regulated by the EU and the UK's Pesticide Safety Directorate (PSD) to ensure that they are safe for the consumer, environment and the operator.

*The Co-operative Group goes one step further and undertakes its own assessment of all approved chemicals. As a result we have banned the use of a number of chemicals that are used by other farmers and approved by other large retailers."*¹⁴

Appendix 3 shows the two retailers approved pesticides lists from the marketplace, in comparison with the NACM list of 40 currently used pesticides. The retailer's lists are from the Co-op and M&S, the lists are of differing dates but are the ones currently in use by the retailers. Additionally in Appendix 3 the Pesticide Action Network (PAN) "List of Lists" is referred to; PAN is an action group working

*"to eliminate the dangers of toxic pesticides, our exposure to them, and their presence in the environment where we live and work. Nationally and globally, PAN UK promote safer alternatives, the production of healthy food, and sustainable farming"*¹⁵.

The PAN List of Lists is from 2005, so is now quite out of date; they are due to publish a new List of Lists in December.

Further Appendices (4 to 6) include the retailers complete lists, and the PAN List of Lists and it can be seen that the criteria and length of list varies considerably. The retailer's best practice lists are for non use of the pesticides for primary products on sale in shops, they do not prohibit their use earlier in the supply chain so for example use on orchard fruit for cider production is not restricted.

4.2 NACM and best practice to date

If only from a purely economic perspective the use of pesticides in orchards is currently kept to a minimum, with integrated pest management (IPM) strategies being common place. And there is considerable advice available to help reduce pesticide use and wastage in orchards, such as from the Horticultural Development Council¹⁶. IPM can best be described as a pest control strategy with six basic components;

¹⁴Co-operative Farms page, accessed 25-11-08 <http://www.co-operative.coop/farms/responsiblefarming/Sustainability/pesticides/>

¹⁵<http://www.pan-uk.org/index.htm>, PAN home page, accessed 11-11-08

¹⁶<http://www.pesticides.gov.uk/HDC.pdf>, Horticultural Development Council, Fact sheet 20/05 Tree Fruit, accessed 10-11-08

acceptable pest levels, preventative cultural practices, monitoring, mechanical controls, biological controls and chemical controls. These methods are done in three stages: prevention, observation, and intervention. It is an ecological approach with a main goal of significantly reducing or eliminating the use of pesticides, in addition using IPM avoids the problems of pest resistance which build up when large quantities of chemicals are used regularly.

IPM can be utilised more in cider orchard management than dessert fruit orchards due to the differing standards for fruit finish and appearance between cider fruit and dessert fruit; with less chemical intervention. Biological pest controls are kept high, with appropriate protection and enhancement of the natural populations of insects, this is enabled by; reducing pesticide use to maintain natural populations, the provision of wide margins and ditches, plus other habitat features. However there is variation between growers in how well IPM is carried out¹⁷, so there is scope to improve cider orchard growers IPM techniques; and NACM could act as the coordinator for practical site visits to spread best practice, and encourage the industry to set an excellent example to the wider agricultural arena.

In Appendix 3, comparing the current 40 NACM pesticides with the combined retailers and PAN lists; there are currently fifteen pesticides that if NACM decided to follow best practice would be allowed, this assumes that NACM would not ask for special permissions to use some of the “monitored” chemicals from the Co-op; they are not prohibited but are classed as “preferred not to be used”.

These fifteen pesticides include eight fungicides, including Dodine for scab, three acaricides and insecticides, only one herbicide (as Dicamba is not allowed and because the products that NACM use are a mixture of Dicamba, MCPA and Mecoprop P this removes all three from the approved list), and two of the original three growth regulators.

Currently the NACM Sustainable Development Policy clause states that:

“The NACM will:

Support and encourage research into growing of apples and pears in a manner which minimises use of agro-chemicals, energy and water, and which enhances the natural environment in terms of biodiversity and visual appearance, whilst delivering an economically viable crop.”¹⁸

4.3 NACM and best practice into the future

It was anticipated that this review would show from industry and pesticide supplier contacts which pesticides would not be available using the best practice list but for which substitutes might be available. Enquiries to date¹⁹ have revealed that due to the intense focus on the potential European legislation there is no advice available for substitutes. Any substitute would need to be both economically and practically viable. Without this information it is difficult to quantify how large the gap is between current practice and adopting the retailers best practice lists, or how much it could cost to them.

¹⁷ Bob Chaplin, Gaymers, and Ben Moss, Bulmers, 5-12-08

¹⁸ NACM sustdevpolicy (final) - 060110.doc, from Richard Heathcote

¹⁹ Bob Chaplin: Gaymers and Robert Fovaulty: PSD, 3-12-08

Table A below therefore summarises the retailers approved lists; as they relate to NACM members' use from Appendix 3.

Table A: Summary of retailer's best practice pesticides available for use.

Type of pesticide	Chemical name
Fungicide	Bupirimate
Fungicide	Copper oxychloride
Fungicide	Dithianon
Fungicide	Dithianon/Pyraclostrobin
Fungicide	Dodine
Fungicide	Myclobutanil
Fungicide	Myclobutanil/cyclohexanone
Fungicide	Fosetyl-aluminium
Acaricide/insecticide	Diflubenzuron
Acaricide/insecticide	Methoxyfenozide
Acaricide/insecticide	Fenoxycarb
Acaricide/insecticide	Indoxacarb
Herbicide	Metazachlor
Growth regulator	Ethephon (2-chloroethylphosphonic acid)
Growth regulator	Prohexadione-calcium

So looking to the future, it is suggested that there is justification for working to the retailer's best practice lists within cider orchard management in the UK is that;

- As can be seen from Table A working to a restricted list of pesticides may be possible as it is not a complete ban. Working to the restricted list of pesticides assumes that all are equally effective and that resistance does not build up with continued use. However this needs confirming with NACM members to confirm the practicalities of working within this reduced list from retailers.
- It would support the Sustainable Development Policy of the NACM.
- The best practice lists do not prohibit the pesticides use earlier in the supply chain - such as use on orchard fruit for cider production, but retailers could apply their lists overnight if they so wished. So NACM would be ready prepared.
- For reputational enhancement of the cider industry as an exemplar not using these pesticides would be a good principle to follow.

4.4 Retailer's lists and December amended EU legislative changes

Table B below summarises the difference between the retailers' non approved lists; as they relate to NACM members' use from Appendix 3, and the December potential effects of the amendments to the EU legislation on pesticides, from Appendix 2. However this information should be read with caution as UK PSD warns that there is still uncertainty over the criteria being put forward by the EU.

Table B: Summary of retailer's not allowed lists and December amended EU legislative changes; NOT available for use.

Type of pesticide	Dec 08 EU law changes: as they relate to NACM	Retailers not allowed chemical lists: as they relate to NACM
Fungicide	x	Captan
Fungicide	Carbendazim	Carbendazim
Fungicide	Fenbuconazole	Fenbuconazole
Fungicide	x	Kresoxim-methyl
Fungicide	Mancozeb	Mancozeb
Fungicide	Myclobutanil	x
Fungicide	Myclobutanil/cyclohexanon	x
Fungicide	Penconazole	Penconazole
Fungicide	x	Pyrimethanil
<i>Fungicide</i>	<i>PyrifenoX (not UK approved)</i>	<i>PyrifenoX (not UK approved)</i>
<i>Fungicide</i>	<i>Vinclozolin (not UK approved)</i>	<i>Vinclozolin (not UK approved)</i>
Acaricide/ insecticide	Pirimicarb	Pirimicarb
Acaricide/ insecticide	x	Thiacloprid
Acaricide/ insecticide	x	Chlorpyrifos
Acaricide/ insecticide	x	Clofentezine
<i>Acaricide/ insecticide</i>	<i>Dinocap (not UK approved)</i>	<i>Dinocap (not UK approved)</i>
Herbicide	2,4-D	2,4-D
Herbicide	x	Dicamba
Herbicide	MCPA	Okay but used with Dicamba
Herbicide	Mecoprop-P	Okay but used with Dicamba
<i>Herbicide</i>	<i>Diquat/Paraquat (not UK approved)</i>	<i>Diquat/Paraquat (not UK approved)</i>
<i>Herbicide</i>	<i>Diuron (awaiting re registration)</i>	<i>Diuron (awaiting re registration)</i>
Herbicide	Glufosinate-ammonium	Glufosinate-ammonium
Herbicide	x	Glyphosate
Herbicide	x	Glyphosate/polyoxyethylene
<i>Herbicide</i>	<i>Paraquat (not UK approved)</i>	<i>Paraquat (not UK approved)</i>
Growth regulator	x	Pacllobutrazol
Total loss:	17, (11 if exclude non approvals)	25 (20 if exclude non approvals)

It can be seen that the rules for EU banning, or retailers not allowing, a pesticide, follows no pattern, the chemicals in column 2 do not all appear in column 3 and vice versa. These inconsistencies probably reflect the amount and frequency of amendments that have been out forward by the EU so should not be interpreted too deeply.

5 Conclusion and recommendations

This review has given an overview of the current EU legislative situation with regard to pesticides, both before and after recent potential amendments. In addition it has provided NACM and the industry with a greater understanding of how big a gap there currently is between the current pesticide use in cider orchard management and the retailer's best practice lists of allowed pesticides. The review gives an indication of how practicable it would be to sign up to these lists.

So in conclusion there are therefore two different solutions arising from this review that NACM could follow:

- a) Work closely with the PSD and the chemical pesticide industry in opposing the potential law change, whatever the legislative changes this will only retain the status quo for a few years. This appears to be the preferred option from the NACM's Pomology Committee. It has the risk that it could create negative publicity for the cider industry as currently the press are not aware of chemical use for cider fruit production.
- b) Look to best practice and phase in reduction of banned/restricted chemicals from the approved lists, this helps with image and has environmental benefits; and ties in with NACM sustainable development policy. Another advantage is that the industry will more prepared for when – because it will happen, the law is tightened on pesticide use, as an example in the past 3 months 18 chemicals have been withdrawn from use (Annex 1).

It is recommended from this review that as option a) is ongoing it is continued, with focus additionally given to option b) of best practice. Option b) can be followed for the longer term, and can be phased in, it should also be interlinked with enhanced integrated pest management strategies in orchard management.