

## Disease Control Products - Varroa Control

Products - The following table from the DEFRA booklet on Managing Varroa shows products being used in EU countries, both licensed & unlicensed.

Name	Authorised	Active Ingredient	How applied	How spread within the colony	When normally applied	Significant features
<b>Bayvarol</b> (Bayer)	<b>UK</b>	Flumethrin (synthetic pyrethroid)	Plastic strips hung between brood frames	Contact	Autumn or early spring for 6 weeks	Highly effective>95%; can be used during honey flow;too similar to Apistan to be used with it as an alternative treatment
<b>Apistan</b> (Vita Europe)	<b>UK</b>	Tau-fluvalinate (synthetic pyrethroid)	Plastic strips hung between brood frames	Contact	Autumn or early spring for 6 weeks	Highly effective>95%; can be used during honey flow;too similar to Bayvarol to be used with it as an alternative treatment
<b>Apiguard</b> (Vita Europe)	<b>UK</b>	Thymol (terpene)	Slow release gel matrix (25%a.i.);two 50g pack treatments with 10-15 day interval	Evaporation, contact,ingestion	Spring or late summer after honey harvest for 4-6 weeks	90-95% efficacy under optimal conditions; depends on temperature & bee activity. When using ensure varroa mesh floors are closed and vents in crownboards are covered.
<b>ApilifeVAR</b> (LAIF)	<b>Not UK</b>	Thymol, eucalyptol, menthol, camphor	Vermiculite carrier matrix	Evaporation	Autumn for 8 weeks	Temperature dependent; high efficacy 70-90% but some variability; easy to apply
<b>Apivar</b> (Biove)	<b>Not UK</b>	Amitraz	Plastic strips hung between brood frames	Contact/systemic	Autumn or spring/early summer for 6 weeks	Highly effective; can be used during honey flow
<b>Exomite Apis</b> (Exocet)	<b>Not UK</b>	Thymol in electrostatically charged powder	Powder in application tray at hive entrance	Contact	Spring or Autumn after honey harvest for 24 days	Efficacy not fully evaluated
<b>Perizin</b> (Bayer)	<b>Not UK</b>	Coumaphos (organophosphate)	Solution trickled over bees	Contact/systemic	Late Autumn/Winter & broodless periods	Ideally needs broodless conditions
<b>Formic acid</b> (generic)	<b>Not UK</b> Note 1	Formic acid (60% or 80% solution)	Evaporator kits (commercially available)	Evaporation	Late summer/Autumn	Kills mites in sealed brood cells; temperature dependent; efficacy up to 80 to 90% (2 treatments) but high variability; brood & queen loss if misused; highly corrosive
<b>Lactic acid</b> (generic)	<b>Not UK</b> Note 2	Lactic acid solution	Acid solution sprayed over combs of bees	Contact	Winter & broodless periods	Ideally needs broodless conditions; Causes skin burns; respiratory irritant.
<b>Oxalic acid</b> (generic)	<b>Not UK</b> Note 2	Oxalic acid solution	3.2 –4.2% acid solution in 60% sucrose trickled over combs of bees; 2.5ml per brood comb	Contact (not ingestion, despite sugar presence) Sublimation	Winter & broodless periods	Ideally needs broodless conditions; 90% average efficacy is possible; sugarless solutions have poor efficacy; danger of significant colony weakening; more scientific trials needed; highly toxic by inhalation, ingestion or skin absorption

Note 1 Not authorized in any EU state except in Germany with Illertisser plates or Nassenheider evaporators

Note 2 Not authorized in any EU State, but tolerated in many countries

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Contact the DEFRA Veterinary Medicines Directorate for up-to-date information on which varroacides are authorized for use in the UK, Products sold in the UK for the treatment of Varroa must be licensed for this purpose under the Medicines Act 1968. Licences are only given to veterinary medicines for which the efficacy, safety to bees, safety to users and safety to consumers of bee products is proven, Products licensed by another EU State may be imported for the personal use by a beekeeper but not for resale or distribution

**NOTE Some of the unlicensed products such as the organic acids are quite dangerous to humans and if beekeepers choose to use them then they must be handled with great care.**

**Care must also be taken that hive products are in no way contaminated.**

### Pyrethroid Resistant Mites

Many mite species including Varroa are able to develop resistance to pesticides. This can occur because individual mites differ in their susceptibility to a given substance. If a population of mites is exposed to a given varroacide dose that only kills the more susceptible mites (e.g, by using too small a dose), then only resistant mites will survive to reproduce and pass on their resistant genes. Over many generations this can lead to the development of a resistant population.

Beekeepers can delay the development of resistance by observing the following rules:

- **Always use the full dose** of a varroacide as directed on the packet
- **Always remove used varroacide strips at the end of treatment**
- **Do not attempt to re-use strips** as these will not release a full dose of active ingredients
- **Where possible, alternate treatments** using unrelated products (see table)
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Beekeepers should also adhere to the following advice from the National Bee Unit (NBU) and link to their web site for up-to-date advice

“The recent development of strains of varroa mites resistant to treatments used against them poses new challenges to beekeepers. The first known case in the UK of resistant varroa mites was found in Devon in August 2001 during routine field screening for resistance to pyrethroid by the Central Science Laboratory's National Bee Unit (NBU). Pyrethroid is the active ingredient in Apistan and Bayvarol, until 2003, the only treatments authorised for use in the UK to control varroa. Further cases of pyrethroid resistant varroa have been detected in apiaries in England since 2001.

In June 2003, a new treatment, Apiguard, was given market authorisation in the UK for use against varroa. Apiguard is not based on a pyrethroid active ingredient and is therefore effective against pyrethroid resistant mites. It is recommended that this treatment be used in conjunction with other controls during the year and with periodic monitoring of infestation levels - ideally as part of an IPM (Integrated Pest Management) approach.

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The NBU's message to beekeepers is that they should remain alert to resistant mites in their colonies and consider the following general advice:

- i. Avoid movement of bees out of the affected areas - this will only hasten the spread of resistance. If you are thinking of moving bees then you should be aware of the risks and thoroughly test them prior to their movement.
- ii. Check for evidence that pyrethroid treatments are working by regularly monitoring mite populations. If significant numbers of mites remain after treatment this may indicate resistance and you need to investigate urgently.
- iii. Use pyrethroid treatments (Apistan and Bayvarol) no more than you have to. Alternate their use with non-pyrethroid treatments (Apiguard) and biotechnical methods. Make sure you strictly follow the label instructions of any varroa treatment - this will maximise their useful working life.
- iv. Learn to test your own colonies for resistance using a resistance field test. If you think this is too difficult for you, then be prepared to ask for help from more experienced local beekeepers or from bee inspectors.
- v. Learn about Integrated Pest Management (IPM) - control of varroa using a variety of methods applied at different times in the year in conjunction with monitoring of varroa mite levels.
- vi. When you find evidence of mite resistance stop using pyrethroid treatments (Apistan and Bayvarol). They will no longer provide effective control of varroa and their use will only make the resistance problem worse. Instead you should use a non-pyrethroid varroacide (Apiguard) ideally in conjunction with biotechnical methods as part of an Integrated Pest Management programme.”

Details, including advice to beekeepers wishing to undertake resistance testing on their own colonies, are available on the [National Bee Unit website](#).