Varroa are always in colonies. Cannot be totally eradicated.

**Varroacides**

Hard chemicals. Synthetically produced. Active ingredients - Amitraz. Flumethrin. Fluvalinate.

Soft varroacides. Naturally occurring chemicals. Oxalic acid. Formic acid. Lactic acid.

All need to be treated with great respect. Particularly the “soft chemicals”.

Softies -

**Apiguard**. Thymol based. Gel. Vapour is given off. Bees spread it round hive. Takes 6 weeks to treat. No supers. Needs temp of at least 15c to be fully effective.

Might stop the queen from laying.

No resistance. Works by breaking down varroa protein molecules.

**Thymovar**. Thymol. Not so effective under 15c. 2 strips 2 weeks apart.

**Api life var**. Strips. Thymol and essential oils of camphor, eucalyptus and menthol. No supers. Can be loss of bees and open brood. 7-10 days x 3.

No resistance. Very smelly.

**Apibioxal**. Oxalic acid +silica +sugar. (Anticaking agent). Use when colonies are broodless. Trickle or sublimate. Can also use oxalic acid on own. No resistance.

**Oxybee**. Oxalic acid + glycerol + sucrose. Trickle only. (Also contains anise and eucalyptus essential oils). Sachet of powder and bottle of oxalic acid. Mix them and trickle. Good shelf life of. 24 months after mixing.

**Oxuvar**. Oxalic acid. Trickle only.

Trickle can kill open brood and eggs especially if used multiple times.

**Varromed**. Oxalic acid and formic acid. Can kill bees. Ok with supers on.

Formic acid affects worker bees lives and brood survival. Queen rejection and decrease of honey with repeated use.

**MAQS**. Formic acid. Kills mites in cells. Can corrode galvanised steel, runners etc. Supers on. Too little not effective, too much kills brood and bees, queens can be rejected. (Happens frequently).

Treatment period 7 days.

**Formic** **pro**. (Same manufacturer as MAQS). Next generation of MAQS. Mostly longer shelf life.

No supers. Needs 3 days of dry weather initially.

Designed for use with langstroth or Dadant hives. Other hive designs haven’t been tested.

Needs 6 deep frames of brood.

Oxalic acid formic acid and lactic acid are naturally occurring in honey. (And other foods ie rhubarb etc.

**Hard chemicals**.

Pyrethroids. Insecticides. Fast acting. Requires low dose to kill insect. Low toxicity to mammals and birds.

Apistan. Fluvalinate (active ingredient). Synthetic. Strips. Very effective on susceptible colonies. It’s fat soluble so easily absorbed into wax. Low levels remaining in hive are thought to affect bees. Drones smaller and with less sperm. Queens smaller.

Negligible effect on worker bees.

Apistan is also spread by drifting, so even if you don’t use it, but your neighbour does, it may accumulate in your wax.

Resistance.

**Bayvarol**.

Flumethrin. Also a pyrethrin. Paralyses mite. Max of 6 weeks.

Similar to Apistan. Resistance.

**Polyvar**. Same active ingredient as Bayvarol.

**Apitraz and Apivar**

Active substance is Amitraz. Not a pyrethroid. (Formamidine). Is a synthetic pesticide and kills mites and ticks.

The amount of active ingredient is the same. Made by different commercial companies.

Amitraz changes mites behaviour. Strips in colony for 6-10 weeks. No supers.

Very efficient. Does not accumulate in wax.

Works the same way in humans but you’d need huge amounts.

Resistance is slow.

Amitraz resistant varroa were found in several commercial beekeeping operations in the USA in 2020. But resistant varroa were found in specific colonies and not widespread in the apiaries.

Sublethal effects of Amitraz, and Fluvalinate have been demonstrated for adult bees. Amitraz can lead to behavioural changes in adult bees.

Fluvalinate may impact queen performanace and drones have shown reduced sperm viability.

Jamie Ellis and others.

**Resistance** occurs through misuse or overuse.

Alternate treatments. Never use a synthetic treatment for more than 2 consecutive years.

**Integrated Pest Management**.

Synthetic treatments.

Organic treatments.

Physical interventions eg Drone removal. Queen trapping.

Brood breaks eg Artificial swarm. Splitting colony.

Usual programme for varroa treatments are late summer/early autumn and mid winter when colony is broodless.

Only oxalic acid trickling or sublimation is suitable for mid winter treatment.

There is now increasing thought that the ‘hard’ chemical treatments affect queen viability and drone sperm viability.

Always follow manufacturers guidelines and always wear appropriate protective gear.

Remember that your practise will also affect other colonies in the area.