*"Any sufficiently advanced technology is indistinguishable from magic."*
*— Arthur C. Clarke*

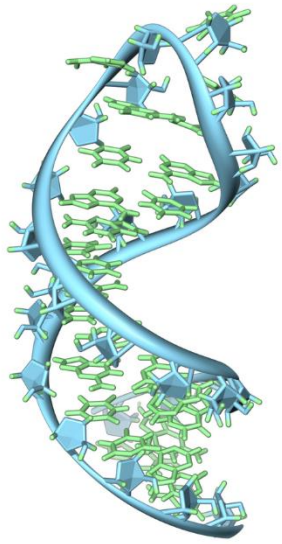
There is a lot of excitement about a new treatment for Varroa mites. Called vadescana (brand name Norroa), it uses RNA interference to basically throw a monkey-wrench into female mites' egg-making systems, stopping mite reproduction in its tracks. But with the excitement comes a lot of confusion. For example, the Google AI description I accessed on 17 December 2025 of how and why this product works is wrong (what a surprise!). The real details are a bit contrary to what we may expect, but apparently it does work as it is intended. The questions of whether it is better than alternatives and worth the cost remain.

Disclaimer: I am not a virologist or geneticist, so please excuse any minor misstatements that may be in my description!

## What is vadescana?

Vadescana's active ingredient is made of double-stranded RNA (dsRNA). It essentially acts as a virus that disrupts the normal functioning of a very specific, Varroa-unique gene that is essential for mite egg formation and therefore mite reproduction.[1] It is provided to nurse bees, who then in turn use it as part of the brood food that they give to bee larvae. When foundress mites burrow into the brood food at the bottom of brood cells just prior to capping, the mites are surrounded by, and therefore exposed to, the product.

People get uneasy about things that affect genes, but it is essential to realize that all animals – humans, bees, etc. -- ingest other-species dsRNA all the time without risk of harm. Not only is this due to the fact that acids and enzymes in our digestive systems disassemble/ destroy proteins (including dsRNA), but perhaps more importantly, the specific gene target that



**The newest battlefield in our fight against Varroa mites is their own RNA, which controls their vital life-processes such as egg creation.**
**Image: Wikipedia[2]**

vadescana disrupts is unique to varroa mites. So vadescana isn't a concern if any should happen to get mixed with honey.

## How is it applied?

From the EPA label: "[Norroa™] is supplied in a single-use pouch, which has a protective sticker covering small holes that allow the bees to access the product. The single use pouch is placed directly in a brood box for the selective control of the mite, *Varroa destructor*. Control of varroa mite with Norroa™ requires bees to move the product from the pouch directly into brood cells, where mites are exposed. Norroa™ targets reproductive mites as they are exposed to the product in the brood food."

Two pouches are required per brood box, either placed simultaneously or consecutively.

## What is required for vadescana to work?

From the EPA label: "Because Norroa™ works by preventing the production of

[1] McGruddy, R.A., Smeele, Z.E., Manley, B., Masucci, J.D., Haywood, J. and Lester, P.J. (2024), "RNA interference as a next-generation control method for suppressing Varroa destructor reproduction in honey bee (Apis mellifera) hives" Pest Manag Sci, 80: 4770-4778. https://doi.org/10.1002/ps.8193

[2] By Vossman - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=7115139

offspring, for best results, Norroa™ should be used when open brood is present, mite numbers are low, and food resources are available for the colony. However, to ensure best efficacy, Norroa™ must not be used during heavy nectar flows, when the product could become overly diluted with incoming nectar, or in large colonies (10 or more frames of bees) during a nectar dearth when all of the Norroa™ may be consumed by adult bees rather than incorporated into brood food. Optimal timing for use is during spring build-up or after splitting colonies. Norroa™ may be used at other times during the year provided that varroa mite numbers are below treatment threshold or if they are above threshold, Norroa™ is used in combination with another miticide to help bring mite numbers down."

To reiterate the critical factors:

- There must be little or no incoming nectar to ensure that bees take up the syrup and use that to immediately create brood food containing the active ingredient, rather than the syrup being stored as "honey" above the brood nest.
- Brood-rearing must be taking place such that all mites in the hive have the chance to be exposed while the treatment is ongoing. Likewise, the exposure must last long enough for the hive's population of mites to all cycle through at least one treatment.
- The colony mustn't be so large that the non-nurse bees consume much of the syrup rather than it being used for brood food.
- When are these conditions typically met? Very late winter before the main spring flow begins? Correct timing is essential.

## Details worth noting

Since none of us have any experience using this type of product for Varroa management, a few key points should be well understood.

- Only foundress mites that are exposed to the vadescana-inoculated brood food will be sterile. Mites feeding on adult bees that were raised in the inoculated brood food are NOT impacted. This is a crucial point subject to much confusion: it is the mites' contact with the brood food itself, not by feeding on brood or bees that have ingested the brood food, that causes the mites to be sterile.
- Vadescana DOES NOT KILL MITES.
- Foundress mites will still infest brood cells for the extent of their lifespan, spreading their viruses, even though they won't be able to reproduce.
- Mites that are introduced via drifting etc. after the treatment is completed are not affected in any way. Along with any mites that somehow evaded or weren't affected by exposure, those will be the source of future mite reproduction and the exponential growth of the mite population. In other words, the effect of the treatment disappears over time. How long it "works", meaning how long the Varroa population takes to build up to treatment thresholds, will depend on the original efficacy rate, reinfestation rate and other factors. At my place, I would expect that to be measured in weeks or several months, not longer.
- This concept is similar to programs that sterilize feral cats and rerelease them to where they came from. The number of cats isn't immediately reduced, but the reproduction of more cats is stifled in the short run. However feral cats from outside the area and cats that escaped sterilization will, in time, grow the feral population to troublesome levels. In the meantime, the sterile feral cats will still eat songbirds, scream at night, defecate in the yard and otherwise create havoc.

## Two fundamental approaches

With this new product, there are now two basic approaches to prevent mites from reproducing:

1. **Kill the mites with a miticide.**
   **Pros:** dead mites don't reproduce or spread viruses. There is a broad choice of legal, commercially-available treatments that achieve very high efficacy rates.
   **Cons:** previously-existing treatments can stress and perhaps harm bees. Cost/benefit

in terms of potential harm must be considered.

2. **Sterilize the mites, leaving them alive.**
   **Pros:** population growth is halted in the short term.
   **Cons:** Mite population isn't affected in the short term. Foundress mites still spread viruses to bee brood.

In both cases, initial results are eroded as new mites migrate into the hive via drifting and mites that somehow escaped exposure continue reproducing. The only prevention for in-migration of mites is to keep hives in locations well beyond the flight zones of other honey bee colonies, both managed and feral, something that is extremely challenging if not impossible in most of the United States.

As the vadescana label suggests, a combination of these two approaches could prove highly effective: decimate the mite population with a proven miticide and then restrict population growth by sterilizing the remaining foundress mites. In-migration of mites would still be a threat, so for that strategy to be successful, periodic monitoring of mite infestation levels remains essential (see "Effective Varroa Management Must Begin with Monitoring" for more on this topic).

## The monetary cost part of the equation

The final consideration for whether to use vadescana (or maybe it should be the first one?) is cost. The distributor of Norroa™ is currently selling a two-pouch pack (which treats one brood box) for $22, a 12-pouch pack for $114 and a 24-pouch pack for $216. That's around twice the typical price of a per-hive treatment with Apiguard or Formic Pro. Is the difference in approaches worth double the price? Is the answer to that question different for a two-hive hobbyist and a 200-hive sideliner?

## They are your bees

I have zero experience with vadescana and offer no advice about whether anyone should try it. But hopefully I've clarified some of the confusion about what it is, how it works and what someone can expect from it, according to academic research and the official label.

That said, regardless of whether you or I ever choose to use it, it is wonderful that there is a new product with a completely new mode of action available for us in our war against *Varroa destructor*. Take THAT, you nasty little baby-bee killers!

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