MATT MAGGIO

Operation Agave Might!

Combating Eriophyoid mite of *Agave*

If you could design the most insidious pest imaginable, what would it be like? Would it command piercing sucking mouthparts more formidable than those of an IRS agent, or have the size and temperament of a Doberman pinscher? Not really, try a microscope on for size. Would it have impenetrable elytra which neither armor-piercing rounds nor the most caustic chemical could penetrate? You wish. The best shield is your most cherished plant. Would it be able to leap across fourteen flats of plants like Weevil Knievel, faster than you can count to Sevin? Dramatic, but why bother when the most gentle breeze makes the perfect vehicle. If you could imagine, the worst pest would be one you couldn't see, shoot, smell or squish between your fingers. But, perhaps the most insidious of all is the pest that doesn't kill your plants. It's the one that makes *you* kill your plants.

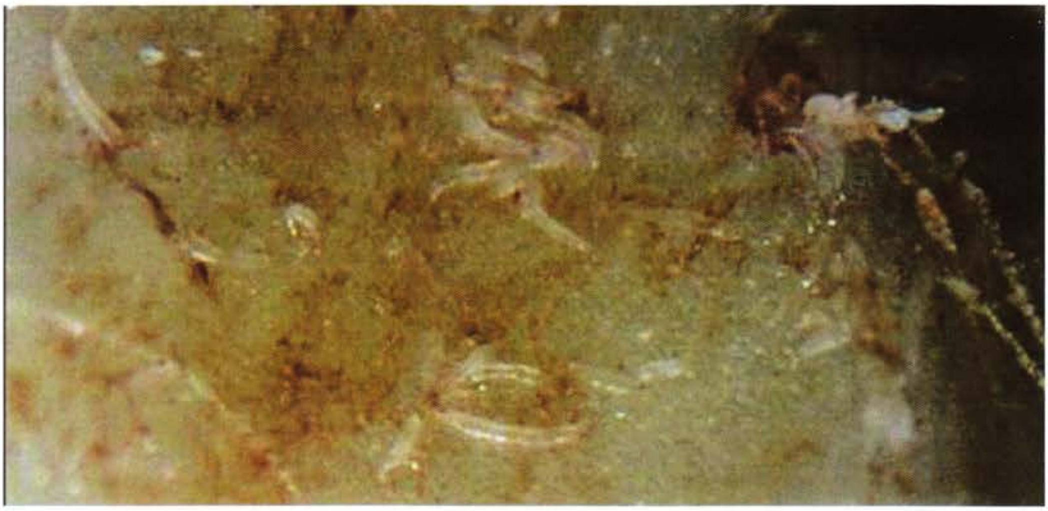
Meet the Enemy

Mother Nature may have sunken below the deepest and darkest depths of our imaginations in creating one particular agent of dystopia. For every popular genus of succulents, there seems to be an equally unpopular pest. Some are even named in honor of their hosts. Aloes have Aloe mite and agaves are blessed with, Agave mite? Yes, there is a mite unique to agaves. It is the imp child of Satan, a brother to Aloe mite, and a pest which has been in existence nearly as long as each (Fig. 1). Awareness of it in the succulent community has only grown alongside the increasing popularity of agaves. Succulent collectors, commercial growers and landscapers alike are now coming to grips with the seriousness of this pest. Concerns about the mites' virulence, severity of damage, and complications of its treatment are spreading quickly among succulent enthusiasts. One aim of this article is to hasten concern faster than can the pest itself, for concern means action.

Know the Enemy

Of the nearly 7,000 know species of mites, over half fall under the super family, Eriophyoidea. This encompasses the plant parasitic families Eriophyoidae (3,824 species), Diptilomiopidae (465 species) and Phytoptidae (178 species). According to the Eriophyoid mite expert James W. Amrine Jr., Emeritus Professor of Entomology and Acarology at West Virginia University, about 95% of the potential Eriophyoid species on Earth have yet to be described. Aloe gall mite, *Aceria aloinis* (Keifer, 1941) is described in the Eriophyoidae. According to Professor Amrine's assessment of key morphological features, Agave mite is believed to be a new species in the genus *Oziella*, in the Phytoptidae, based on their distinguishing morphological characteristics, namely: the length and position of the setae (hairs) on the body, the sculptured lines on the dorsal

1. The subject of this article, an Agave mite.



2. Eriophyoid mites on inside surface at base of *Agave* leaf.

shield, which can be likened to fingerprints, the number of annuli (rings) on the body and the symmetry and number of rays on the empodium (foot structure used for gripping). The genus *Oziella* was first described on Yucca in Kansas with Yucca mite, *Oziella yuccae* (Keifer, 1954). This genus is known to effect genera in the Cyperaceae. While Professor Amrine believes multiple species of *Oziella* may affect *Agave*, the pest is like most other Eriophyoid mites in that it is very host specific. One will not have to worry about *Oziella* affecting aloes and *Aceria* jumping onto agaves.

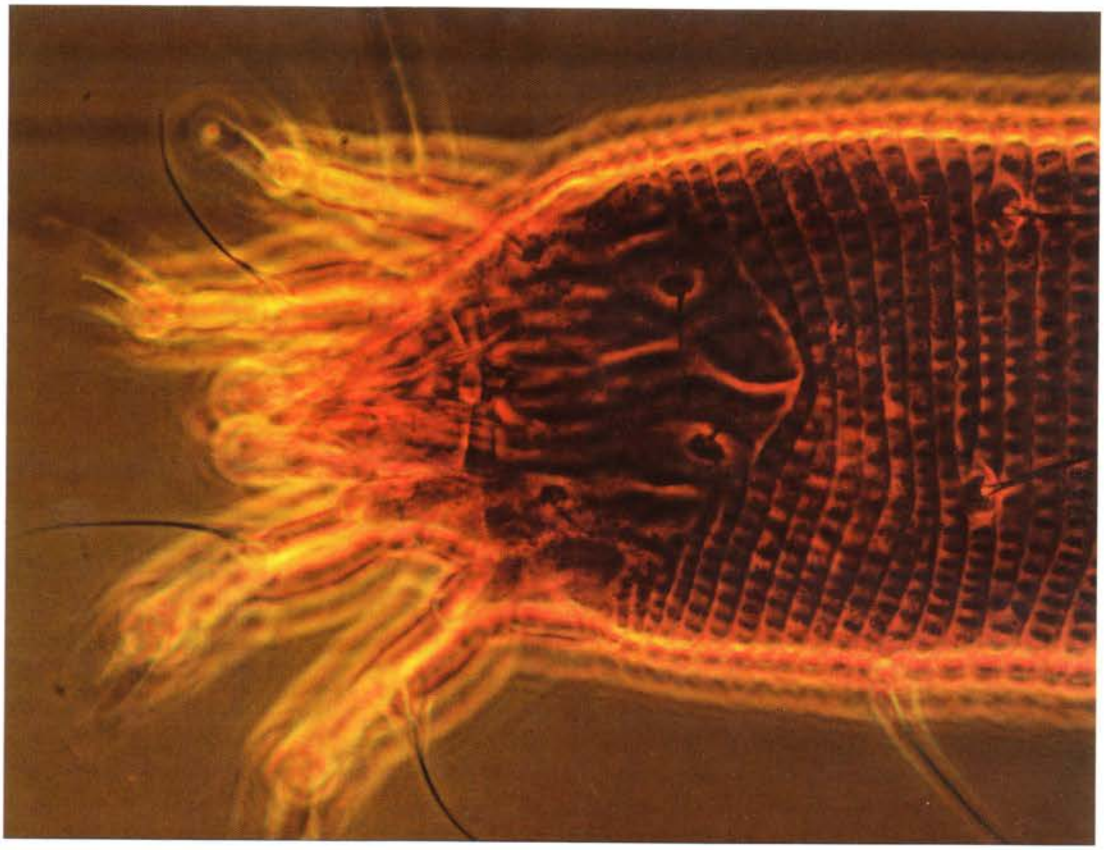
These mites are among the smallest animals in the world, but can be seen with a 10× hand lens. While gazing through the microscope one will gather a clear image of their wormlike, fusiform appearance (Fig. 2). Members of this genus typically have a length of 1/3 mm and a width of 50 microns. Like all Eriophyoidea, *Oziella* have two anterior pairs of legs. The eggs are 20 microns across and take 3-12 days to hatch. A female can lay 10-40 eggs over her life cycle, which can be as long as six months when females overwinter. Eggs are laid on actively growing tissue, in the sheltered core of an agave plant. The successive stages are larvae and then nymph, which can last one week and two weeks, respectively. Maturity is usually reached after three weeks and is primarily temperature dependent. Males and females do not cozy up under that blanket of leaves. Rather, males expend packages of sperm called spermatophores on the leaf surfaces for the roving females to encounter. Unfertilized eggs will produce males, while fertilized eggs will produce females. This sex-determination system is termed haplodiploidy.

New colonies are formed by disseminating females, which can give birth to males in the new colony from unfertilized eggs. Females disperse by raising their legs to the wind and lifting off, a behavior known as 'ballooning' in the mite kingdom. If air currents are prime, some Eriophyoids can survive journeys of several hundred miles! On fewer occasions, the interloping mites will attach to birds, insects and other animals.

Along with reproduction, feeding by *Oziella* occurs in the agave's core. The mites have a complex array of piercing/sucking stylets collectively termed the gnathostome (Fig. 3). The longest feeding stylets are the chelicerae and are about 12-20 microns long in *Oziella*. The mites do not burrow into the tissue, but feed on cell contents from the surface. Individual feeding produces little damage, but large populations are another matter. The prime seasons for activity feeding and reproduction appear to be spring and fall across much of the United States,. The mites seem opportunistic when conditions are temperate.

Symptoms of Infestation

Since the pest cannot be detected with the naked eye, plant symptoms are the only practical reference. Unfortunately, the earliest visible symptoms are indicative of an advanced infestation. Small populations will largely go unnoticed. The mites' presence is first detected at the agave's core, on immature leaves. The young leaves emerge with greasy-looking streaks (hence the common name Agave grease mite), as a result of destruction of epidermal cells. In addition, newly-formed leaves tend to distort to one side as the damaged cells expand unevenly. As the damage progresses, the greasy streaks scab over while necrosis may develop along the lower leaf margins. The symptoms are often most intense on the abaxial (outside) surfaces of the



3. Leg pairs with gnathostome in between.

leaves (Figs. 4 & 5). The marginal leaf necrosis is similar to the early symptoms of Aloe mite, but unlike Aloe mite, no galls are formed in the advanced stages of Agave mite.

This damage to agaves can be confused with that caused by thrips or spider mites. However, signs of these pests are usually detectable with the naked eye or a basic hand lens. In addition, closer inspection reveals that the injuries consist of more flecking and less of the streaking associated with Agave mite. These larger pests have coarser mouthparts and attack the leaves at later stages of maturity, after much leaf expansion has occurred.

An infestation of Agave mite is seldom fatal but can lead to secondary infection from various pathogens. Even if disease is avoided, the damage is enough to spoil the plant for many months or even years, rendering it unfit for show or sale.

Favored Hosts

To our knowledge, all agaves are suitable hosts. Susceptibility varies with environmental factors such as nutrition and moisture status. Nonetheless, some varieties appear more flavorful than others. The mites do not appear to target these varieties intently, but rather increase their populations when favorable varieties are randomly encountered. Therefore, susceptible varieties should not be considered as trap crops in a cultural control strategy, as has been practiced with other pests. These varieties will only serve to augment mite populations in the vicinity. Varieties with acute susceptibility noticed thus far include: *Agave guadalajarana*, *A. isthmensis*, *A. macroacantha*, *A. palmeri*, *A. potatorum*, *A. parrasana*, *A. shawii*, and *A. titanota*. No reports of symptoms occurring on *Manfreda* or ×*Mangave* are known so far, but that does not preclude an Eriophyid mite species that could afflict these taxa.

Proposed Control Methods

Total eradication of an entrenched infestation is impossible, lest an entire *Agave* collection is cast into the furnace. The good news is that such a dire scenario can be avoided with current knowledge of the pest. Moreover, prevention and control are feasible for most plant connoisseurs, but while blindness to the mite is unavoidable, vision of symptoms and corrective actions are choices of the individual. In challenging such pests, vigilance and tenacity are necessary compo-

4. Suspected mite damage on *Agave desertii* in habitat,

5. Advanced damage on *Agave palmeri*.

nents of one's attitude, while both cultural and chemical controls are critical components of one's approach. Additionally, proprietary steps concerning resistance management, quarantine and prevention are inextricably linked to successful control. Successful control is defined as maintaining the pest population below an injury threshold as determined by the individual or the marketplace.

Finally, the concepts and methods explored in following text overlap with strategies for controlling Aloe mite, although combating Agave mite is more challenging because of more limited access to the pest within the agave's core.

Prevention

Some more good news: nothing is inevitable until it actually happens. Nowhere in this article or anywhere else is it seriously written that Agaves beget mites, although it may appear that way in moments of frustration. However, given the widespread distribution of the pest and the heavy exchange of Agaves in the trade today, chances are that it *might* happen.

One likely means of prevention would be to produce all agaves from seed, within an isolated area, as the mites are unlikely to transfer on the seed's surface. This is easier said than done, as many desirable varieties of *Agave* can only be obtained vegetatively from outside sources. Agave plants being considered for addition to a collection or nursery should be thoroughly inspected for the symptoms described earlier. If classic symptoms are detected, one should think long and hard about introducing the plant(s) into the collection. A clean collection is seldom outweighed by a single infested plant, and the risk of spread is very high. One may also consider letting the grower know about the problem (tactfully of course) instead of quietly returning the plant. If the decision to introduce a symptomatic plant has been made, then proceed to containment (i.e. quarantine) and utilize some of the following controls.

Containment

In light of this pest's dissemination modes and the delayed manifestation of symptoms, one should assume a more widespread infestation than is evident. Additionally, this delay of symptoms should make all agave plants new to a collection suspect. New introductions should be monitored for development of infestation for at least one month following acquisition. The author notes several cases where agaves appeared clean at the time of trade, but developed symptoms in the weeks afterward. A proper quarantine area for new arrivals is prudent, and should be **downwind** of the existing collection or have air movement thwarted by some means (e.g., a designated cold frame). New arrivals should also be kept as far away from the existing collection as possible. The mite can disseminate by other means (e.g., hitching rides on other mites and insects, tools, the owner and clothing), but wind travel should be the primary cause for concern.

Containment principles also apply to outbreaks in an existing collection. When careful monitoring detects new symptoms, the plants should be immediately purged from the group. The decision whether to destroy plants or quarantine/treat should be made at such time. The decision depends on the personal value of the plant, but the author can attest to impractical treatment costs that have resulted in a majority of cases ending in the trash. Plants that are not discarded should be incarcerated under a tight lid, if not incinerated!

Plants that have been in the vicinity of those with visible symptoms should be treated with chemical applications, with the assumption that the mites have already spread to adjacent plants.

Resistance Management

Understanding the dilemma of pesticide resistance requires a basic comprehension of how pesticides are categorized into Mode of Action (MoA) groups via their Active Ingredient (AI). Pesticides have their own classification series apart from herbicides, fungicides, etc. For example, the AI carbaryl (sold under the trade name Sevin) is classified as a MoA group 1A carbamate, which functions as an acetylcholinesterase inhibitor. The neonicotinoids are classified as mode 4A, Acetylcholine receptor antagonists. There are 28 unique MoA groups encompassing hundreds of pesticides in use today.

Now, one should assume that for every chemical MoA indicated for an active ingredient in a pesticide formulation, there exists a correspondingly resistant strain among individuals in the target pest population. This has already been demonstrated with many other pests. If a chemical with MoA **X** is used repeatedly, throughout multiple generations of a given population **Y**, then individuals with a genetic mutation for resistance to MoA **X** will occupy a larger percentage of population **Y** with each generation. With repeated use, most of population **Y** can become resistant. Bear in mind that individuals are not acquiring resistance. Rather, ones already resistant are being favored under general selection pressure from MoA **X** and are surviving to pass on the favorable mutation.

So, why be concerned with resistance in Agave mite? First, Eriophyoid mites - and mites in general - have very rapid generation times. Therefore, resistant strains can become augmented with alarming speed. Second, the repertoire of MoA groups – never mind chemicals with different AIs and trade names - known to be effective against mites is very narrow. Acarid physiology is distinct in some respects from other sucking insects, and new chemistries are hitting the market at a snail's pace for a nimiety of reasons. For instance, there is less incentive for chemical manufactures to expend research and development and jump through regulatory hoops when the end product targets a limited range of pests, and therefore a limited market. Third, resistant strains are easily spread to other collections, undermining any diligent efforts. Finally, chemicals are *still* the most effective means of controlling Eriophyoid mites. Let us keep them at the tip of the spear by managing resistance.

Therefore, in practice, avoid treating with the same MoA group more than three consecutive applications for most chemicals. Rotate usage between two to three separate MoA groups. Unfortunately for one's budget, this will mean stocking multiple products. Moreover, one should integrate prevention and containment strategies with cultural controls to limit populations before chemicals are used. Furthermore, by integrating prevention and containment strategies with cultural controls in an attempt to limit populations, chemical use frequency can be reduced. Resistance is a numbers game; the higher the population, the greater the likelihood of resistant individuals.

Cultural & Physical Controls

Delving deeper into the tool chest, ones finds the physical and mechanical means, hygienic practices and cultivation strategies that can impede Agave mite. These methods can work in tandem with chemical controls in a comprehensive strategy. First, purging of infested plants is strongly encouraged. Tainted plant material should be promptly disposed of in a manner that prohibits continued dissemination. Adult mites and eggs can survive outside of the host plant for up to 30 days, with survivability promoted by higher humidity. Therefore, the pest should be treated like an infectious disease with respect to nursery hygiene. Tools used in the process of control (coring tools, pruners) should be disinfected with isopropyl alcohol between uses. Growing benches should also be cleaned and disinfected when treating an outbreak. Hands should be washed before contact with other agaves.

Second to complete disposal, coring has proven to be the most effective physical technique for squashing populations. The core is the 'beehive' of activity for Agave mite and the process involves physical removal of this (including the apical meristem) or portions of this plant section. In this highly invasive procedure, one may core the meristem and use subsequent offsets from the mother plant to start anew. Similarly, one may remove several whorls of leaves from the center bud, just enough to expose the core to chemical treatment, especially critical when using non-systemic products. All material removed from the core should be disposed of in a sealed container, immediately. All coring techniques should be used in conjunction with chemical

6. Stages in the coring of an *Agave*: (a) the starting material. (b) manual removal of the smaller, central leaves. (c) removal of the apical meristem using a drill with a shovel bit. (d) using a saw to cut a channel from the center of the plant to prevent accumilation of water in what used to be the crown of the plant.

controls for maximum impact. While the damage from coring may be worse than the pest damage itself, the technique can prove handy when salvaging a valuable plant. New, clean pups should be expected from leaf axils within 6-8 months post treatment (Fig. 6)

Temperature treatments for this pest are currently being explored, hot and cold alike. Cold exposure appears to be of limited effectiveness. Limitations are the hardiness of various agaves, but moreover, the mite seems highly resilient to freezing temperatures. According to Professor Amrine, the mites are small enough to dodge ice crystals as they form. He also contends that many Eriophyoid mite species can survive subfreezing temperatures in the upper atmosphere when carried aloft. Heat treatment, on the other hand, may prove more effective and has already been used to control Cyclamen mite (*Phytonemus pallidus*) by immersing leafed-out corms in an 111°F water bath for 15 minutes. Experiments with agaves could be worthwhile considering the high temperature tolerances of some species' tissue, up to 140°F leaf temperature for one hour on test species when properly acclimated (Nobel, 1994).

The growth environment and plant phenotype are also important factors. The mites are favored by higher humidity, so maintaining a drier ambiance could prove beneficial to the grower. In addition, mite outbreaks are exacerbated by soft, lush growth and higher nitrogen content of leaves. Growing plants 'hard' should disfavor the mites.

Chemical Controls

Do not be the carpenter who shows up for work without a hammer or tape measure. Understand that chemicals are fundamental to controlling Eriophyoid mites, even something as simple as rubbing alcohol. A wide range of chemical controls and tips for application will be proposed in brief. As trade names for chemicals vary like common names for plants, active ingredient (AI) names will be used. Solutions will be suggested for commercial nurseries, hobbyists and anyone in between; all of which are 'growers' (Table 1).

With Agave mite, the problem relates more to making chemicals available to the pest than the limited availability of chemicals to the grower. These mites are sissies when removed from the comfort of the host plant, but wear an impenetrable force field once inside your most coveted plant. This is where **systemic** pesticides come in handy and where adequate coverage of **contact** pesticides is essential. With Agave mite, that means coverage of the entire plant and not just the core region. Products can be systemic through the roots, locally systemic through the leaves (translaminar), or both. Contact chemicals should be combined with a non-ionic surfactant to break the surface tension of the water. This allows the chemical solution to work in between the leaf whorls of the agave's core and coat its waxy leaf surfaces. If the spray solution beads when applied to the leaves, then the surfactant is too dilute. The mites will be missed in between the droplets. While some product labels will indicate the need for supplemental surfactants, others will specifically caution against their use. True systemics can be applied via a drench to the roots, or as a "sprench" when applied to the foliage simultaneously. Contacts and translaminar products can be applied via overhead sprays and with appropriate surfactants. Overhead contact treatments will have an impact reserved for mobile female mites outside the core.

The preferred delivery method of the author for all products is a chemical bath (i.e. complete submersion in a chemical/surfactant solution for at least 30 minutes, Fig. 7). This is only practical for limited quantities of high value plants, and is not viable for large blocks of commodity nursery stock. The method requires pre-washing of the roots and reestablishment of the plants post treatment; a very invasive yet highly effective process in sum.

The first chemicals worth exploring are the miticides. Realize that not all miticides are created equal. Products will vary in systemic capabilities, residual activity, life stages controlled (i.e. eggs, nymphs, adults) and the types of mites controlled (e.g. Spider mites, Broad mites, Bud mites, Rust mites, Cyclamen mites, Eriophyoid mites, etc.). No product will specifically address Agave mite and not surprisingly, very few list treatment protocols for succulents. One must also assume the unstated challenge of succulents' thickened cuticles in achieving efficacy of systemics. Nevertheless, the best results can be expected from systemic and/or translaminar products labeled for Eriophyoid mites (including Bud mites and Rust mites), Cyclamen mites or Broad mites. Products geared towards Spider mites will not necessarily control the little beast in question. Other products may in fact control Eriophyoid mites, but the labels will only list what has been tested by the manufacturer. A decent miticide will have long residual activity to capture the momentum of the mite popula-

7. Total immersion means just that.

or make little economic sense to the hobbyist because of cost and/or the quantity marketed.

With the diversity of available miticides and the disparate horticultural backgrounds among the readership, relevant products across the spectrum are worth underscoring. The only miticide labeled as a full systemic is spirotetramat (Kontos). This product happens to have demonstrated efficacy against Aloe mite, a pest akin enough to Agave mite to make one optimistic about control. However, expect this product to be slow acting, on the order of weeks. Miticides with locally systemic (translaminar) activity in leaf tissue also known to control Eriophyoid mites are chlorfenapyr (Pylon), spiromesifen (Forbid 4F, Judo), etoxazole (Tetrasan) and abamectin (Avid). Pylon has a long residual and has demonstrated excellent control on Aloe mite, but will not kill eggs. It is also the most expensive at $450-$500 per pint! Spiromesifen also has a long residual, is stronger on eggs and immature stages while being weaker on adults, but has shown less control of Aloe mite than has chlorfenapyr. For resistance management purposes choose either spiromesifen or spirotetramat, but do not rotate between the two. Etoxazole is only labeled for early stages of Spider mites, but has shown modest control of Aloe mite efficacy trials. Abamectin (Avid) has a longer history of controlling Eriophyoid mites, works on all life stages and is easier on the pocketbook. Fenpyroximate (Akari) is one of the few contact miticides known to control all life stages of mites and controls Eriophyoids. Some miticides to avoid for lack of control on Eriophyoid mites are bifenazate (Floramite) and hexythiazox (Hexagon).

In addition to miticides, there are some promising chemicals that are palpable to most hobbyists. Other products may be getting more credit than they deserve, but further experimentation will tell. Imidacloprid receives a lot of attention, but the author has yet to find success with this and other neonicotinoids like dinotefuran (Safari). Products like Bayer Advanced Disease, Insect and Mite Control have also been sug-

Miticides

Active ingredient	Brand name	Mechanism of action (class)	Mite controlled	Life stage controlled	Delivery	Comments
spirotetramat	Kontos	lipid biosynthesis inhibitor (23)	Eriophyoid	most effect on immature mites	systemic	
chlorfenapyr	Pylon	oxidative phosphorylation uncoupled (13)	Eriophyoid	nymphs, adults	translaminar	not ovicidal
spiromesifen	Forbid 4F, Judo, Oberon	lipid biosynthesis inhibitor (23)	Eriophyoid	eggs, nymphs	translaminar	
etoxazole	TetraSan	Mite growth inhibitor (10B)	Spider, Eriophyoid?	eggs, nymphs	contact & translaminar	
abamectin	Avid	chlorine channel activator (6)	Eriophyoid	All except eggs	contact & translaminar	
fenpyroximate	Akari	Electron transport inhibitor (21A)	Eriophyoid	All	contact	
bifenazate	Floramite	unknown	Spider	nymphs, adults	contact	not ovicidal
hexythiazox	Hexagon	GABA-gated chlorine channel agonist (10A)	Spider	All except adults	contact	poor control of Aloe mite
bifenthrin	Talstar	Sodium channel modulator (3)	Spider, Eriophyoid?	All?	contact	poor control of Aloe mite
Other Chemicals						
imidacloprid	Merit, various Bayer products	acetylcholine agonist (4A)	-	-	systemic	possible breeding stimulant
tau-fluvalinate	Bayer 3-in-1	Sodium channel modulator	Spider	?	contact	poor control of Eryphyoid
formic acid	-	-	?	?	fumigant	in testing
elemental sulfur	-	-	general	?	contact	
Isopropyl alcohol	-	-	general	?	contact	
carbaryl	Sevin	cholinesterase inhibitor (1A)	Eriophyoid	?	contact	possible breeding stimulant
acephate	Orthene	cholinesterase inhibitor (1B)	-	?	contact	possible breeding stimulant

Table 1. Some chemicals and their role in control of mites. Note that different sources provide conflicting information on many of these treatments.

gested, with the active ingredient against "Spider mites" being Tau-fluvalinate. However, this is the AI found in Mavrik Aquaflow, a product that has been tested by the author on Aloe mite with little success thus far. Formic acid, a compound successfully used to control *Varroa* mite on bees, at 50% dilution, is being trialled in similar ways by George Clark at Plant Delights Nursery. Results are anticipated soon. Elemental sulfur solutions have also been documented to control various mites. The author has experimented with over-the-counter products like isopropyl rubbing alcohol by submersions in 50% water solution for 15 minutes. Some success is noted. Carbaryl (Sevin) is labeled for Eriophyoid mites and has been used to treat these pests on conifers. It is strictly a contact chemical, so use accordingly. Efficacy of carbaryl on Aloe mite has been championed by some hobbyists. The systemic organophosphate acephate (Orthene) has also been suggested by others. However, studies on the effects of carbamates, organophosphates and the neonicotonoid imidacloprid on Spider mites have shown increased fecundity post treatment at sub-lethal doses. Little is known about the lingering effects on Eriophyoids for any of these agents. Broad spectrum pesticides are also incompatible with natural enemies and the detrimental effects of these chemicals on predators can lead to swift pest resurgence, but, as one will see in the Biological Controls section, natural enemies may be a moot point with Agave mite.

Great care must be taken in avoiding phytotoxicity (damage to the plant) from the entire spray formulation, including its surfactants. Always test small quantities of plants first, and avoid spraying during hot sunny weather. Sulfur sprays or concentrated alcohol can be highly damaging. Caution should also be given to the tetramic acid class of lipid synthesis inhibitors such as spiromesifen and spirotetramat. The author has observed strange stunting effects on meristem tissue in *Agave* and *Aloe* following some applications of spiromesifen (Forbid 4F). Last but not least, ALWAYS read the label before committing!

Biological Controls

Eriophyoid mites are targets of many natural enemies including predatory mites in the families *Phytoseiidae, Anystidae* and *Bdellidae*. Predatory mites can most easily be distinguished from plant feeding mites by their rapid locomotion. In the case of *Oziella* sp. disseminating females are most vulnerable, as predatory mites cannot fit into the agave's core. Predatory thrips will also feed on Eriophyoid mites and prefer the 1st and 2nd instars. Unfortunately with *Oziella* sp. on agaves, those stages are almost always buried in the core. Interestingly, the author recently observed such predation by thrips on Agave mite through the view of his trusty hand lens.

Since Agave mite populations are mostly beyond the reach of known predators, commercial biological controls are impractical. One would have to accept a significant resident population of the mite - and corresponding injury - for biological control agents to hang around. Pollen sprinkled on leaves can help sustain predatory mites directly, but the results will still not measure up to available chemical and cultural controls. Finally, biological controls are incompatible with most of these chemicals, so an integrated approach would be nearly impossible.

Future Study

A wide open frontier of new discovery exists for those with interest and a microscope. According to Amrine, a graduate student at West Virginia University recently conducted an experiment where a tray of water was placed on the roof of a building every day for one year. By the end of the experiment, over 9,000 Eriophyoid mites were collected! About 125 separate species were counted, and most were new to science. Much is still unknown about their behavior and their interaction with other organisms. More thorough field analysis will be required to map the extensiveness of *Oziella* sp. on agaves in habitat. Mystery still shrouds the array of selection pressures, both biotic and abiotic, that keep the lid on mite populations *in situ*.

The species of *Oziella* infesting *Agave* should be described within the next year. The formal classification of Agave mite as a new species will result from the collaborative effort of some of the world's foremost practicing acarologists: James W. Amrine Jr., Philipp Chetverikov and Radmila Petanović of Serbia. At the time of publication, DNA samples of the mite have been obtained, and a formal description is just over the horizon. In the meantime, it is hoped the succulent community will exert the same passion while exploring new and improved ways to combat this most insidious pest.

Recommended Reading

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