

Mites, They *kill* Aloes, don't they?

By: Michael J. Green

Well, at least one does, sort of. The dreaded Aloe mite, aka Aloe gall mite, Aloe wart mite and Aloe cancer mite, doesn't exactly "kill" the Aloe, but it does destroy the aesthetics. The technical name is either *Aceria aloinis* or *Eriophyes aloinis*, two names for the same villain. In addition to aloes, *Eriophyes aloinis* is reported to infest *Haworthia* species. Googling each name will return different sets of information. About 45,000 species of mites have been described, but this amounts to only about 5% of the number of species estimated to be alive today.

Mites have successfully colonized nearly every known marine, terrestrial, and fresh water habitat including polar and alpine extremes, tropical lowlands and desert barrens, surface and mineral soils to depths of 10 meters, cold and thermal surface springs and subterranean waters with temperatures as high as 50C, all types of streams, ponds and lakes, and sea waters of continental shelves, deep sea trenches to depths of 5000 meters AND some Aloes. They're everywhere. Mammals, including us, and birds, are hosts to innumerable species of parasitic mites (e.g. scabies and mange mites), as are many reptiles and some amphibians. Many mites have complex symbiotic relationships with the larger organisms on which they live. Some, like our "Aloe mite", are more parasitic. Mites found on agricultural crops are major economic pests (e.g. spider mites) or useful bio-control agents (e.g. phytoseiid mites) of those pests.

There are three major groups of mites that attack cacti and succulent ornamental plants. These are the spider mites, the false spider or flat mites, and the gall or eriophyid mites. Aloe mites are classified as eriophyid mites. Species specific information is difficult to find; thus much of the information presented is derived from eriophyid mites in general. The eriophyids are a group of plant-feeding mites that inject a plant growth regulator similar to the weed-killer 2,4-D (2,4-Dichlorophenoxyacetic Acid) into the plant cells as they feed. This induces formation of a gall, which surrounds the mite as it feeds. Eggs are laid within the gall; nymphs mature within the gall and the emerging adults infest new foliage. Galls themselves are abnormal plant growths.

Since they are mostly host specific, eriophyids can be identified by the plant and damage seen. Various other organisms such as insects, nematodes, fungi, bacteria, and viruses can also cause galls, though not necessarily on aloes. After the induced change has altered the behavior of the affected cell or cells, the mite does not have to remain on the site (i.e. in the gall) to insure continuation of gall growth. Stems, leaves and flowers may be affected. These tiny mites typically over winter on their host plant. They begin feeding and initiate gall formation in spring as the leaf or flower buds open. Eriophyid mites usually do not cause serious "injury". Large populations can be tolerated by plants, but the damage may / will be unsightly. The damage to the aloe plant is irreversible. There is an *Aloe bainesii* compact form at the JMCC that has its galls cut out almost annually and the Aloe still looks healthy.

Since eriophyids are among the smallest of mites (less than 1/100 of an inch in length), field identification of species on the basis of their morphology usually is difficult or impossible. Eriophyid mites are more closely related to spiders and ticks than to insects. Unlike spider mites, which have 8 legs (as do spiders), and insects, which have 6 legs, eriophyids have only four legs. They are located near the head so that the elongate posterior portion of the body must be dragged along the plant surface. They are long, ringed (annulate), and worm-like. Eriophyids are also the only important mite transmitters of plant viruses.

They are poor crawlers, but their small size facilitates travel between hosts by wind, water, insects, birds, and people. Eriophyid mites reproduce rapidly. Fertilization occurs when females come in contact with sperm sacs left on the host by males. Females can lay as many as 80 eggs in

one month under favorable conditions. The majority of eriophyid mite species go through four stages of development - the egg, two nymphal instars and the adult. The length of life cycle is variable depending on the species, but it is usually approximately seven days to reach adulthood. Adults live for about one month, and there are as many as six to eight generations per year where seasons are long.

It is fairly easy to control (but not destroy) eriophyid mites. Infected areas can be cut out to eliminate adult mites and remove unattractive tissues. Burn, or (plastic) bag and dispose, of infested plant tissues in the trash. Removing and destroying galls is often necessary to stop the spread of mites on the current host plant and neighboring plants. Exposed mites are easily controlled, but most pesticides do not kill the mites living within galls.

Heavy infestations can be “controlled” with insecticides. Spraying, or root drenching plants, will not get rid of the galls (deformity) once they have been produced, but BOTH are necessary for efficient control. Root drenching alone is effective, but takes longer. Apply insecticides in early spring, and again just after bud break for later blooming species. Dormant oil, carbaryl, dicofol (commercial only, in California), horticultural oils, and insecticidal soaps may be effective. Carbaryl (Sevin) is highly toxic to bees and should not be applied when they are active (i.e. when the aloe is in bloom). Orthene, used according to the directions, has been successful for some hobbyists but the formulation does not contain miticides. Based on experimentation, dimethoate is used by at least one aloe specialist, and does contain a miticide. Applying any chemicals to control aloe mites may also kill beneficial insects.

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Electromicrograph of an Eriophyid mite. Courtesy USDA



Galling and distorted growth of *A. arborescens* (M.Wiznev)



**Aloe bainesii bloom w/ *E. aloinis*
Aloe bainesii with large gall
Photos by mjpg**



***A. arborescens* bloom stalk
with large gall
photo by Geoff Stein**