

Pest Management of Hemp in Enclosed Production

Hemp Russet Mite (*Aculops cannibicola*)

Damage and Diagnosis. Hemp russet mites feed on the surface layer of plant cells, piercing them with their minute mouthparts and feeding on the cell fluids. No visible symptoms are produced when russet mites are in low populations, but a range of subtle symptoms develop during outbreaks.

A slight upward curling along the edges of leaves is the most easily observed symptom (Fig. 2), but this is not a consistently produced and may only develop on some cultivars. Plants often respond by having a general dullness of leaves (russetting) and as infestations progress small areas of leaves may have visible yellow or brown spotting. Foliage also may become more brittle and may sometimes break at the leaf petiole. Russet mites also develop on stems, which may cause stems to have a slight bronze/golden color. Heavy infestations on developing flower buds may suppress bud growth and size.



Figure 1. Three hemp russet mites on the underside of a hemp leaf, near a leaf vein.



Figure 2. A slight upward rolling along the leaf edge is a symptom hemp russet mite can produce in some hemp cultivars.

The hemp russet mite is extremely small – much smaller than the twospotted spider mite - and individual mites cannot be observed without substantial magnification (15-20X) (Fig. 1, 3). They have an elongate body and pale color, typical of most eriophyid mites (the mite family Eriophyidae). (An excellent photograph of hemp russet mite on a very heavily infested leaf petiole can be viewed [here](#).)

The most serious damage reported to hemp in Colorado involves the maturing buds/flowers of all-

female clones grown for CBD production. Extremely high populations of mites may build in late summer which damage these tissues and reduce yield and quality. During heavy infestations flowering structures may take on a beige appearance, the combined result of leaf injuries and the color of the mites observed when as the mass on the heads.



Figure 3. In this photo there is an egg and fecal drop produced by twospotted spider mite. Below it and a bit to the left is a hemp russet mite; there are two other russet mites in the lower left corner. The whitish spotting on the leaf was produced by the spider mite, not the hemp russet mite.

Biology Notes. *Cannabis* is the only reported host for hemp russet mite and attempts to establish it on related plants in the Cannabaceae family (hops, hackberry) have so far been unsuccessful.

The biology of hemp russet mite is very little studied but is likely similar in general outline to related species of eriophyid mites (e.g., tomato russet mite *Aculops lycopersici*) that feed on the surface of herbaceous plants. In the case of the tomato russet mite, eggs are produced that hatch within two days. A minute immature stage (larva) emerges from the egg and a couple of days later it will molt to the larger second stage (nymph). A few days later there is a final molt, producing the adults. Both males and females are

produced. The entire life cycle (initially laid egg through first egg laying by the adult) is reportedly completed within about two weeks at temperatures of 77⁰F. Egg production by tomato russet mite is reported to typically average between 1-2 dozen per female.

Adults of tomato russet mite will normally live about 3 weeks. No special stages are produced that would allow extended survival, such as an egg that can remain dormant for an extended period. However, tomato russet mites are capable of surviving for an extended time between growing seasons on various nightshade plants and on bindweed. During winter, reproduction ceases, and they are semi-dormant.

Hemp russet mite appears capable of surviving and reproducing year round on *Cannabis* crops grown indoors in continuous culture. However, significant questions remain about how hemp russet mites may survive outdoors between seasons. In June 2018 hemp russet mites were found on leaves of volunteer hemp growing adjacent to a shed used to dry the crop of the previous season. This suggests that some hemp russet mites may survive outdoors in Colorado under certain conditions, although it is not clear on what kinds of plants they would be sustained in the absence of live hemp.

On their own, hemp russet mites can crawl only very short distances and immature stages are particularly immobile. However, adults are capable of some crawling and may move to the edge

of leaves where they can then be picked up and carried on air currents; in enclosed areas, fans can quickly spread mites. Outdoors small breezes can distribute mites through fields.

Elsewhere in this website is a sheet on [*Pest Management of Hemp in Enclosed Production: Hemp Russet Mite*](#), which discusses management options in greenhouses.

Acari: Eriophyidae