

Pest Management of Hemp in Enclosed Production

Hemp Russet Mite

(*Aculops cannibicola*)

Damage and Diagnosis. Initial signs of infestation are subtle and easily missed. They can also vary among cultivars. A slightly curling along the edges of leaves is the most common symptom observed, but this is not expressed in all plants. Others respond to having a general dullness of leaves (russetting). As infestations progress areas of leaves may have visible yellow or brown spotting. Foliage also may become brittle foliage, often resulting in breaks at the leaf petiole. Ultimately, highest populations usually occur on developing buds, which results in buds that are smaller and of reduced quality.

The hemp russet mite is extremely small – much smaller than the twospotted spider mite - and normally cannot be observed without some magnification. They have an elongate body and pale color, typical of most eriophyid mites (the mite family Eriophyidae). 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.

Biology Notes. The biology of hemp russet mite is very little studied but is likely similar to related species of eriophyid mites (e.g., tomato russet mite). It reproduces by production of eggs that is then followed by two immature stages (protonymph, deutonymph), followed by an adult. The entire life cycle (initially laid egg through first egg laying by the adult) is reportedly completed in about a month at temperatures of 77⁰F. Each adult will produce from 10-50 eggs.

Cannabis is the only known host for this species and similar rust mites (e.g., tomato russet mite) do not produce any resistant stages. Therefore, nymphs and adults off the host are unlikely to survive for more than a few days to a couple of weeks, at the most.

On their own, hemp russet mites can crawl only very short distances. However, they are readily carried on air currents and fans will quickly spread mites in enclosed areas. Some hemp russet mites may also be transferred from plant to plant on hands and clothing.

Management of Hemp Russet Mite

Prevention and Quarantine. Hemp russet mite survives solely on *Cannabis* plants and indoor plantings become infested through the introduction of infested plant materials (e.g., live plants, cuttings). Quarantine steps, as for prevention of powdery mildew and spider mites, should be considered the first step in prevention of hemp russet mite. This primarily involves isolating all new live plants/cuttings from the primary growing area, until the plants can be determined to be mite-free. Plants grown from seed will be free of hemp russet mite.

Biological Controls. Several predatory mites, discussed above in relation to twospotted spider mite, will also feed on eriophyid mites. No testing of these has been done with hemp russet mite.

Sprays. Horticultural oils (described above) are likely to be the most effective spray for control of hemp russet mite. These products that primarily act by smothering and likely can active stages as well as eggs. However, oil sprays have no residual effects on plants and can only potentially kill mites that are covered with the oil at the time of application. Therefore, oils must be applied very thoroughly. Since hemp russet mites are so tiny they may shelter within very small cavities such as around leaf veins, in curled margins of leaves, or in folds within buds and sprays must reach all of these sites.

Also available are some “essential oil” products, usually sold as ready-to-use sprays, which contain oils of rosemary, thyme, peppermint or clove, or other natural products. Some control of hemp russet mite can be expected with at least some of these products but there has been very little testing of these products under conditions similar to those that occur in cannabis production - or against any kinds of rust/russet mites. Furthermore, since testing of these types of pesticides is often minimal, it is strongly suggested that they initially be applied only to a small area to determine if there are any problems with plant injury (phytotoxicity).

Russet mites are also susceptible to sulfur, and a few sulfur-containing insecticides are allowable in cannabis production. However, plant injury can occur from oil sprays if sulfur residues are present on the crop.

Eradication of Hemp Russet Mites. Once established in an active growing area, hemp russet mite will be extremely difficult to eradicate, although should be somewhat simpler than for twospotted spider mite. Disinfestation requires that there be extended period during which no host plants are present. As *Cannabis* is the only host plant of the hemp russet mite and survival of the mites off the plants is short (a couple of weeks maximum), eradication should be possible with a sufficient host free period.