

THE HEMP RUSSET MITE

AND THE POTENTIAL DAMAGE TO CANNABIS PLANTS

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The Hemp Russet Mite (HRM), *Aculops cannabicola*, has the potential to become a very damaging pest in cannabis. HRM feed on leaves, petioles, flowers and meristem tissue. This may include trichomes. They usually aren't noticed until damage has occurred. The first sign of damage is curling of the leaf edges. HRM can be seen with a 20X hand lens (with practice) or greater magnification. A devastating infestation can be seen without magnification. When populations explode, trichomes become discolored and flowers stunted. High populations will decrease resin and phytochemical production causing low yields and poor potency testing results.

DESCRIPTION

These are tiny plant feeding mites belonging to family Eriophyidae (which are not insects). They are golden to translucent colored, cigar shaped, microscopic mites that cause damage and deformity. Another example of a pest eriophyid mite is Grape rust mite, *Calepitrimerus vitis*, which infests wine grapes in the Pacific Northwest. They overwinter in bud scales. During spring, the adults emerge and feed on young tissue causing deformity of young shoots. Grape rust mite is managed in vineyards by carefully timed applications of wettable sulfur as the vines break dormancy. This life cycle description in wine grapes and the resulting eriophyid management technique can be applied to managing HRM in cannabis. *Aculops cannabicola* is best managed when populations are detected early, effective pesticides are

sprayed, and beneficial insects are released. This combination of management techniques significantly decreases the likelihood of crop loss.

HISTORY AND A MYTH BUST

Aculops cannabicola was first described as a new species in Serbia in 1960. During this time, the eggs of HRM were also discovered in a research greenhouse at Indiana University. Recently, HRM has become a significant pest in regulated states where recreational and medical production has been allowed. Growers are often befuddled by the sudden appearance of this pest. A commonly heard myth in the cannabis community is that the government intentionally released Hemp Russet Mites along roadways near cannabis farms. Thirteen species of Eriophyid mites have been evaluated as a vegetation biological control. All releases are of the eriophyid genus *Aceria*. Eriophyid mites are host specific. They prefer certain types of plants and will not infest plants of another genus. Growers find *Aculops cannabicola* infesting plants due to the direct introduction of an infested cannabis plant. Soil may also harbor hemp russet mite.

LIFE HISTORY

More research is necessary to fully understand the life cycle of HRM. Outdoor populations most likely overwinter as eggs on contaminated vegetation and seed. Hemp Russet mites can infest indoor production facilities throughout the year. The optimal life cycle conditions are

30 days in 80 degrees Fahrenheit. The mite population that infested Indiana University's greenhouse may have been imported on seeds from Northern India. HRM can reproduce and damage all cannabis strains. No plant resistance has been detected. Eriophyid mites adults can overwinter in soil.

HEMP RUSSET MITE MANAGEMENT TECHNIQUES

Biological control involves the release or application of natural enemies including parasitoids (parasitic wasps), predators and pathogens (entomopathogenic fungi and nematodes) to regulate an existing pest population. This method is used to address pesticide resistance and residue concerns on specific crops.

Cultural controls are practices that reduce pest reproduction, colonization, movement and survival. An example of a cultural control is irrigating to match the water demand of a plant, thus reducing plant pathogens. Implementing cultural controls is critical for addressing recurring plant health challenges.

Mechanical and physical controls kill a pest directly, block pests out, or make the environment unsuitable. An example of a cultural control is tilling the soil to interrupt rodent mating and prevent establishment in vineyards.

Chemical control is the application of pesticides. A pesticide is a substance or mixture of substances

intended for preventing, destroying, repelling or mitigating a pest. Pesticides are selected and applied in a way that minimizes harm to people, nontarget organisms and the environment.

SCOUTING TO PREVENT PEST INFESTATIONS

Thorough continuous scouting is key to the success of your program. Scout frequently using a hand lens or stereo microscope. Submit well-written reports to qualified consultants and key management to discuss compliant treatment methods.

BIOLOGICAL CONTROL OF HRM

Selecting the correct predatory mite to combat existing HRM populations can reduce the damage and significantly decrease populations. *Neoseiulus californicus*, *Galendromus occidentalis*, and *Stratiolaelaps scimitus* work synergistically to clean up HRM populations. *N. californicus* is used commercially around the world to control the two-spotted spider mite and eriophyid mites. *Galendromus occidentalis* is also a predator of HRM and reproduces more rapidly than *N. californicus*. The soil predatory mite *S. scimitus* will consume pests in the soil and reduce populations of eriophyid mites in substrate. If you discover a population of HRM during flower and would prefer not to spray, then implementing biological control can save the crop. If you would like to prevent HRM in your crop, introduce these predatory mites at a moderate release rate early in production.

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Electron scan
micrography of
Aceria anthocoptes.
The Russet Mite

Photo by Eric Erbe

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CULTURAL CONTROLS OF HRM

One of the most important pest control steps is to ensure that you begin with clean starts. Carefully inspect plants and, when possible, place plants in a separate quarantine area for a few weeks before introducing them to primary grow rooms. Life stages of many pests, such as HRM, are small and difficult to detect.

HRM and other rust mites can move on wind currents. Keep this in mind in your facility in terms of air movement, both in terms of air coming in and air moving internally. If there are cannabis plants being grown out of doors nearby, it may be good practice to use extra-fine mesh screens or filters on the air being blown in.

Due to the risk of transferring pests, and especially pathogens such as root rot, reusing soil and planting media is not a preferred choice, but definitely don't reuse media without some kind of treatment if you discover HRM. The pest may be able survive in the soil and infest the next crop cycle. Throw away highly-infested plants and associated plant material. Introduction of *S. scimitus* during the initial stages of production may be helpful.

CHEMICAL CONTROL OF HRM

Pesticide selection in cannabis must be very carefully considered. Check the approved list of products in the state where you're cultivating (for Oregon: <https://oda.direct/CannabisPesticides>). Horticulture oil, Sulfur, and PFR 97 (*Isaria fumosa*)

are effectively suppressing populations of this plant pest. Consult with a qualified professional and read the label before applying pesticides.

CONCLUSION

HRM is a potentially severe pest, but with careful planning and monitoring, it can be managed. Due to its legal status, cannabis is far behind its crop peers in agricultural research. This means that we have a great deal to learn about pests like HRM in order to design the best integrated pest management programs possible. With time and determination, the industry can get there.

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