Grasshoppers and RAATs? They’re a great combination

By Scott Schell

Did grasshoppers strip your pastures and yards bare last summer? Maybe you can use RAATs to manage them this year. I didn’t misspell and mean the heady-eyed redrots. I am referring to Reduced Agent and Area Treatments, an integrated pest management (IPM) strategy developed at the University of Wyoming to provide a low cost, effective means of reducing grasshopper infestations to non-damaging levels on rangeland and around farmsteads.

Insecticides Reduced

RAATs is a simple concept, in which the rate of insecticide is reduced from label levels suitable for adult grasshoppers to lower rates that work well on the little nymphs. The amount of insecticide is also reduced as treated swaths are alternated with untreated swaths to take advantage of the grasshopper’s mobility.

RAATs work through chemical control, meaning grasshoppers are killed in treated swaths and as they move out of untreated swaths, and consequent biological control, which allow the regrowth of vegetation and predators preserved in untreated swaths to continue to prey on grasshoppers.

This integrated pest management (IPM) approach can reduce the cost of control and the amount of insecticide as compared to traditional blanket treatments by more than 50 percent. Eradication of grasshoppers is not the goal of this IPM strategy. Some grasshoppers after treatment as a food source for other animals keeps the environment healthier and more in balance in the long term. Less insecticidal in the environment lowers the risk to non-target species like fish, wildlife, and humans.

The untreated swaths provide a refuge for organisms lower mobility than grasshoppers, and even those insects that move into the treated swaths will be largely unaffected unless they feed on treated foliage.

Treat the nymphs

The key to success with RAATs is determining when pest grasshoppers start to hatch in the spring and then treating them while the nymphs are still less than 1/4 inch long. RAATs can be done by air, ground, and with sprays and bait. Of the current products registered for grasshopper control, Dimilin 2L has ideal properties for successful RAATs programs and reducing impacts on non-target animals. It only kills immature insects that eat the treated foliage by interfering with the production of chitin. Chitin is only found in insects and other arthropod exoskeletons.

Dimilin 2L is the least toxic of currently registered compounds and is applied at the lowest dose to take advantage of grasshopper nymphs in the most vulnerable stage of growth.

Early planning, organization, and survey is critical to preventing the devastating late-summer damage grasshoppers can inflict.

Joining with neighbors and visiting with local University of Wyoming Cooperative Extension Service (UW CES) educators, county weed and pest control district officials, and licensed applicators planning and applying RAATs IPM strategies will be the best way to prevent grasshopper problems from happening.

UW CES county contact information is at http://ces.uwyo.edu/Counties.asp. Wyoming weed and pest control district contact information is at www.wyoweed.org/addresses.htm.

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Correct identification of insect order important for pest control

By Sandra Frost

About 1 million insect species have been described by scientists. More than 80,000 of them are in North America, and between 10,000 and 15,000 are in Wyoming. Less than 1 percent of all insect species are serious pests that affect humans, their animals, crops, structures, or fibers.

Scientists distinguish among living organisms based on kingdom, phyla, class, order, family, genus, and species. The insect class is in the animal kingdom, Arthropoda phylum. The class of insects is divided into orders based upon broad characteristics such as mouth parts or life cycle. A successful pest control strategy is based upon correct identification at the order level because pest control strategies commonly target an insect that eats in a particular way or a particular, vulnerable stage of growth. An insect may have either a simple or complete metamorphosis life cycle. A simple life cycle is

Order Diptera

Diptera (flies, mosquitoes, gnats, midges) – Species in this order undergo complete metamorphosis. Larvae may have chewing mouthparts or mouth hooks. Species with mouth hooks are called maggots. Adults have one pair of wings. They have either sporing or piercing mouthparts. Members of this order may be pests (such as mosquitos or sugar beet root maggot) or beneficial insects (such as parasitic flies that control pests).

Order Homoptera

Homoptera (bees, ants, wasps, sawflies, hornstails) – These insects undergo complete metamorphosis. Adults and nymphs are both piercing mouthparts. Take an insect sample for identification. Life cycle, mouth parts, and wings are useful characteristics for identification.

Order Coleoptera (beetles, weevils) – These insects undergo complete metamorphosis. Larvae are worm-like. Adults have chewing mouth parts and two pairs of wings. The outer pair of wings is hardened. Pest species include blister beetles, Mexican bean beetle, wireworms, fleas beetles, and western corn rootworm.

Order Dermaptera (earwigs) – These insects undergo simple metamorphosis. Mouthparts are the chewing type. They have short, hardened outer wings and folded, membranous inner wings.

Diptera (flies, mosquitoes, gnats, midges) – Species in this order undergo complete metamorphosis. Larvae may have chewing mouthparts or mouth hooks. Species with mouth hooks are called maggots. Adults have one pair of wings. They have either sporing or piercing mouthparts. Members of this order may be pests (such as mosquitos or sugar beet root maggot) or beneficial insects (such as parasitic flies that control pests).

Hemiptera (stinkbugs, plant bugs, squash bugs, boxelder bugs) – Metamorphosis is simple in this order. Adults have piercing-sucking mouthparts and two pairs of wings. Adults and nymphs are both damaging in pest species (lygus bug in seed alfalfa). Some species (such as damsel bugs), however, are predators of harmful insect pests (such as aphids).

Homoptera (scale, mealybugs, whiteflies, aphids, leafhoppers) – These insects undergo simple metamorphosis. Nymphs resemble small adults and molt four to five times as they grow into adults. Adults have two pairs of wings. Mouthparts are the cutting and chewing type. Grasshoppers that damage crops include leafhoppers, spodopter alfalfa aphid, and Russian wheat aphid.

Hymenoptera (bees, ants, wasps, sawflies, hornstails) – These insects undergo complete metamorphosis. Adults and nymphs are both piercing mouthparts. Take an insect sample for identification. Life cycle, mouth parts, and wings are useful characteristics for identification.

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