



Inside Ag

June 2012

Shifting Russian Knapweed Biocontrol into High Gear



Russian knapweed is a widespread invader of grazing lands, crop lands, roadsides and riparian corridors. The plant is a 2-3 foot tall perennial with pink to lavender flowers and an extensive and branching root system. Dense stands of Russian knapweed crowd out native vegetation and the foliage is toxic to horses. The USDA recently approved the release of a gall midge, *Jaapiella ivannikovi*, for the control of Russian knapweed.

The gall midge is a fly that lays eggs in the growing shoot tips of Russian knapweed. After a few days the shoot tips stop growing and expand to form a gall, which is made of layers of unopened leaves that form a protective home for developing midge larvae. The larvae feed on the plant while protected within the gall. Mature larvae pupate and eventually emerge as adult flies which are smaller than a common fruit fly. The gall midges can have several generations per season and they have overwintered successfully at sites in Wyoming as well as in the Palisade Insectary garden.



The Colorado Department of Agriculture, in collaboration with the USDA-APHIS-PPQ in Fort Collins, has been rearing and distributing galls in Colorado since 2011. County weed managers, the BLM, the NRCS, Colorado Parks and Wildlife and private landowners have all helped us locate good release sites throughout the state. In 2012 we have already made releases at 12 locations in Montezuma, Delta, Mesa, Garfield and Alamosa Counties with additional releases planned for the Arkansas River Basin, the San Luis Valley and the Dolores River drainage. Releases are made by cutting live galls from knapweed plants and keeping the stems in water to keep them fresh. Adult flies can then emerge from the galls and seek new Russian knapweed shoots to lay eggs in.

Studies have shown that gall formation greatly reduces flowering by the knapweed and plant growth is also stunted. The midges are not likely to bring about complete control of the knapweed but they may reduce seed production and plant vigor. Given the huge problem that knapweed presents anything that slows the plant is good news for weed managers. Our goal at the Palisade Insectary is to get the midges established throughout Colorado and monitor the impact of midges at selected sites. Other biocontrol agents are being developed by the USDA and these may eventually be added on top of the midges for a "one-two" punch.

Photo 1: Russian knapweed in bloom in our "knapweed garden" in Palisade.

Photos 2: A Russian knapweed gall fly.

Photo 3: Steve Anthony, Garfield County weed manager, and Daniel Shaw, NRCS Glenwood, release knapweed gall midges at the Eagle Springs Organic Farm above Rifle.

