

The Huerfano County Noxious Weed Department is tasked with the control of Colorado state listed noxious weeds within their jurisdiction and to assist landowners with the control and containment of non-native invasive plant species. One of the most aggressive and damaging in Huerfano County is *Cirsium arvense* a.k.a. Canada thistle. This perennial which is native to southeastern Europe and the eastern Mediterranean areas is notoriously difficult to control and infests nearly a half of a million acres in Colorado alone. Here in Huerfano County it is widespread with the greatest densities occurring in the Gardner\Red Wing area, La Veta and most riparian areas. First introduced in the 1700's as a contaminant in imported livestock feed, it continues to invade new areas in much the same way it was introduced. Overgrazed and disturbed sites are prone to infestations which aid in the colonization of healthy neighboring lands. Once established Canada thistle is capable of crowding out desirable vegetation by competing for light, nutrients, moisture and precludes the growth of other plants through its allelopathic properties. Heavy infestations can reduce native grass production in pastures by as much as 60% and yield losses of over 48% in alfalfa fields.¹

While newer generations of herbicides can provide improved control of Canada thistle, they generally have limited success and can prove to be cost prohibitive. Often Canada thistle colonizes areas that are environmentally sensitive and chemical treatments are not an option. The time proven mechanical and cultural control options that have proven very effective on other types of noxious weeds may actually contribute to the overall spread of this invader due to its extensive creeping root system that can clone itself from individual root fragments and that can be stimulated by removal of above ground growth. Each plant is capable of producing over 5,000 seeds each year that are capable of residing in the soil for over 20 years, awaiting favorable growing conditions.

Given these aggressive traits, local and state weed managers are exploring alternative methods for control. One of the most promising is the host specific biological control *Puccinia Punctiformis*. Also known as Canada thistle rust fungus, it has received a renewed interest and has become better understood since it was first introduced as a biological control in 1893. The fungus is present in all states that Canada thistle resides, and was most likely introduced with the first Canada thistle to arrive in the 1700's. The Colorado Department of Agriculture and the Palisade Insectary have been researching and developing methods on the successful introduction and establishment of rust fungus in Canada thistle colonies and have learned how to best harness the thistle destroying epidemic qualities of *P. Punctiformis*.

Recently Huerfano County has employed this biological control through the help of the Palisade Insectary and the Colorado Department of Agriculture. Huerfano County staff inoculated a large colony of Canada thistle in late September and will be monitoring the site for signs of systematically diseased plants this coming spring. By introducing the rust fungus in the fall, it allows the host plants to have the greatest degree of susceptibility to infection by mimicking the natural process of disease proliferation. Should conditions be favorable for establishment of the rust fungus, it will move to the root system of infected plants as above ground growth dies with the onset of winter. As spring arrives, systemically diseased shoots rise from the large underground network of roots and start to exhibit the tell tale signs

¹ Columbia University-Introduced Species Summary Project

of infection; spindly stems, curled leaves, an unusually sweet aroma, and a layer of red rust fungus on the underside of leaves. These symptoms ultimately give way to the death of the infected plant and aid in the continuance of the epidemic within the colony and beyond. Generally, biological controls are not capable of totally eradicating weed populations given the symbiotic relationship that the host plant and the given natural enemy (usually an insect) share. However, the pathogenic properties of *P. Punctiformis* have resulted in near total eradication of certain Canada thistle test sites and can yield exceptionally high control rates when compared to other biological control methods that only provide around 28% sufficient control.² Trials conducted by the Colorado Department of Agriculture have demonstrated success rates as low as a 45% reduction of thistles over five years to a reduction of 100% in 18 months.³ In areas where the rust fungus can be established, spore laden plant material can be collected and used on other sites to aid in the spread of *P. Punctiformis*.

Huerfano County will continue to expand and develop the tools and methods needed to combat the ongoing invasion of the over 70 state listed noxious weeds, and aid landowners in the development of management plans for the upcoming year. Interested landowners may contact the Huerfano County Noxious Weed Department at 738-2420, or by e-mail at cbryant@huerfano.us for more information on this and any other weed control related issues.



Photo Courtesy of Steve Conway, Penn State

² Weed Research and Information Center-University of California

³ Colorado Department of Agriculture