

I appreciate your intention of always minimizing the use of chemicals when developing an invasive plant management plan, as pesticides destroy soil microbiome health. In the context of the climate crisis, we need to protect the soil microbiome to retain water, sequester carbon, and support biodiversity and native plants. For more information on this topic you can refer to the documents referenced below.

Removing seed heads and/or fruiting bodies from invasive plants before they go seed is indeed a very effective practice to reduce the invasive plant seed bank over a small area.

On larger areas, targeted goat grazing is an approach that has been successfully implemented elsewhere in Colorado. [Goat Green LLC](#) offers an inspirational example of successful pesticide-free weed management and fire mitigation. You can watch the inspiring presentation “[Using Goats for Habitat Restoration on Public lands](#)” by Hilary Boyd, a wildlife biologist at the BLM Colorado River Valley Field Office. The Roaring Fork Transportation Authority also uses the goats from Goat Green LLC along the Rio Grande Trail to manage weeds. The [video](#) presents their efforts and goals. To address the disease transmission from goats to bighorn sheep, Hilary Boyd, the wildlife biologist of the BLM Colorado River Valley Field Office, and Colorado Parks and Wildlife agreed that the herder will stay with the goats. The goats do not roam freely, but are lead by the herders and directed by electric fences to weed infested areas to avoid damaging the native vegetation. Additionally, goats are browsers. They prefer to eat brush and weeds rather than grass. Follow up treatments are obviously critical to consistently reducing the weed seed banks. Over time targeted goat grazing can remove weeds and also return the land to a healthy and natural ecosystem, a requirement for carbon sequestration in the soil. Barely any seeds survive the digestive system of goats. This is demonstrated in the research paper “[Recovery and viability of seeds ingested by goats](#)”.

In our highly fire adopted ecosystem, prescribed burns can reduce cheatgrass infestation and favor native plant recovery, as shown in the [presentation](#) “Fire, Cheatgrass, Mammals, Birds, and Butterflies - A Study of Ecosystem Interaction” during the Boulder County [Parks & Open Space Advisory Committee](#) meeting of December 16, 2021. These results are confirmed by the research papers referenced below.

Please don't use toxic chemicals to control weeds when we have approaches that can address the weed problem and also restore the health of our ecosystem, including the soil microbiome. In the context of the climate crisis, we urgently need healthy soil to absorb water and carbon.

Thank you for your time.

Best,
Christel

Documents regarding the impact of herbicides on the ecosystem and the soil microbiome

[Adverse impacts of Roundup on soil bacteria, soil chemistry and mycorrhizal fungi during restoration of a Colorado grassland](#)

[Weed killer use destroys Soil Life and Ecosystem, paper finds](#)

[Indaziflm controls nonnative Alyssum spp. but negatively affects native forbs in sagebrush steppe conducted in Yellowstone area](#)

Research papers regarding cheatgrass control and fire

[Seeding native species increases resistance to annual grass invasion following prescribed burning of semiarid woodlands](#) demonstrates an increased resistance to cheatgrass invasion after fire on higher elevation plots

[Spatial Variation in Postfire Cheatgrass: Dinosaur National Monument, USA](#) identified increased altitude, increased fire severity, and increased post-fire soil moisture as factors decreasing cheatgrass return after fire

[Prescribed Burning in the Northern Great Plains: Yield and Cover Responses of 3 Forage Species in the Mixed Grass Prairie](#) consistently observed decreases in cheatgrass density regardless of burn timing

[Fire Rehabilitation Using Native and Introduced Species: A Landscape Trial](#) and [Long-Term Vegetation Recovery and Invasive Annual Suppression in Native and Introduced Postfire Seeding Treatments](#) show that reseeded native vegetation after fire can effectively control invasive species, including cheatgrass