



Rocky Mountain Research Station

Exotic Invasive Weeds

FY 2009 President's Budget

ISSUES

Exotic species invasions threaten the ecological integrity and biological diversity of ecosystems around the world. In the West, weeds are among the greatest exotic threats. There is a critical need to improve weed management to preserve natural resource productivity and ecosystem services.

IMPORTANCE

Exotic species invasions cost the U.S. \$120-\$137 billion each year due to reduced land productivity and ecosystem services in addition to high suppression costs. Better management can greatly decrease these ecological and economic impacts.

PROPOSAL

Exotic species management is like human medicine. Medical treatments, such as drugs and surgery, have side effects. The objective in medicine is to match the appropriate treatment with the correct diagnosis to improve the patient's condition while minimizing adverse side effects. Similarly, in managing exotic species invasions, we need to maximize the efficacy of our tools while minimizing their negative side effects. To accomplish this, we must (1) accurately diagnose the invaders' impacts and the underlying processes that facilitate its impacts, and (2) understand the benefits and negative side effects of our tools in order to make effective prescriptions for success.

We have initiated a comprehensive research program to (1) elucidate the causes and outcomes of exotic weed invasions to improve diagnoses, and (2) evaluate the efficacy of management tools to ensure favorable outcomes.



Research plots with automated precipitation covers to study effects of climate change on weed invasion and biocontrol.

EXPECTED OUTCOMES

- Improve weed biological control through advanced understanding of agent efficacy.
- Develop guidelines to improve broadleaf herbicide applications for mitigating weed impacts and restoring vegetation by reducing side effects on native and desirable species.
- Examine effects of climate change (altered precipitation dynamics) on exotic weed invasion and efficacy of biological control.
- Quantify long-term effects of fuels management on weed invasion and develop herbicide and reseeding techniques to mitigate side effects.
- Identify and develop native seed mixes for application following other weed management approaches to increase system recovery.
- Develop a framework for integrating research findings with management applications for better technical information transfer, and disseminate through workshops and websites.