

FY 11 Project Progress Report

Rocky Mountains Cooperative Ecosystem Studies Unit (RM-CESU)

Project Title: *Develop Prescriptive IPM Control Plan for Field Bindweed at Grant-Kohrs Ranch National Historic Site*

Project Code: J1242110003 UMT-250

Type of Project: Technical Assistance

Funding Agency: National Park Service

Partner University: University of Montana

NPS Agreement Technical Representative: Christine Ford, Grant-Kohrs Ranch National Historic Site, Integrated Resources Program Manager, 406-846-2070 ext 242.

Chris_ford@nps.gov

Principal Investigator: Peter Rice, 32 Campus Drive #4824, Division of Biological Sciences, University of Montana, Missoula, MT 59812-4824; voice: 406-243-2671; fax: 406-243-4184; peter.rice@mso.umt.edu

Start Date of Project: February 23, 2011

End Date of Project: December 31, 2014

Funding Amount: \$5,000

Project Summary,:

The primary goal of this technical assistance proposal is develop effective Integrated Pest Management (IPM) methods for control of field bindweed so that culturally significant vegetation representative of the Grant-Kohrs Ranch's entire history and legacy of land use will be retained and preserved. The proposed scope of work and deliverables included:

1. Conduct a literature review for field bindweed
2. Evaluate herbicide labels and gray literature relevant to control of field bindweed
3. Interview university, agency, and industry scientists currently working on field bindweed management
4. Establish demonstration plots for at least two IPM approaches with pre and post treatment monitoring
5. Prepare a written report with IPM guidelines for long term management of field bindweed and maintenance of culturally significant forage legumes and perennial grasses

To date, items 1-3 on the proposed scope of work have been completed, and item 4 has been initiated. The following is a summary of the literature review and work completed:

Suppression of field bindweed in mixed alfalfa-grass hay is among the most difficult problems in weed management. Rate selective herbicides comprise three broad classes. They can control

all types of plants, they control broadleaf plants, or they control grasses. Most broadleaf herbicides that suppress bindweed are likely to injure if not kill the alfalfa. Quinclorac (Paramount or Quinclorac SPC 75 DF) should be highly efficacious on the field bindweed; but it will eliminate any remnant alfalfa in the stand. Imazapic (Plateau) is an exception in the class of broadleaf herbicides in that legumes, including alfalfa, are tolerant of this chemical. However field bindweed is in large part difficult to control because it regrows from an extensive system of rhizomes. High rates of imazapic are necessary to kill these bindweed rhizomes but these higher rates can also cause significant grass injury. The possibilities for metribuzin (Metribuzin 75) are also confounded. There is ambiguity in the label and literature about the degree of bindweed efficacy obtained by metribuzin alone as opposed to multiple herbicide tank mixes with a broader spectrum of kill. And, as with imazapic, there may be an intermittent grass injury response with higher rate of metribuzin. Each of these three herbicides would alter the competitive interactions between the bindweed, alfalfa, and perennial grasses. Short term grass injury by imazapic or metribuzin may release in-situ alfalfa. Accordingly we are testing treatments that will significantly injure if not kill the bindweed, create intermittent grass injury that could allow remnant alfalfa to increase, and/or create an opportunity for post-spray inter-seeding of new alfalfa.

On October 20, 2011 a trial using these three herbicides was implemented. Three plots, each 20 x 60 feet, were sprayed with each of these three herbicides. The rates were in the higher range what is allowed by the label; but with consideration to constrain the degree of expected grass injury from imazapic and metribuzin. Three no-spray control plots were included in the experimental design. Response of the various species on all 12 plots will be first evaluated in summer 2012.

Number of students participating in this project: undergraduates, graduate students, degrees conferred.

Peter Rice – Division of Biological Science, University of Montana