Webinar Brief for Resource Managers

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Effects of Imazapic over Four Years Post-Treatment

To Be Presented on 26 March 2014 by Eugene Schupp, Professor of Plant Population Ecology, Utah State University

Project Summary (2-3 sentences): I present preliminary results of vegetation responses to fuels treatments in the sagebrush/cheatgrass network of SageSTEP. Prescribed fire, mow, and tebuthiuron treatment responses are addressed, but the emphasis is on responses to imazapic.

Abstract (250 word minimum): As part of the region-wide SageSTEP project we have followed vegetation responses to a series of fuels reduction treatments across the 7 sites in the sagebrush/cheatgrass network (spanning Utah, Nevada, Idaho, Oregon, and Washington) for 4 years post-treatment. At the whole plot level treatments were 1) prescribed fire with an attempt to blacken 100% of the plot, 2) tebuthiuron at a rate calculated to chemically thin shrub cover by about 50%, 3) mow with a blade height set to mechanically remove about 50% of the shrub cover, and 4) an unmanipulated control. At the subplot level we applied imazapic herbicide to half of the permanently monitored subplots in each whole treatment plot. In addition to reducing fuel loads, these treatments were predicted to result in competitive release and increased cover of desirable perennial herbaceous understory and increased resistance and resilience of the ecosystem. Although we address whole plot treatment effects, the emphasis in this presentation is on imazapic, a pre- and post-emergent herbicide that is thought to be especially effective at controlling annual weeds such as cheatgrass. Fire decreased cover of perennial tall grasses 1 year post-treatment, but by 4 years post-treatment the grass cover was greater in prescribed fire, mow, and tebuthiuron plots than in control plots. However, these treatments also had greater cover of exotic annual forbs. In contrast to the tall grasses, *Poa secunda* cover was reduced for at least 3 years post-fire. Imazapic greatly reduced cover of cheatgrass and exotic annual forbs for 4 and 3 years post-treatment, respectively. However, it also reduced the cover of native annual forbs, perennial tall grasses, and *P. secunda* for at least 3 years post-treatment. Imazapic did not affect perennial forb cover.

Management Implications

- Imazapic reduced the cover of cheatgrass and exotic annual forbs, potentially opening a window of reduced competition that could benefit establishment of new plants and growth of existing plants.
- However, imazapic had undesirable consequences as well, reducing cover of native annual forbs and native perennial grasses for at least 3 years.
- Fire, mow, and tebuthiuron all resulted in increased perennial grass cover 4 years post-treatment

Most Relevant References:

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Morris, C., T. A. Monaco, and C. W. Rigby. 2009. Variable impacts of imazapic on downy brome (*Bromus tectorum*) and seeded species in two rangeland communities. Invasive Plant Science and Management 2: 110-119.

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