



# WILDFLOWER SEED PRODUCTION



## INTRODUCTION

There is great interest in incorporating native wildflowers into seed mixtures for conservation plantings and disturbed land revegetation projects. Despite this interest in restoring the rangelands of the Intermountain West with native forbs, and unlike the marketing of non-native species by the commercial floriculture industry, wildflower seed producers need to gain scientific knowledge for the successful production of native seeds. In particular, assessing weed management approaches including testing wildflower species tolerance to pre- and post-emergence herbicides and responses to weed-competitive interactions represents a necessary step to facilitate the successful establishment and seed production of native wildflowers. This study is being conducted under greenhouse and field conditions to assess establishment capabilities and management needs in two contrasting environmental conditions. The goal of this study is to evaluate the effectiveness of different weed management practices on the establishment, growth, and seed production of five native wildflower species.

## MATERIALS: GREENHOUSE & FIELD



Ratibida columnifera



Phacelia hastata



Dalea candida



Gaillardia aristata



Penstemon eriantherus

Trade name	Active Ingredient	Mode of Action	Rate greenhouse and field
Prowl®	pendimethalin	Microtubule assembly inhibitor	4.2 liters/ha
Treflan™	trifluralin	Microtubule assembly inhibitor	20 gal/acre
Plateau®	Imazapic	ALS inhibitor	560 g/ha
Permit®	Halosulfuron	ALS inhibitor	91 g/ha
Lorox	Linuron	Inhibits photosynthesis in ps 2	1.121 kg/ha
Control	-	-	

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## METHODS: GREENHOUSE

Fifteen to twenty days after spraying, plant survivorship and leaf injury was estimated. Leaf injury was recorded as percent damaged relative to the control. Plants were harvested 30 days after spraying and fresh weights and dry weights were recorded. Dry weight were obtained after a 48 hour drying period at 105 C.

## METHODS: FIELD

In this experiment conducted under two contrasting environmental conditions, wildflower species are the main plot factor and herbicide treatments the split-plot factors. Each split-plot is further subdivided into hand weeded and non-weeded split-split plots. Control plots were not treated with herbicide or weeding and there is a treatment with just hand weeding and no herbicide applied. During the summer and fall of 2007 wildflowers were evaluated four times throughout the growing season for wildflower seedling emergence as well as herbicide damage. Within each sampled area, wildflower seed production was obtained at the end of the growing season. Number of seeds per plant along with seed weight and viability were obtained.

## RESULTS: GREENHOUSE

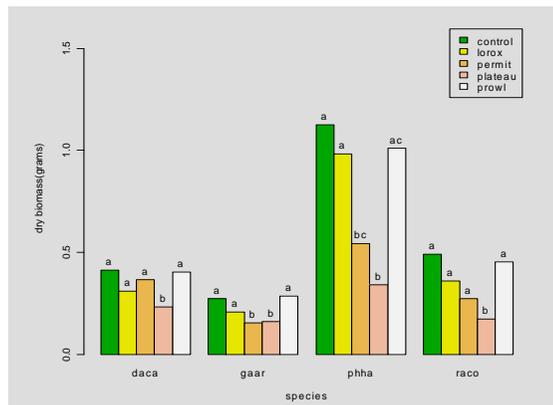


Figure 1. Dry weights by species

## RESULTS: FIELD

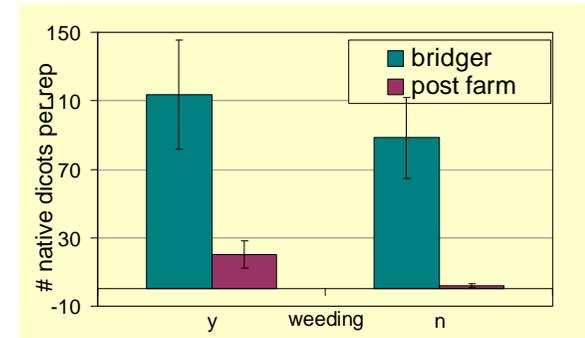


Figure 2. Number of plants established in no herbicide hand weeded control plot

Gaillardia-control



Gaillardia-imazapic



## CONCLUSIONS

- Results so far are indicating that under field conditions herbicides are affecting wildflowers differently than they are in the greenhouse
- Weed seed bank composition and density play a critical role in wildflower establishment and yield
- Herbicides tested may significantly damage wildflowers
- Hand weeding contrasted with herbicide will elucidate the most economically viable option for management of these species
- Climate and seed source may be playing an important role in establishment