Progress Report to Willapa National Wildlife Refuge 2006
SPARTINA SEED VIABILITY AS A FUNCTION OF HERBICIDE TIMING.

Kim Patten, Carol O'Casey and Chase Metzger
WSU Long Beach Research and Extension Unit
2907 Pioneer Road, Long Beach WA 98631
pattenk@wsu.edu

Introduction.
Late application of herbicides to control Spartina may result in treatment efficacy in terms of Spartina control, but may not prevent viable seed production. A study was conducted in 2005 to determine the effect of herbicide timing on efficacy and seed viability.

Methods.
Habitat at 5pt/ac, Rodeo at 5% and Habitat 5pt/ac plus Rodeo 3% were sprayed at three times during anthesis/seed set (August 24, 2005, September 7, 2005, or September 21, 2005). Treatments were applied at 100 gpa on 3 replicated plots (7'x10') at Leadbetter State Park. Competitor @ 1% was used as a surfactant for Habitat and Habitat + Rodeo, and Agridex @ 1% was used for Rodeo. Seeds were collected in October and germination measured on ~ 2000 seeds per plot using standard procedures for germination of Spartina. Efficacy was rated in March 2006 for regrowth.

Results.
Main effects means indicated that the least germination occurred with Habitat and the most with Habitat + Rodeo, and the percentage of germination increased the later the treatments were applied. There was an interaction between herbicide and treatment date for percentage germination. Habitat by itself suppressed germination on August 24 and September 7, while other treatments were only effective for the first spray date.

Conclusion.
Any herbicide application beyond late August is likely to result in significant viable seed production, regardless of the herbicide treatment. Control of Spartina with herbicides sprayed after mid-September is reduced compared to mid-August or early September. Rodeo by itself is less effective than Habitat or Habitat + Rodeo. A combination of Habitat + Rodeo might be a better treatment late season treatment than Habitat alone.

Main effects means of seed germination

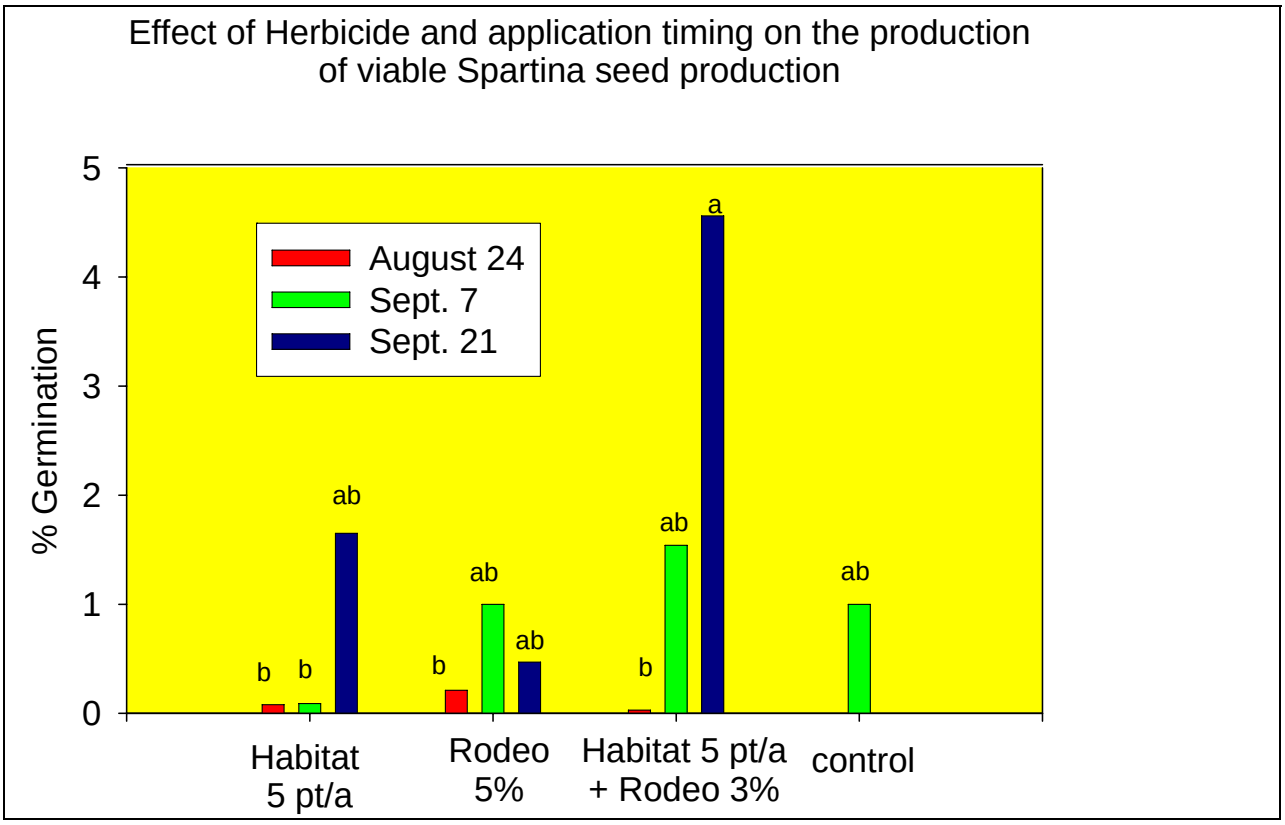
Herbicide	% germination
Habitat	0.1
Rodeo	0.87
Habitat + Rodeo	2.22
Main effect treatment significance level	0.06

Date of application	% germination
August 24	0.2
September 7	0.4
September 21	1.2
Main effect treatment significance level	0.02

Interaction between herbicide and date of application significant at 0.04% level

Herbicide efficacy in year following treatment.

Herbicide	% Control March 2006
Habitat 8/24	100 a
Habitat 9/7	100 a
Habitat 9/24	73 c
Habitat + Rodeo 8/24	99 a
Habitat + Rodeo 9/7	100 a
Habitat + Rodeo 9/24	90 b
Rodeo 8/24	70 c
Rodeo 9/7	77 c
Rodeo 9/24	66 c


Effect of Herbicide and application timing on the production of viable Spartina seed production
% Germination
0
1
2
3
4
5
August 24
Sept. 7
Sept. 21
b
b
ab
b
ab
ab
b
ab
a
ab
Habitat 5 pt/a
Rodeo 5%
Habitat 5 pt/a + Rodeo 3%
control