Horseweed (*Erigeron canadensis*) Growth Stage Response to Herbicide Technologies

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Horseweed (*Erigeron canadensis* L.Cronq)

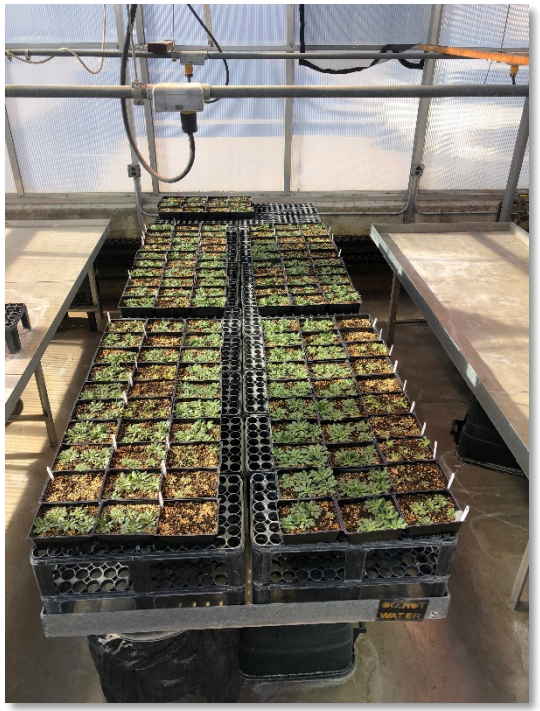
https://ag.purdue.edu/btny/ppdl/Pages/POTW_old/7-14-03.html

- Life Span: Winter or summer annual
- Emergence periods
  - Typically late March-June, Late summer-late fall
  - Can emerge year around with a rain or irrigation period
- Flowering
  - Starts in July
  - ~ 95% of florets are self pollinated (Bajwa et al. 2016)
- Seed production
  - Shed from late July to the beginning of October
  - 50,000-200,000 in field setting, can produce up to 1 million in non-stressed conditions
  - 1.0 – 1.3 mm long with an average weight of 0.07 mg

Tillage

Greenhouse trial

- Seed was collected in two field sites (8/18/18)
  - Seed was planted into 4 by 6 by 2 in pots
  - Peat based potting media
  - Thinned to 5 plants per pot
- 3 growth stages
  - Early rosette (2 – 3 in)
  - Late rosette (4 – 5 in)
  - Bolting (4 – 5 in)
- 10 herbicide treatments (Table 1)



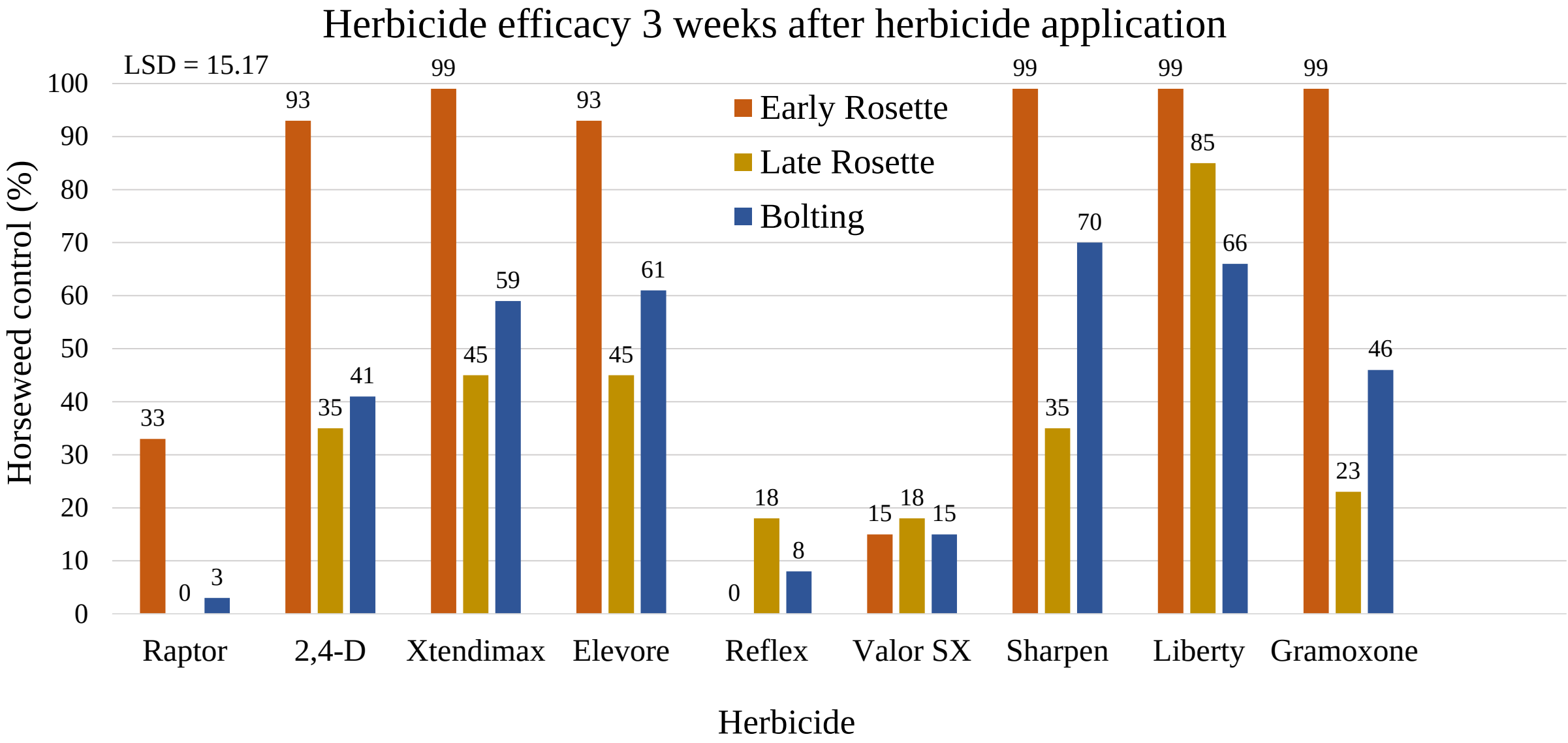
Greenhouse trial cont…

- Evaluation methods
  - Plants were evaluated for visible injury
    - 0 to 100 scale
    - 1 and 3 weeks after application
  - Height was measured and aboveground biomass was collected and weighed for dry weight

Table 1. Herbicide efficacy at each of three growth stages in greenhouse.

Herbicide[a]	Rate
	oz/A
Untreated	-
Raptor + HSMOC	4
2,4-D Amine 4	16.8
Xtendimax	22
Elevore + HSMOC	1
Reflex + HSMOC	11.4
Valor SX + HSMOC	2
Sharpen + HSMOC	1
Liberty 280 SL + AMS-D	39.5
Gromoxone 2.0 SL + NIS	32

[a]Adjuvants: (HSMOC) high surfactant methylated oil concentrate at 16.4 fl oz/A, (AMS-D) ammonium sulfate-dry at 3 lb/A, (NIS) nonionic surfactant at 4.1 fl oz/A.


Herbicide efficacy 3 weeks after herbicide application
LSD = 15.17
Horseweed control (%)
100
90
80
70
60
50
40
30
20
10
0
Early Rosette
Late Rosette
Bolting
33
0
3
93
35
41
99
45
59
93
45
61
0
18
8
15
18
15
99
35
70
99
85
66
99
23
46
Raptor
2,4-D
Xtendimax
Elevore
Reflex
Valor SX
Sharpen
Liberty
Gramoxone
Herbicide

Late rosette 3 WAA

Untreated

Xtendimax

Reflex

Late rosette 3 WAA

Liberty

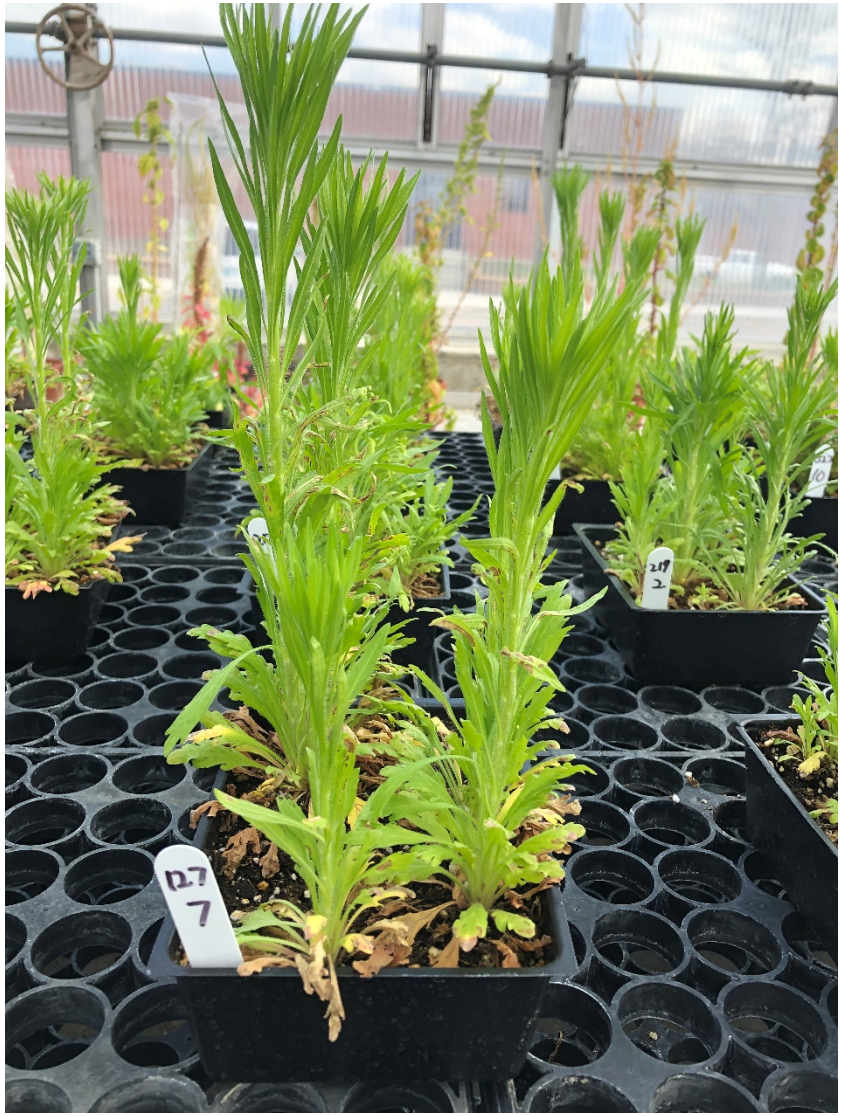
Gramoxone

Sharpen

Bolting 3 WAA

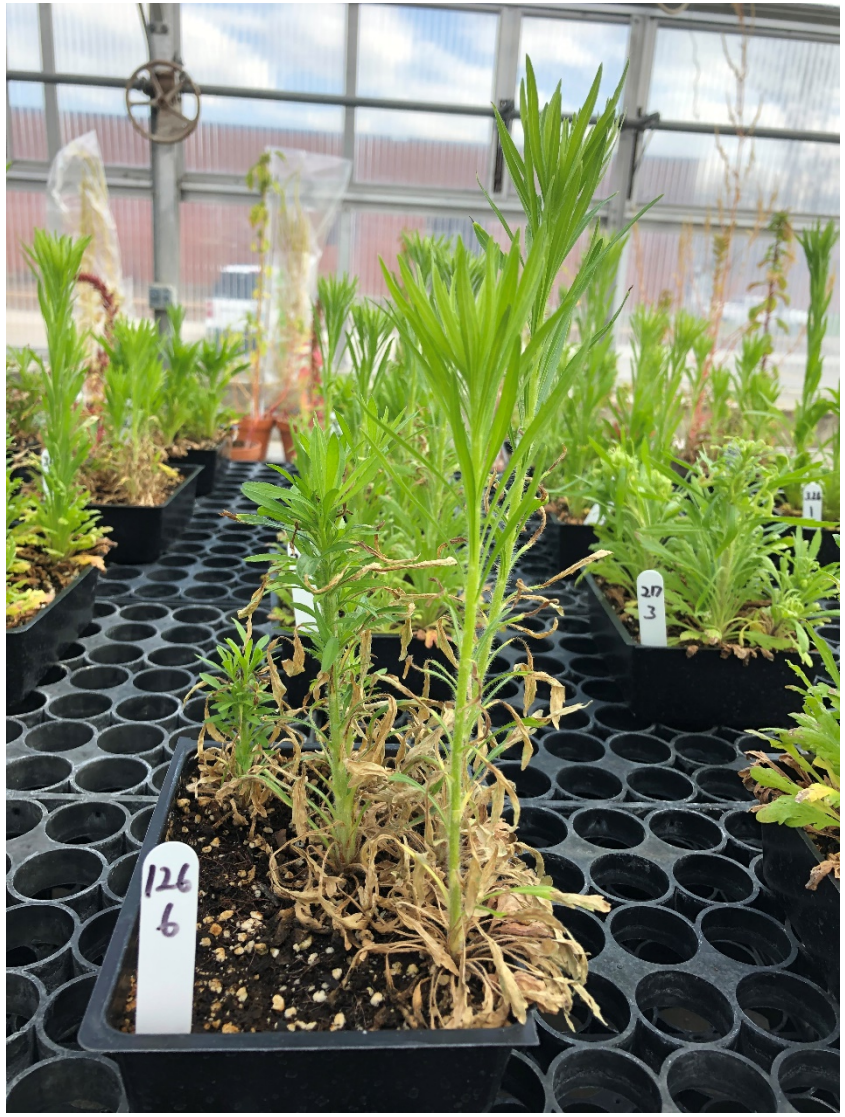
Untreated

Xtendimax

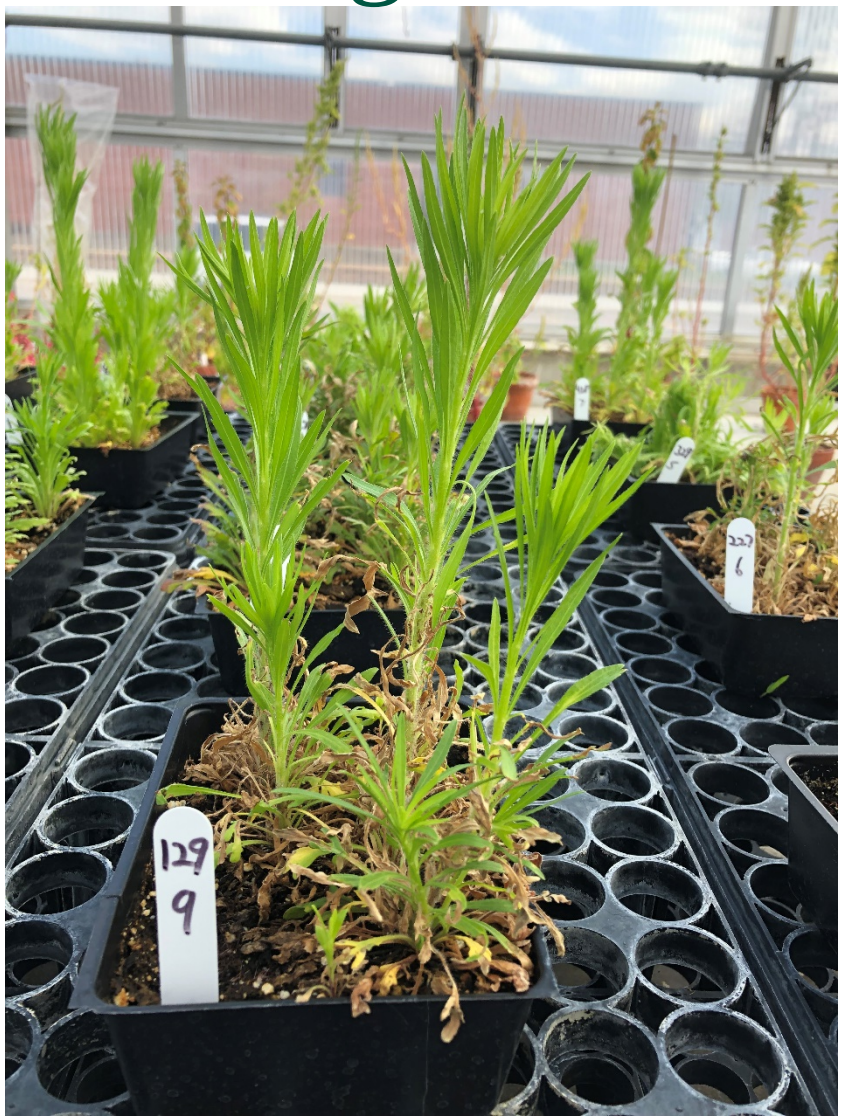


Reflex

Bolting 3 WAA



Liberty



Gramoxone

Sharpen

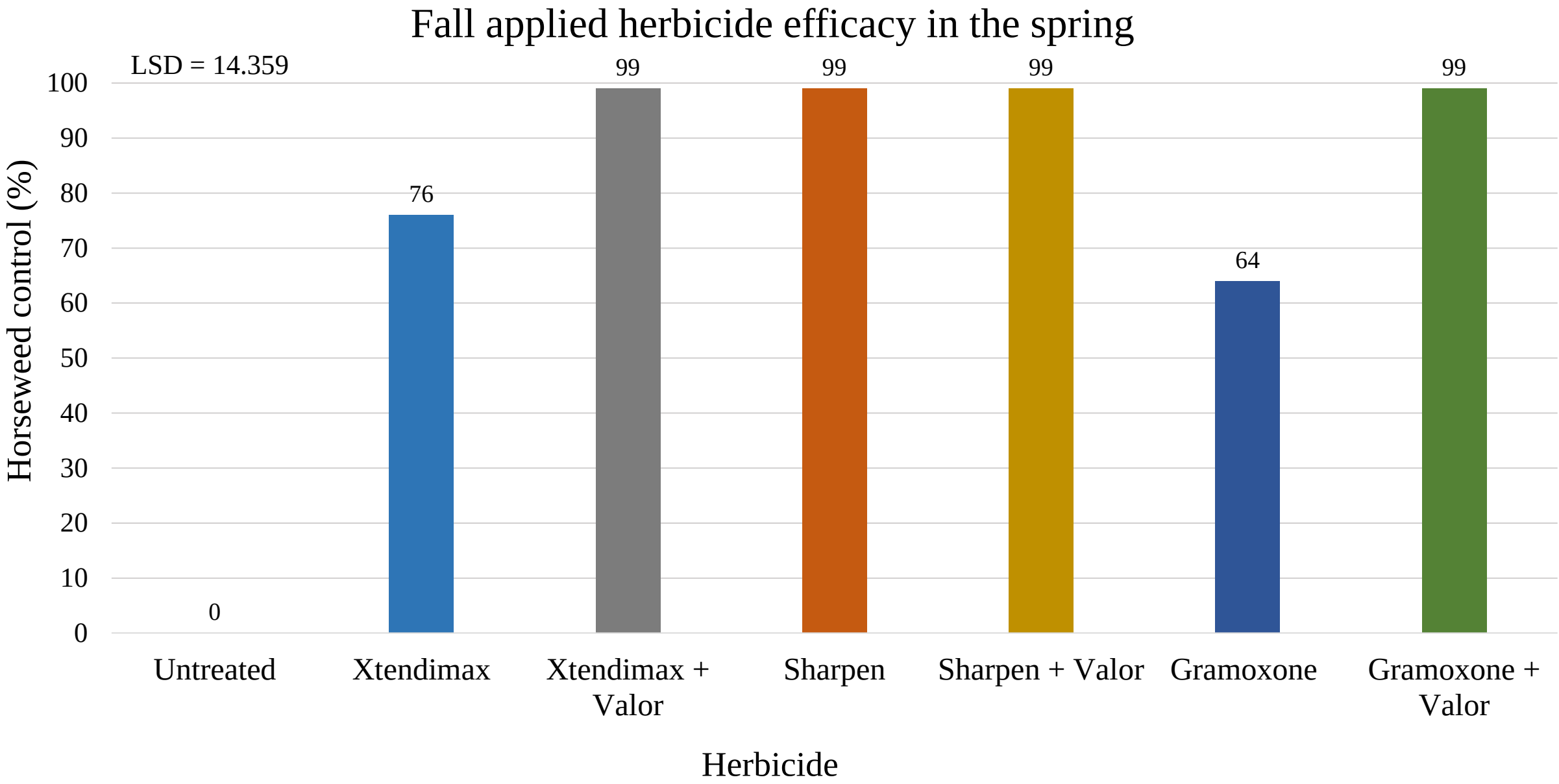
Fall herbicide trial

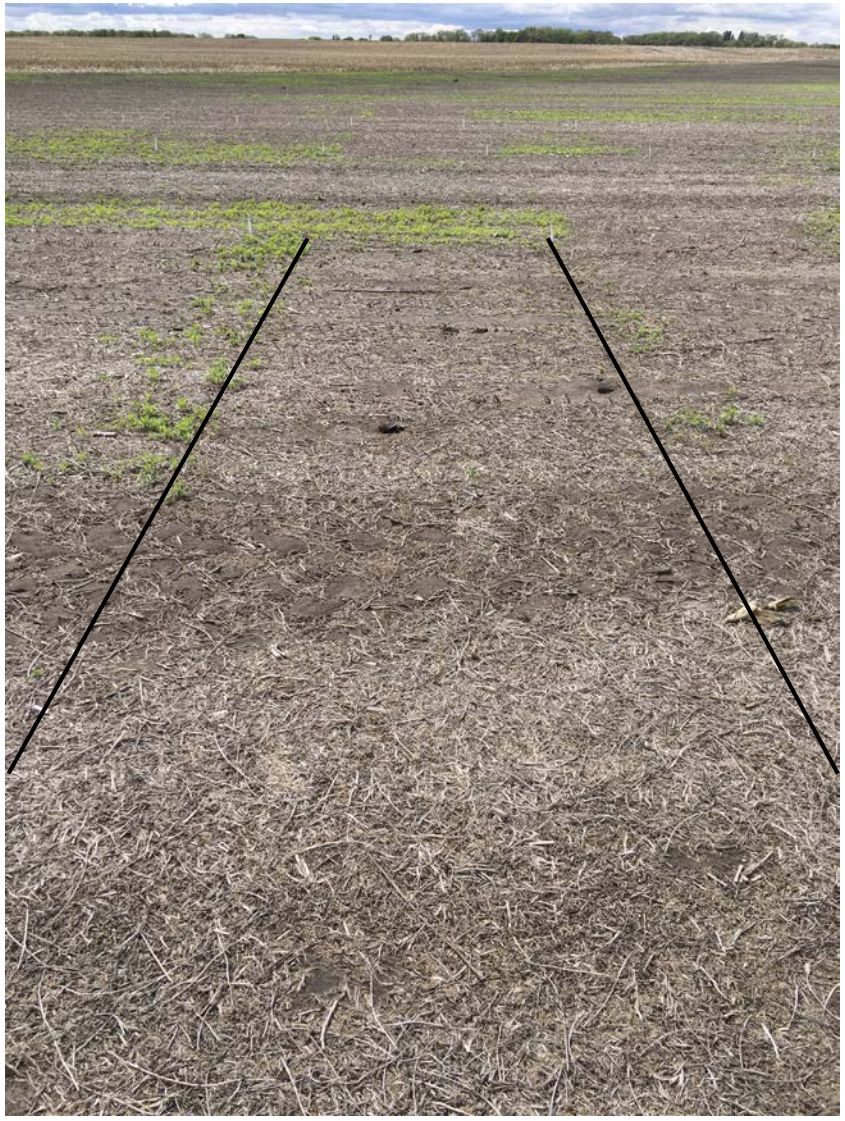
- 1 year of data
- Application timing
  - Late September (Not applied)
  - Late October
- Evaluation methods
  - Fall: Plant density was counted three times per experiment in a 0.25-m^{-2} quadrat
  - Spring: Plant density was counted two times per plot in a 0.5-m^{-2} quadrat and percent control was determined

Table 2. Fall applied herbicides applied at each of three timings to control horseweed.

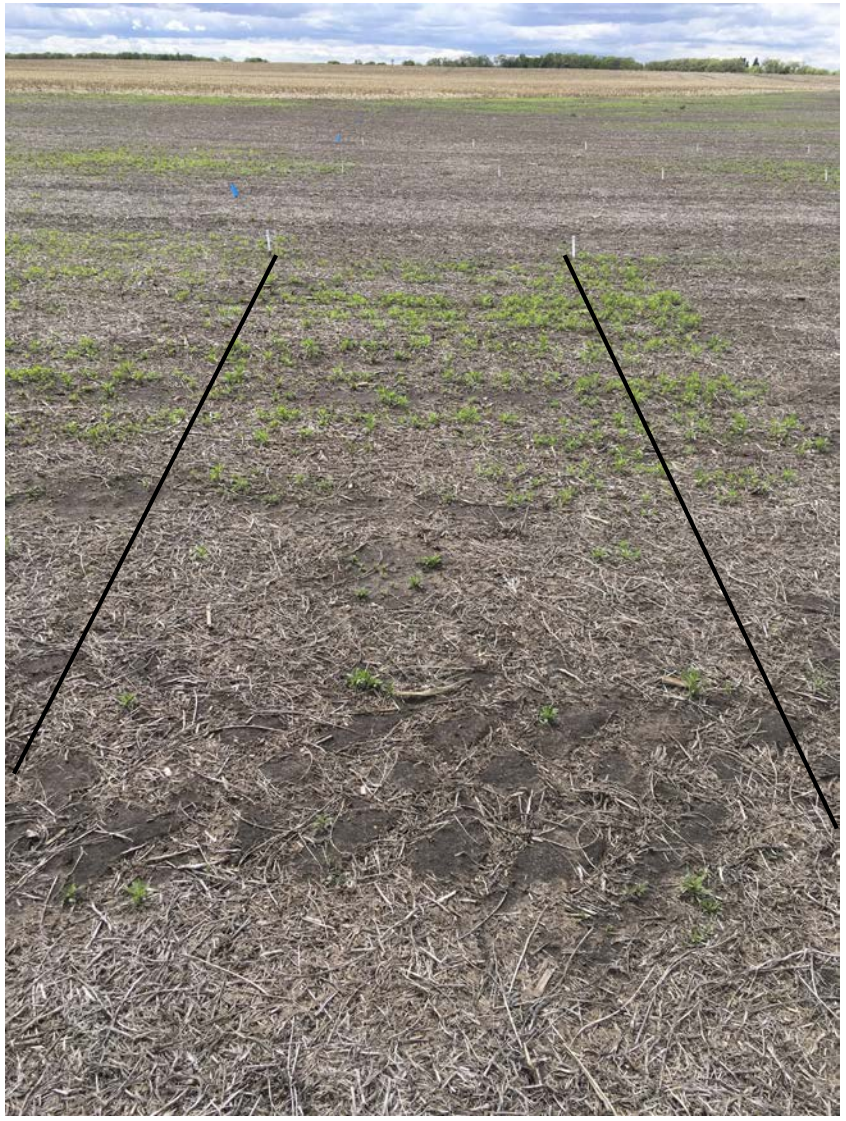
Herbicide[a]	Rate
	oz/A
Untreated	-
Xtendimax	11
Sharpen + HSMOC	1
Xtendimax + Valor SX + HSMOC	11 + 2
Sharpen + Valor SX+ HSMOC	1 + 2
Gramoxone 2.0 SL + NIS	32
Gramoxone 2.0 SL + Valor SX + NIS	32 + 2

[a]Adjuvants: (HSMOC) high surfactant methylated oil concentrate at 16.4 fl oz/A, (NIS) nonionic surfactant at 4.1 fl oz/A.


Fall applied herbicide efficacy in the spring
LSD = 14.359
Horseweed control (%)
100
90
80
70
60
50
40
30
20
10
0
0
76
99
99
99
64
99
Untreated
Xtendimax
Xtendimax + Valor
Sharpen
Sharpen + Valor
Gramoxone
Gramoxone + Valor
Herbicide



Gramoxone



Untreated

Xtendimax

Summary

- Horseweed control is significantly increased when herbicide is applied to early – mid rosette plants.
- Damage to the apical meristem of late rosette plants promoted rapid regrowth.
- Fall applied herbicides are very effective for control of winter annual horseweed.
- Addition of residual herbicides in the fall significantly increases control of late emerging winter annual horseweed.

Questions?