

Identification of post-emergence herbicides for use in native forb seed production



Native Forb Seed Production in Response to SDI in 2007

Shock, Feibert, Saunders, & Ishida



Identification of post-emergence herbicides for use in native forb seed production

E. umbellatum, Sulfur-flower buckwheat

P. acuminatus, Sand penstemon

P. deustus, Hot rock penstemon

P. speciosus, Showy penstemon

L. dissectum, Fernleaf biscuitroot

L. triternatum, Nineleaf biscuitroot

Lomatium grayi, Gray biscuitroot

Identification of post-emergence herbicides for use in native forb seed production

Post-emergence treatment	Rate
	lb ai/acre
Untreated	
Buctril 2.0 EC	0.125
Goal 2XC	0.125
Select 2.0 EC + Herbimax	0.094 + 1% v/v
Prowl H2O 3.8 C	1
Caparol FL 4.0	0.8
Outlook 6.0 EC	0.656
Lorox 50 DF	0.5

Identification of post-emergence herbicides for use in native forb seed production

2006 seven post-emergence treatments and a check

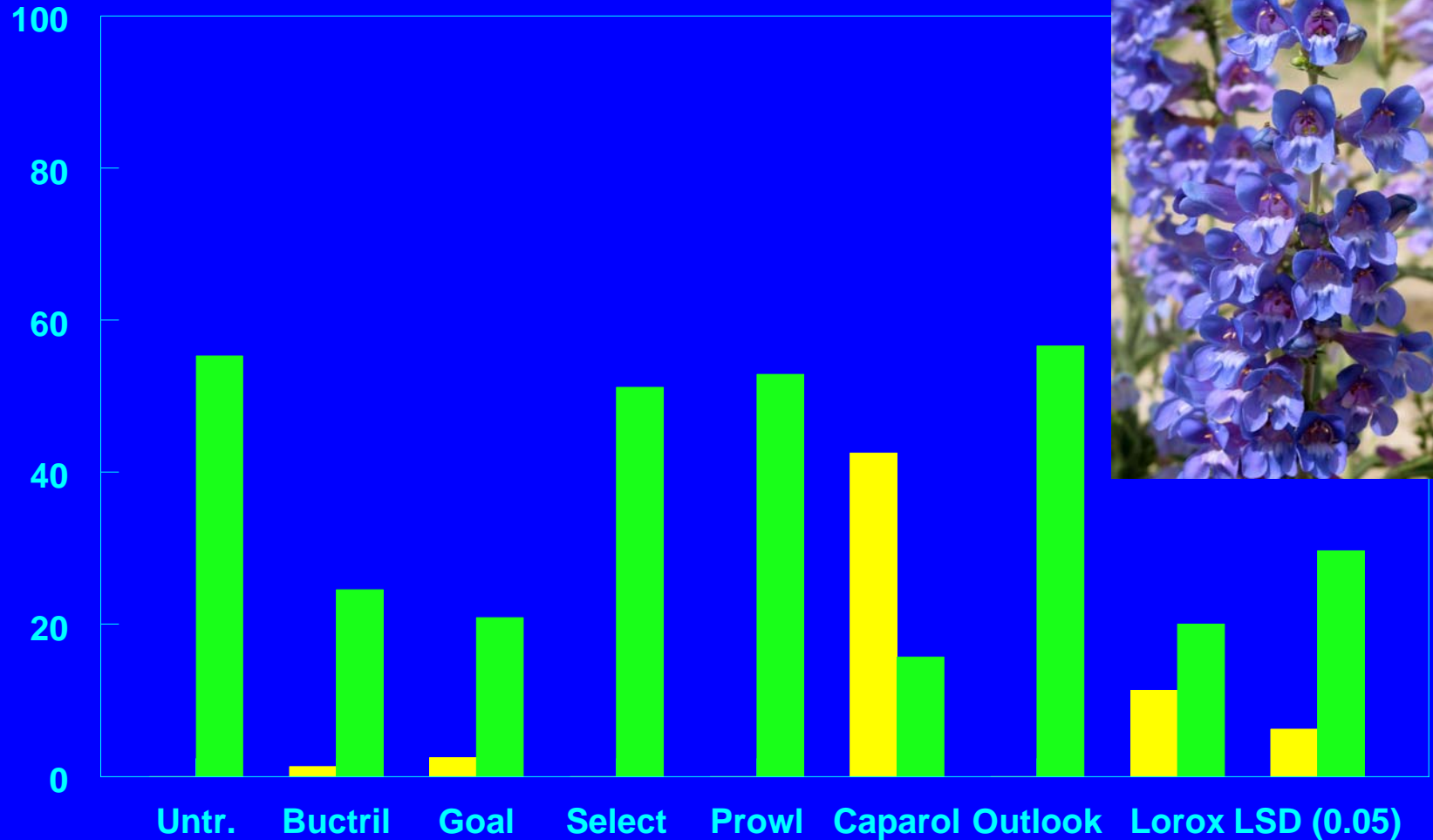
- A. 5-ft-wide plots perpendicular to the forb rows**
- B. 4 reps, randomized complete block design**
- C. Applied May 24 at 30 psi, 2.63 mph, in 20 gal/acre using 8002 nozzles, three nozzles spaced 20 inches apart**
- D. Plant injury rated visually on May 31, June 15 and 30.**

2007

- A. Same treatments, rates, methods, and plots., and rates**
- B. Applied on April 24**
- C. Plant injury rated visually on May 1, 11, 25, and June 12**
- D. Seed harvested as it matured.**

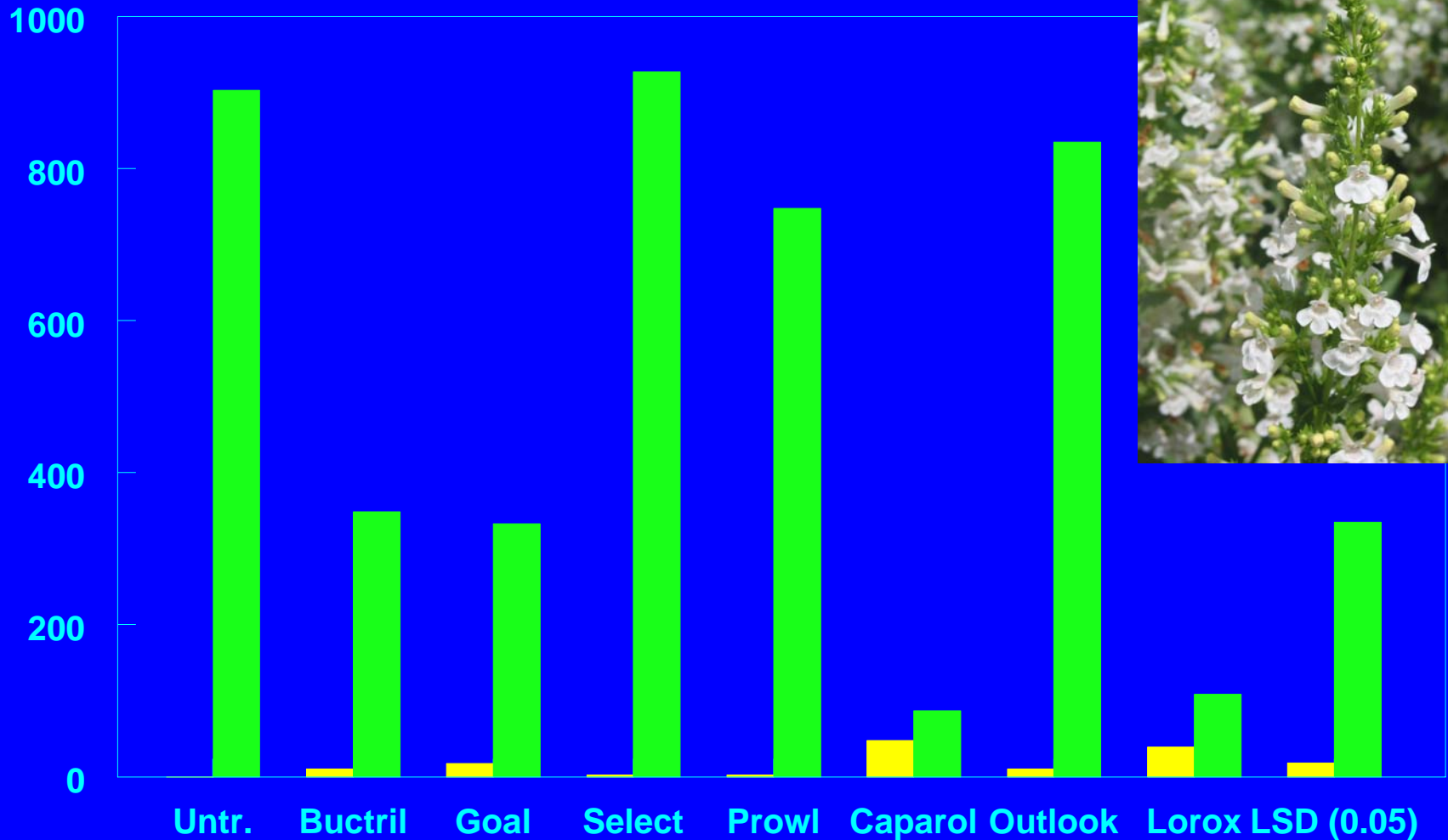
Effect of post-emergence herbicides on the injury & yield of *Penstemon speciosus*, Ontario, OR, 2007.

■ Visual injury, % ■ Seed yield, lb/ac



Effect of post-emergence herbicides on the injury & yield of *Penstemon deutus*, Ontario, OR, 2007.

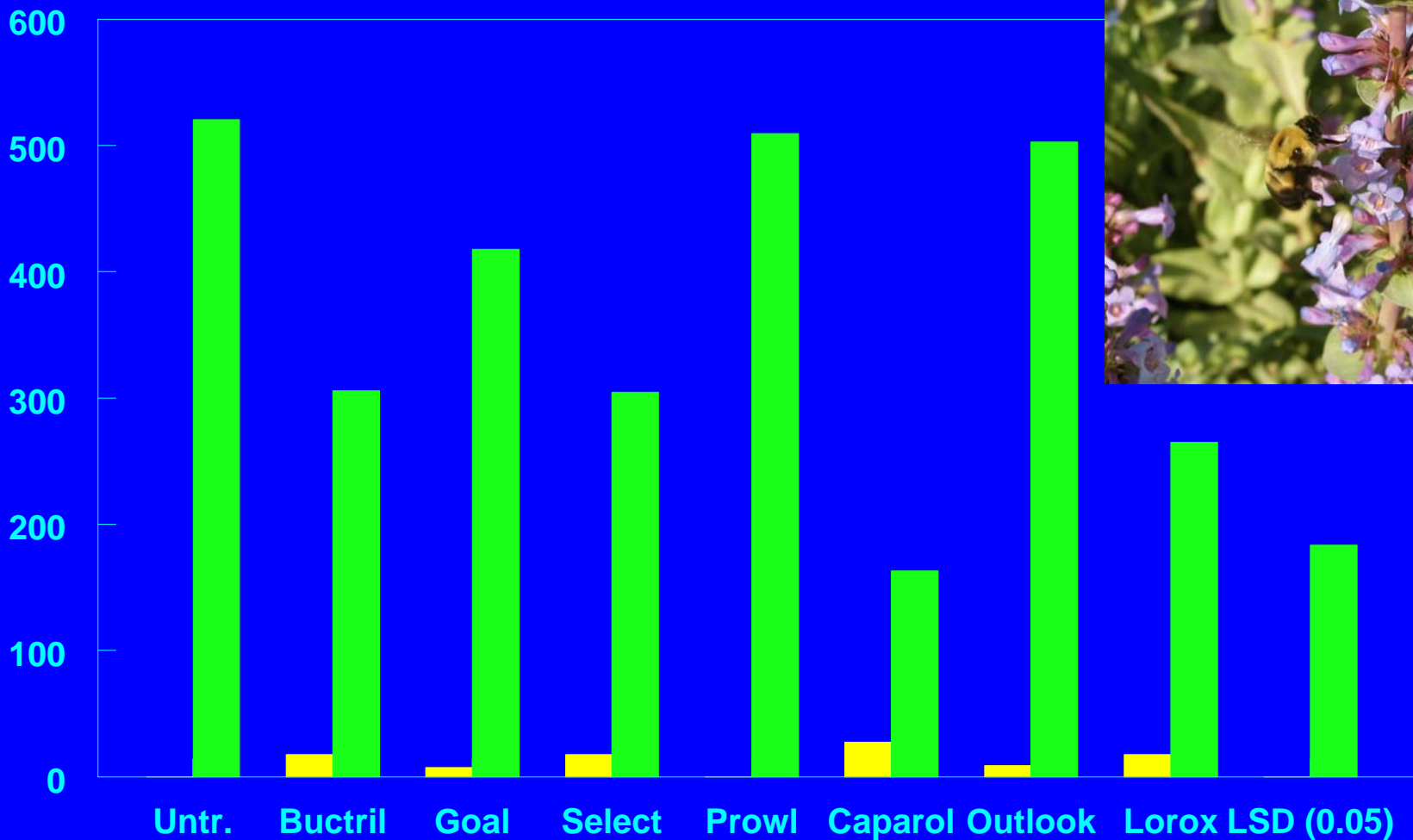
Visual injury, % Seed yield, lb/ac



Effect of post-emergence herbicides on the injury & yield of *Penstemon acuminatus*, Ontario, OR, 2007.

Visual injury, %

Seed yield, lb/acre

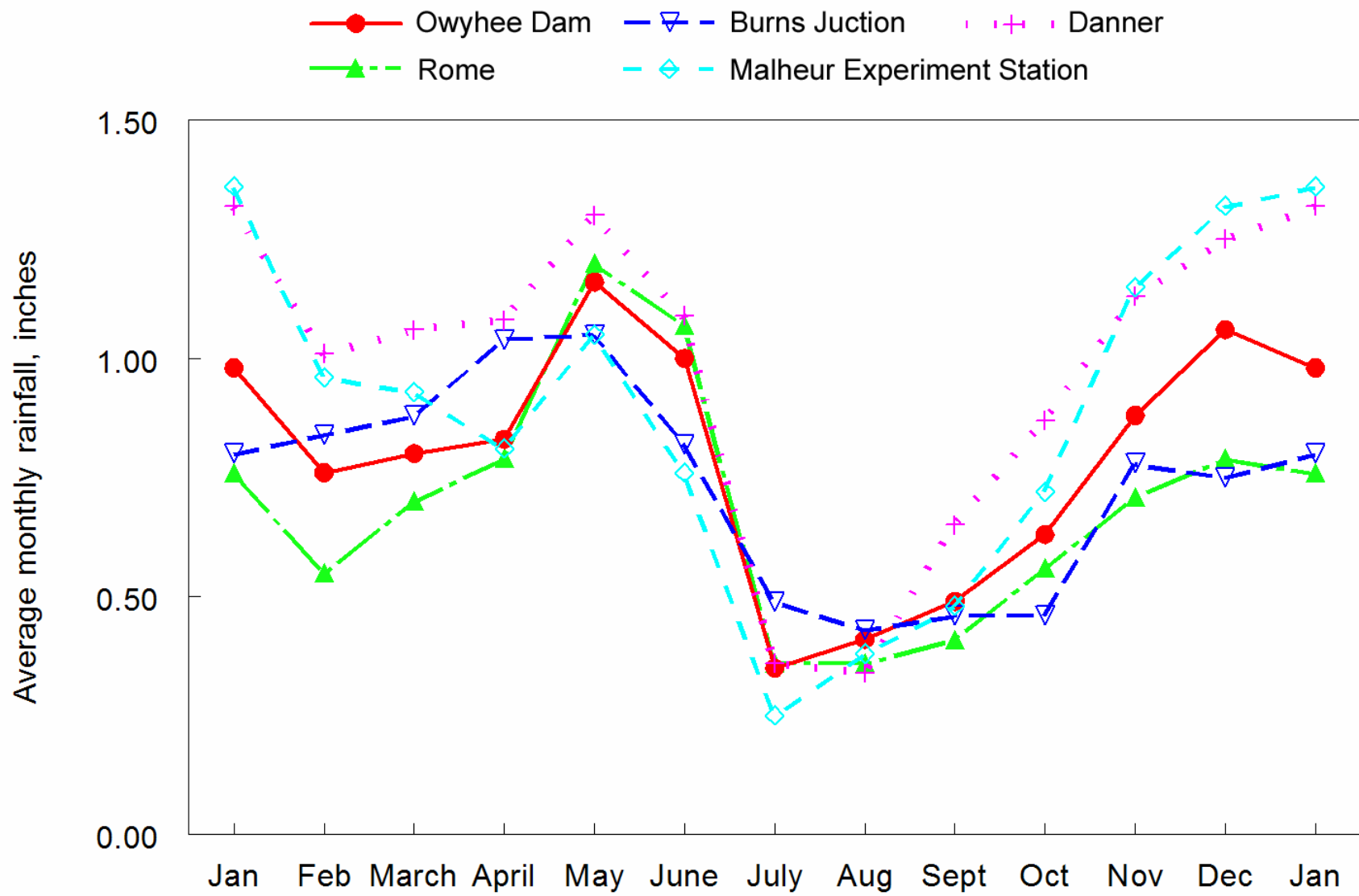


Identification of post-emergence herbicides for use in native forb seed production

Preliminary conclusions from 2007:

- A.** In general there tended to be less observed foliar injury with the use of Prowl, Outlook, and Select in 2006 and 2007.
- B.** *E. umbellatum* and *Lomatium* spp. have not yet flowered.
- C.** *P. speciosus* and *P. deustus* resisted Prowl, Outlook, and Select. *P. deustus* showed good seed yield.
- D.** *P. acuminatus* resisted Prowl and Outlook and demonstrated good seed yield.

Figure 1. A comparison of rainfall patterns at five meteorological stations in and around the lower Owyhee subbasin.^{2,38,39,40,41}



SDI Objectives

Test SDI for stable, efficient native wildflower seed production using small amounts of supplemental irrigation water.

Why try SDI irrigation?

- 1. Cultivated seed production requires dependable production.**
- 2. Excess water stress has hurts flowering and seed set.**
- 3. Total water requirements are unknown, but probably are low.**
- 4. Furrow and sprinkler irrigation encourage weeds and disease.**

Design

Drip tape buried 0.3 m (1 ft) deep

Tape 1.52 m (5 ft) apart

T-tape TSX 515-16-340

0.76-m beds, seed drilled 0.38 m (15 in) to each side of the tape

Forbs established in 2005, 2006



0.04 ha each of 7 Species

E. umbellatum, Sulfur-flower buckwheat

P. acuminatus, Sand penstemon

P. deustus, Hot rock penstemon

P. speciosus, Showy penstemon

L. dissectum, Fernleaf biscuitroot

L. triternatum, Nineleaf biscuitroot

Lomatium grayi, Gray biscuitroot

2007 trial, 6 added species

***S. parvifolia*, Small flower globe mallow**

***S. grossularifolia*, Gooseberry leafed
globe mallow**

***Sphaeralcea coccinea*, Red globe mallow**

***Dalea searlsiae*, Seals' prairie clover**

***Dalea ornata*, Western prairie clover**

***Astragalus filipes*, Basalt milkvetch**

Design

Irrigated at 0, 1, and 2 ac-in/ac
every 2 weeks, RCBD 4 rep.

Flowering to seed set

Water meters to verify water
applied

Neutron probe to measure soil
water









Horrendo-gram

Seed harvest and cleaning by species in 2007. Malheur Experiment Station, Oregon State University, Ontario, OR.

Species	Number of harvests	Harvest method	Pre cleaning	Threshing method	Cleaning method
<i>Eriogonum umbellatum</i>	1	combine ^a	none	dewinger ^d	mechanical
<i>Penstemon acuminatus</i>	1	combine ^b	none	combine	mechanical
<i>Penstemon deustus</i>	1	combine ^a	mechan. ^c	hand ^e	mechanical
<i>Penstemon speciosus</i> ^f	1	combine ^b	none	combine	mechanical
<i>Lomatium dissectum</i>	0				
<i>Lomatium triternatum</i>	2	hand	hand	none	mechanical
<i>Lomatium grayi</i>	2	hand	hand	none	mechanical
<i>Sphaeralcea parvifolia</i>	3	hand	none	combine	none
<i>Sphaeralcea grossularifolia</i>	3	hand	none	combine	none
<i>Sphaeralcea coccinea</i>	3	hand	none	combine	none
<i>Dalea searlsiae</i>	2	hand	none	dewinger	mechanical
<i>Dalea ornata</i>	2	hand	none	dewinger	mechanical

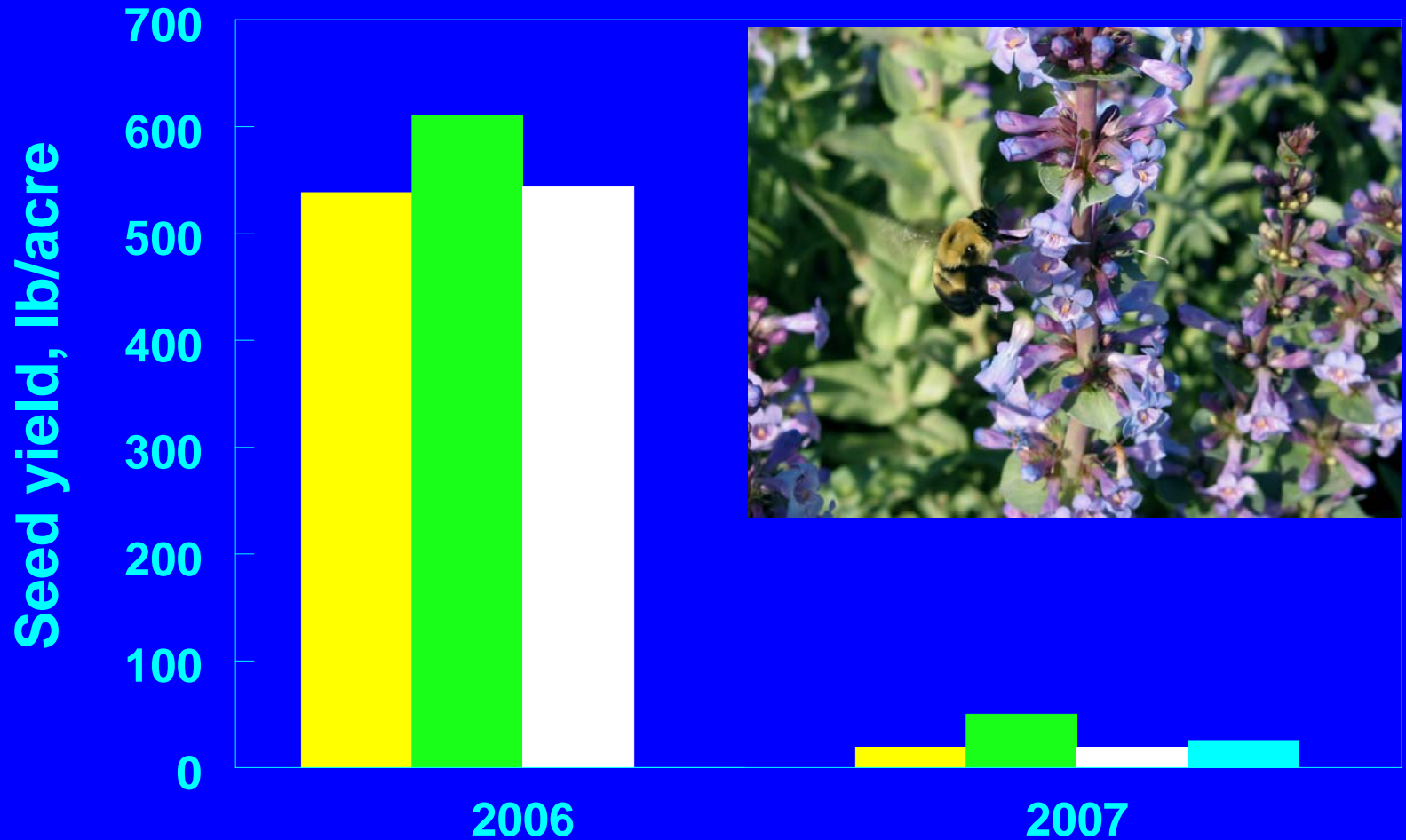
Penstemon acuminatus

Sand penstemon



Effect of SDI rate on the seed yield of *Penstemon acuminatus*, Ontario, OR.

None 1 1/2 wks 2 1/2 wks LSD



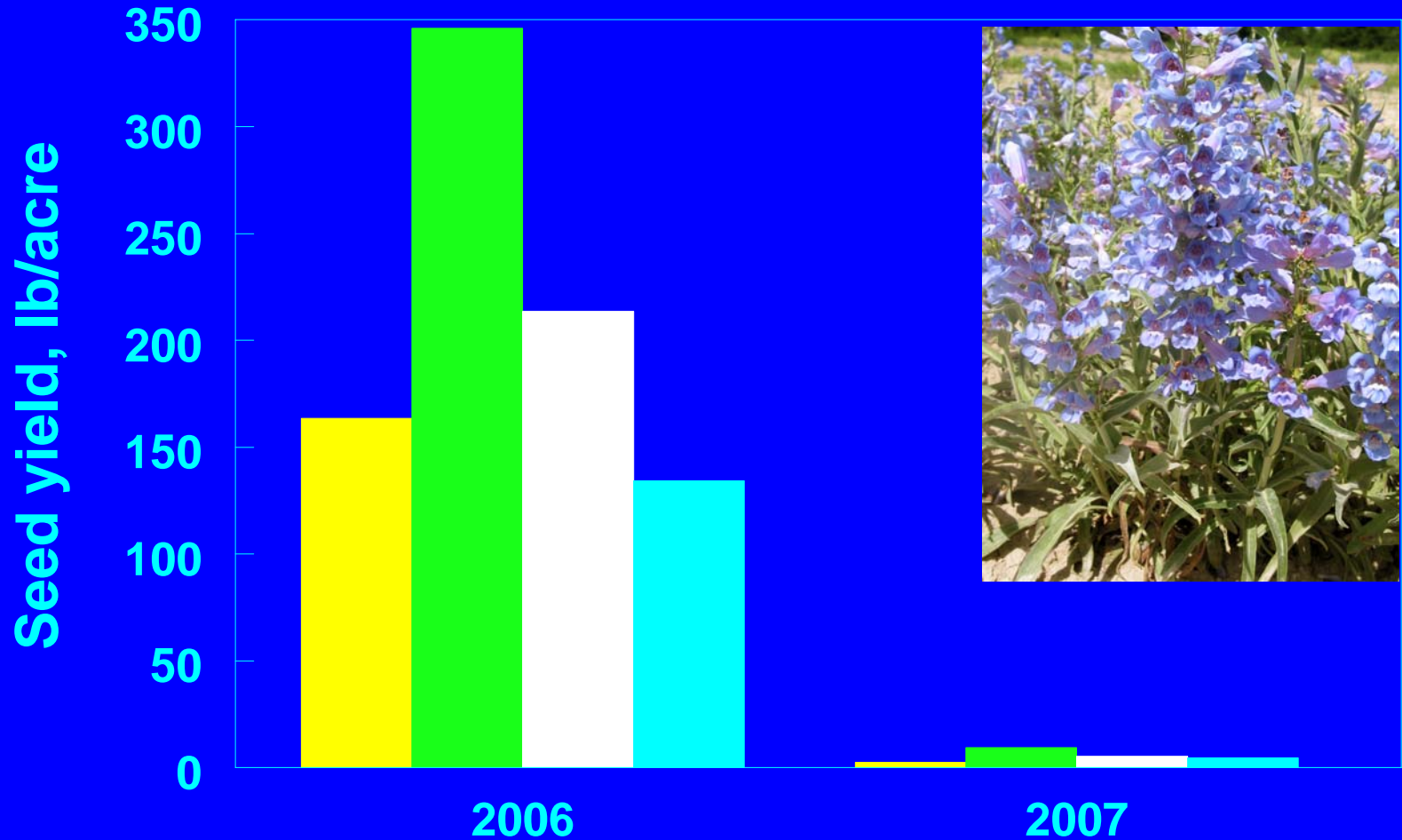
Penstemon speciosus

Royal or Sagebrush
penstemon



Effect of SDI rate on the seed yield of *Penstemon speciosus*, Ontario, OR.

None 1 1/2 wks 2 1/2 wks LSD



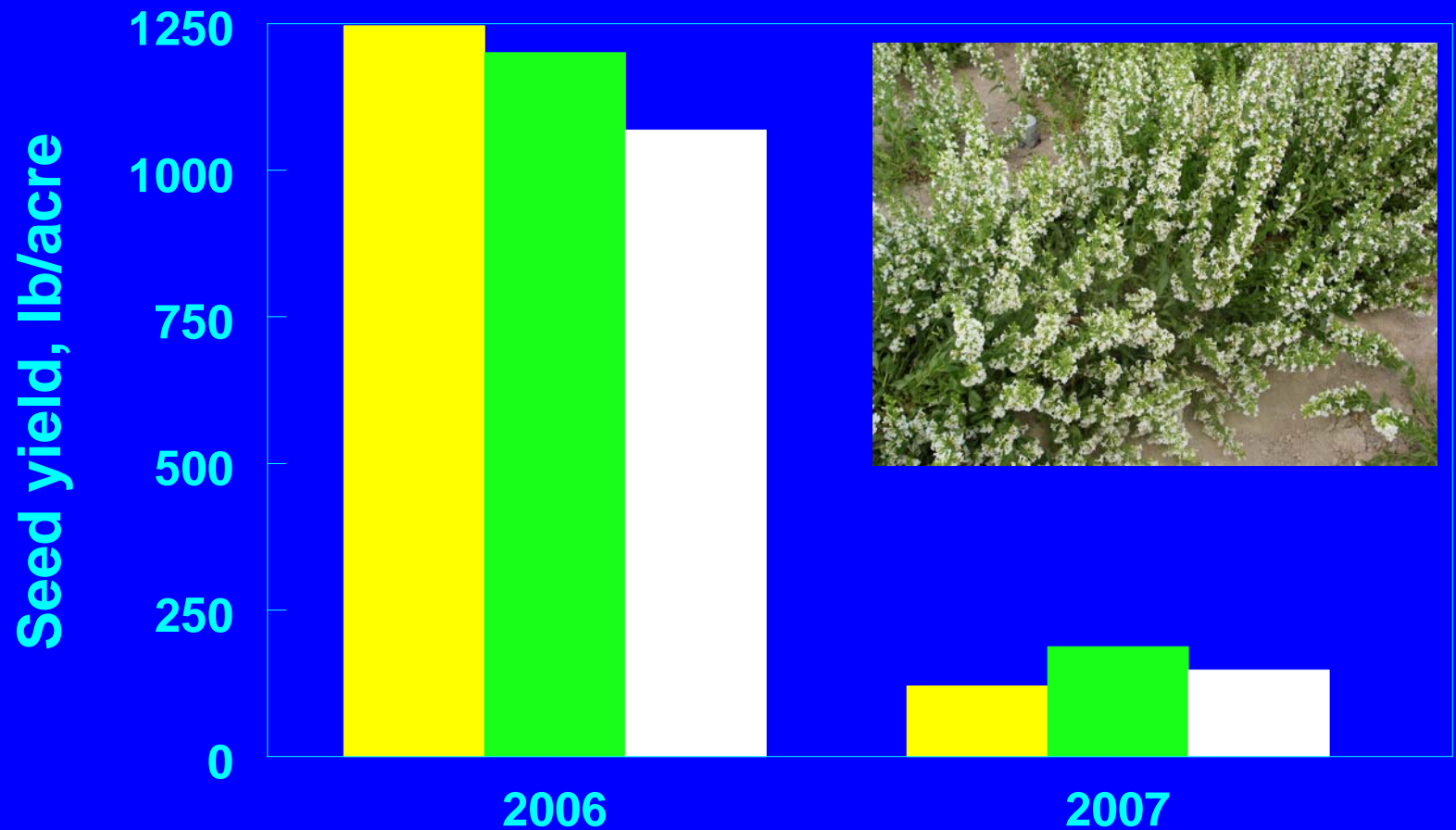
Penstemon deustus

Hotrock penstemon



Effect of SDI rate on the seed yield of *Penstemon deustus*, Ontario, OR.

None 1"/two wks 2"/two wks



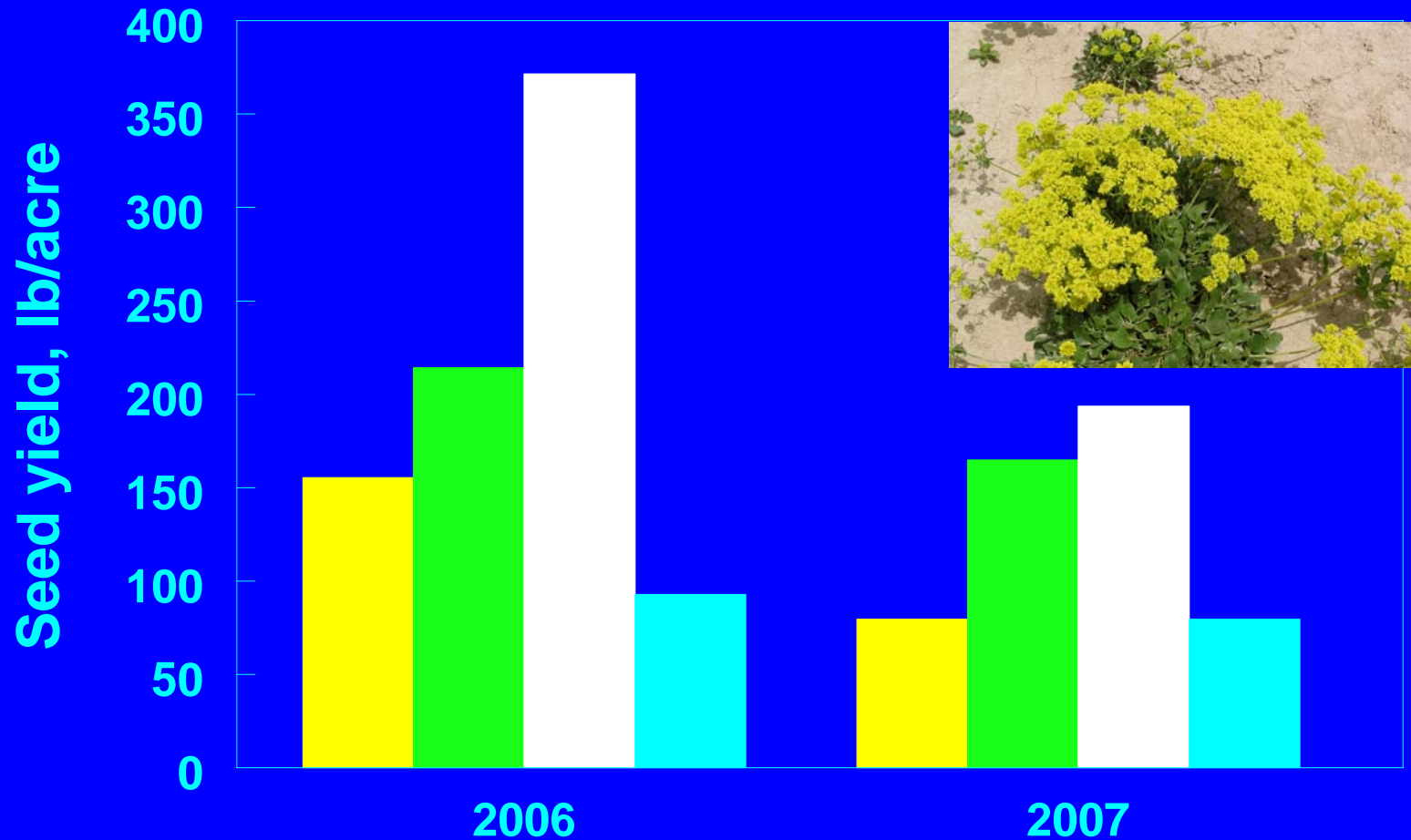
Eriogonum umbellatum

Sulfur buckwheat



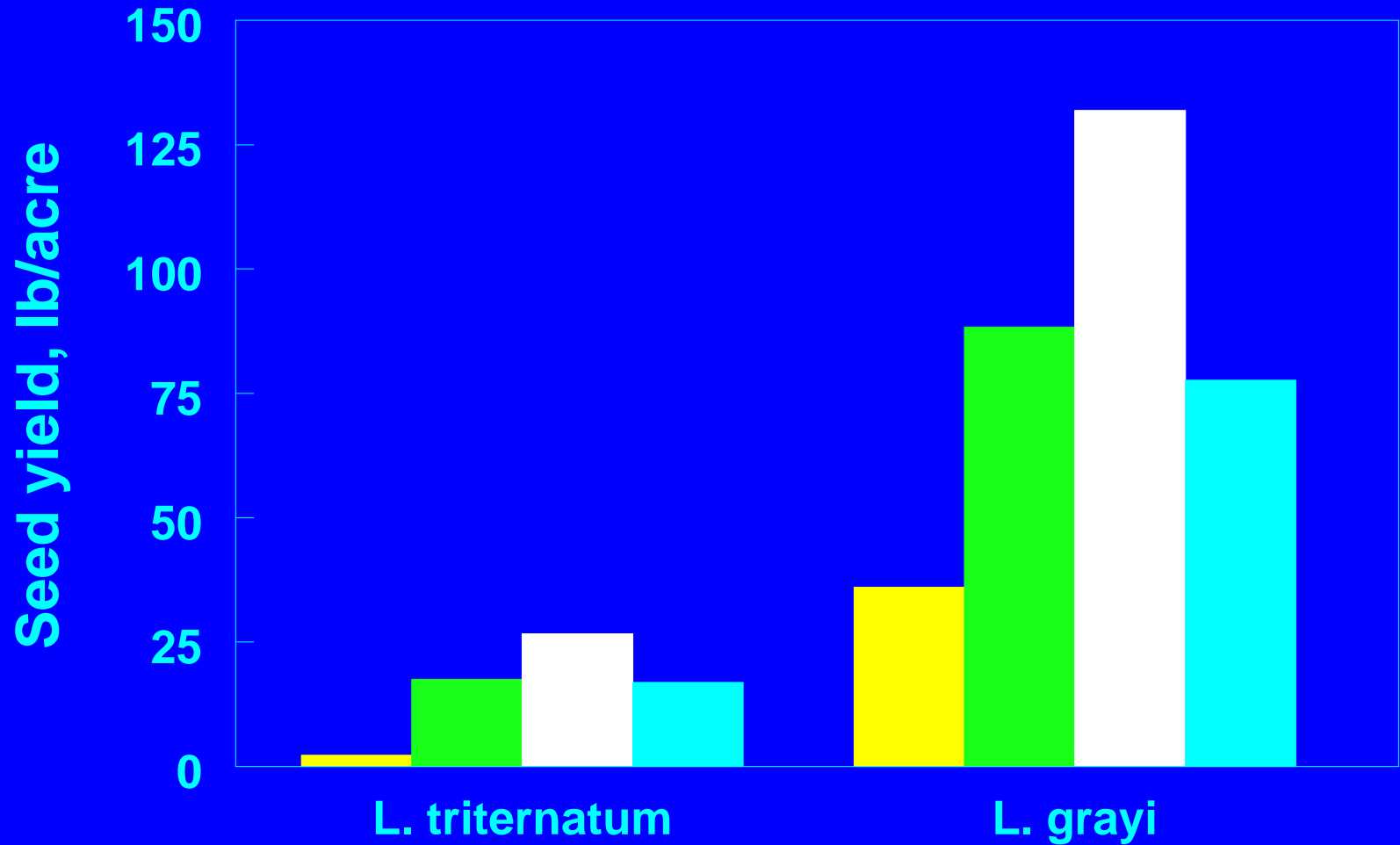
Effect of SDI rate on the seed yield of *Eriogonum umbellatum*, Ontario, OR.

None 1 1/2 wks 2 1/2 wks LSD



Effect of SDI rate on the seed yield of *L. triternatum* and *grayi*, Ontario, OR, 2007.

None 1 1/2 wks 2 1/2 wks LSD



SDI Conclusions

1. Fall planting was far better
2. SDI worked well for irrigation.
3. *Lomatium triternatum* and *L. grayi*, 1 to 2 1/2 wks in 2007
4. *Lomatium dissectum* has not flowered

SDI Conclusions

5. *Eriogonum umbellatum* responded to 2 1/2 wks both years.
6. *Penstemon speciosus*, *P. acuminatus* , 1 1/2 wks in 2007
7. All other species showed no irrigation response, imperfect stands.