

CHEMIGATION WEED CONTROL IN PROCESSING ONIONS

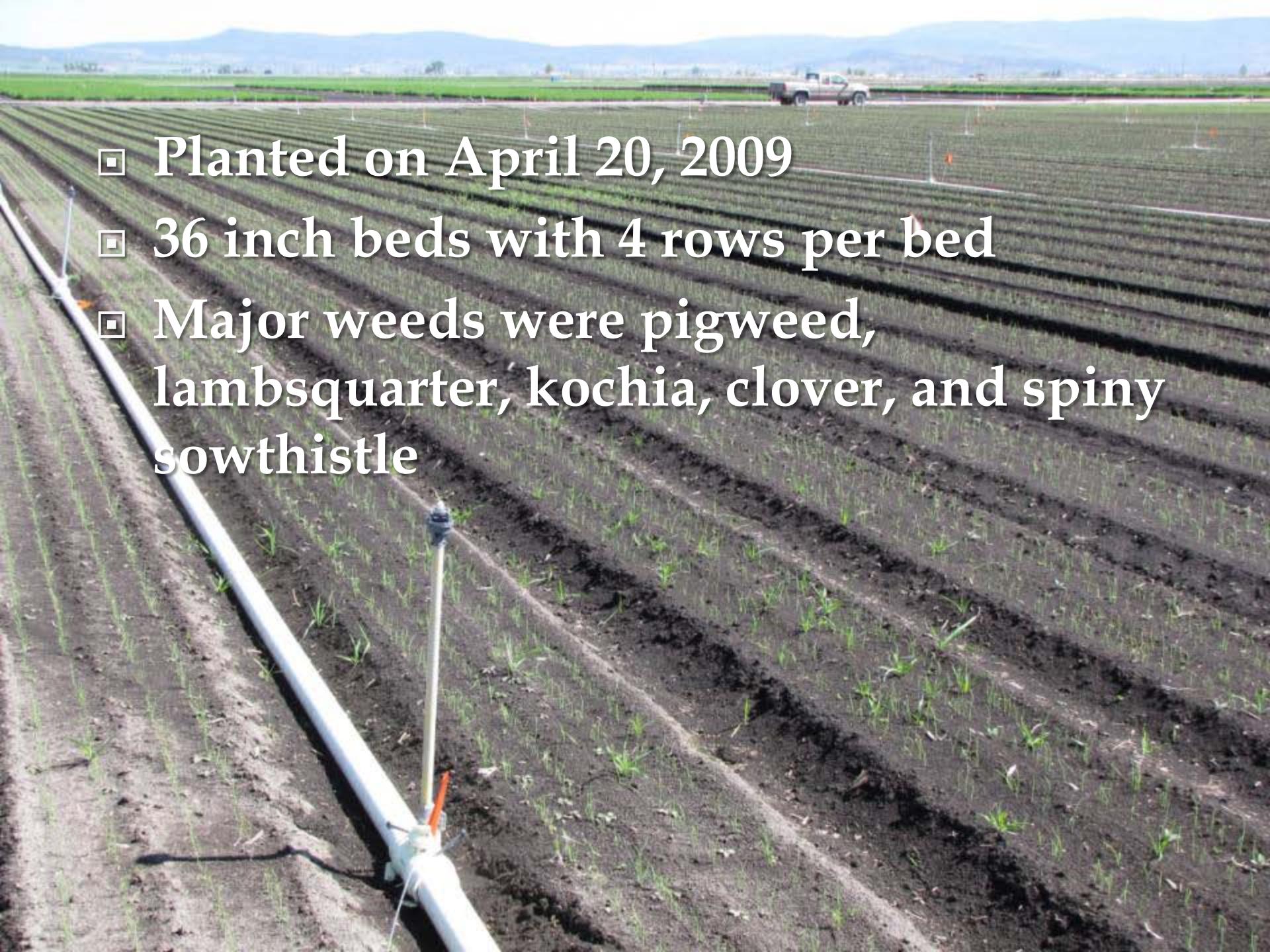
**Rob Wilson, Steve Orloff, Don Kirby,
Kevin Nicholson, and Brooke Kliewer**

**UC Intermountain Research and
Extension Center**

Research Objectives

- ❑ Determine herbicides' efficacy and crop safety when applied via chemigation
- ❑ Evaluate herbicides' when applied to high organic matter clay loam soils
- ❑ Determine the economic benefit from herbicides with regard to yield and hand-weeding costs

- ❑ Planted on April 20, 2009
- ❑ 36 inch beds with 4 rows per bed
- ❑ Major weeds were pigweed, lambsquarter, kochia, clover, and spiny sowthistle





Varying rates of Goal/Outlook/Prowl H₂O Trial

Trt #	Herbicide	1 Leaf (5-21-09)	2 Leaf (5-29-09)	3-4 Leaf (6-12-09)
1	Goal 2xL	2 oz/a	6 oz/a	6 oz/a
2	Goal 2xL		6 oz/a	6 oz/a
3	Goal 2xL	1 oz/a	3 oz/a	6 oz/a
	Outlook	5.25 oz/a	5.25 oz/a	
	Prowl H20	2 pt/a		
4	Goal 2xL	1.5 oz/a	4.5 oz/a	6 oz/a
	Outlook	7.9 oz/a	7.9 oz/a	
	Prowl H20	3 pt/a		
5	Goal 2xL	2 oz/a	6 oz/a	6 oz/a
	Outlook	10.5 oz/a	10.5 oz/a	
	Prowl H20	4 pt/a		
6	Goal 2xL	3 oz/a	9 oz/a	6 oz/a
	Outlook	15.7 oz/a	15.7 oz/a	
	Prowl H20	6 pt/a		
7	Goal 2xL	4 oz/a	12 oz/a	6 oz/a
	Outlook	21 oz/a	21 oz/a	
	Prowl H20	8 pt/a		
8	Goal 2xL	2 oz/a	6 oz/a	6 oz/a
	Outlook	4 pt/a		
9	Goal 2xL	2 oz/a	6 oz/a	6 oz/a
	Prowl H20	4 pt/a		
10	Goal 2xL		6 oz/a	6 oz/a
	Outlook		21 oz/a	
	Prowl H20	4 pt/a		

← Goal Alone

← 1/2 x rate

← 3/4x rate

← 1x rate

← 1 1/2x rate

← 2x rate

← Goal + Outlook

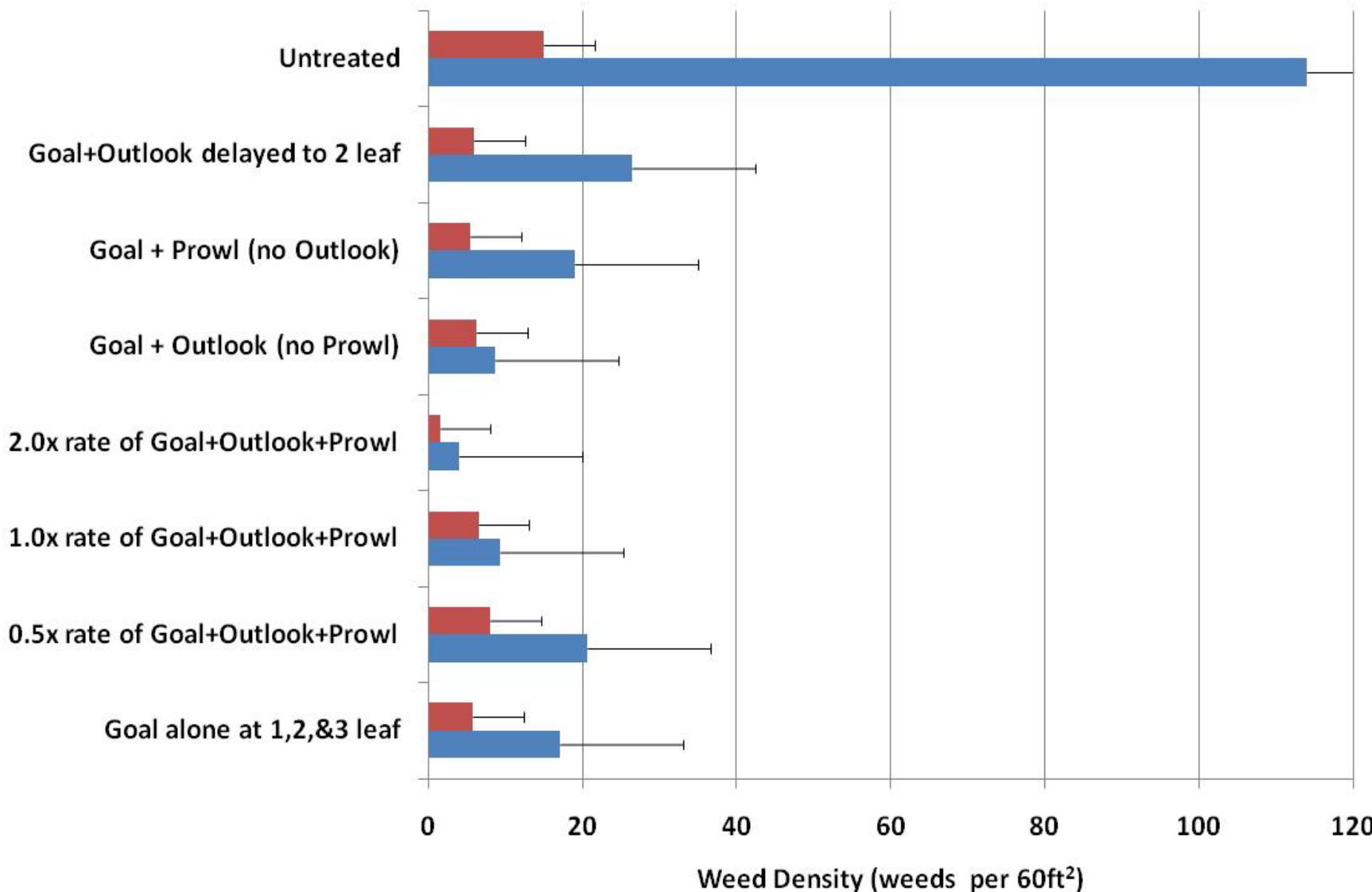
← Goal + Prowl

← Goal + Outlook
delayed until 2-leaf

¹ All herbicide rates are product rate per acre.

Average Total Weed Density during July and August

■ Total Weed Density 8/3/09 ■ Total Weed Density 7/8/09



Kochia at 1-leaf stage



Pigweed at 1-leaf stage



Kochia at 2-leaf stage



Lambsquarter regrowth after 2-leaf treatment

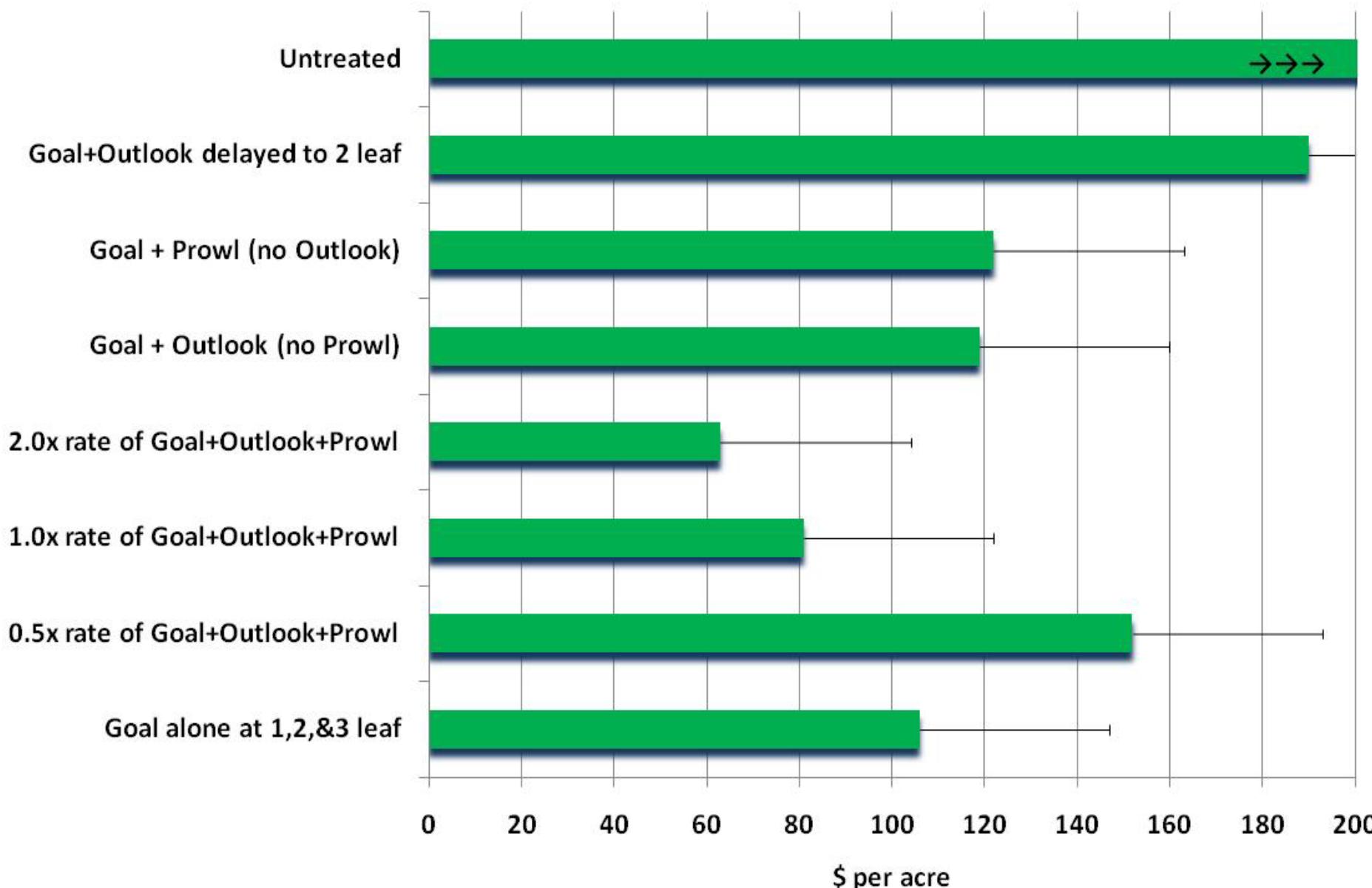


A photograph of a field of weeds growing in dry, cracked soil. The weeds are at the 3-4 leaf stage, showing various leaf shapes and textures. The soil is light brown and shows significant cracking, indicating drought conditions. The plants are green and appear healthy despite the dry environment.

Weeds at 3-4 leaf stage

Season Hand-weeding Cost (2 Hand-weeding Events in July and August)

■ Season Hand-weeding Cost (\$/acre)



Trial 4569A. Varying rates of Goal/Outlook/Prowl H₂O tank-mixes

Onion Injury and Stand

- The 1.5x and 2x rates of Goal/Outlook/Prowl H₂O caused significant onion injury (stunting, curling, and cholorsis).
- Onions in all treatments out-grew herbicide injury by the July evaluation. None of the treatments reduced onion stand.



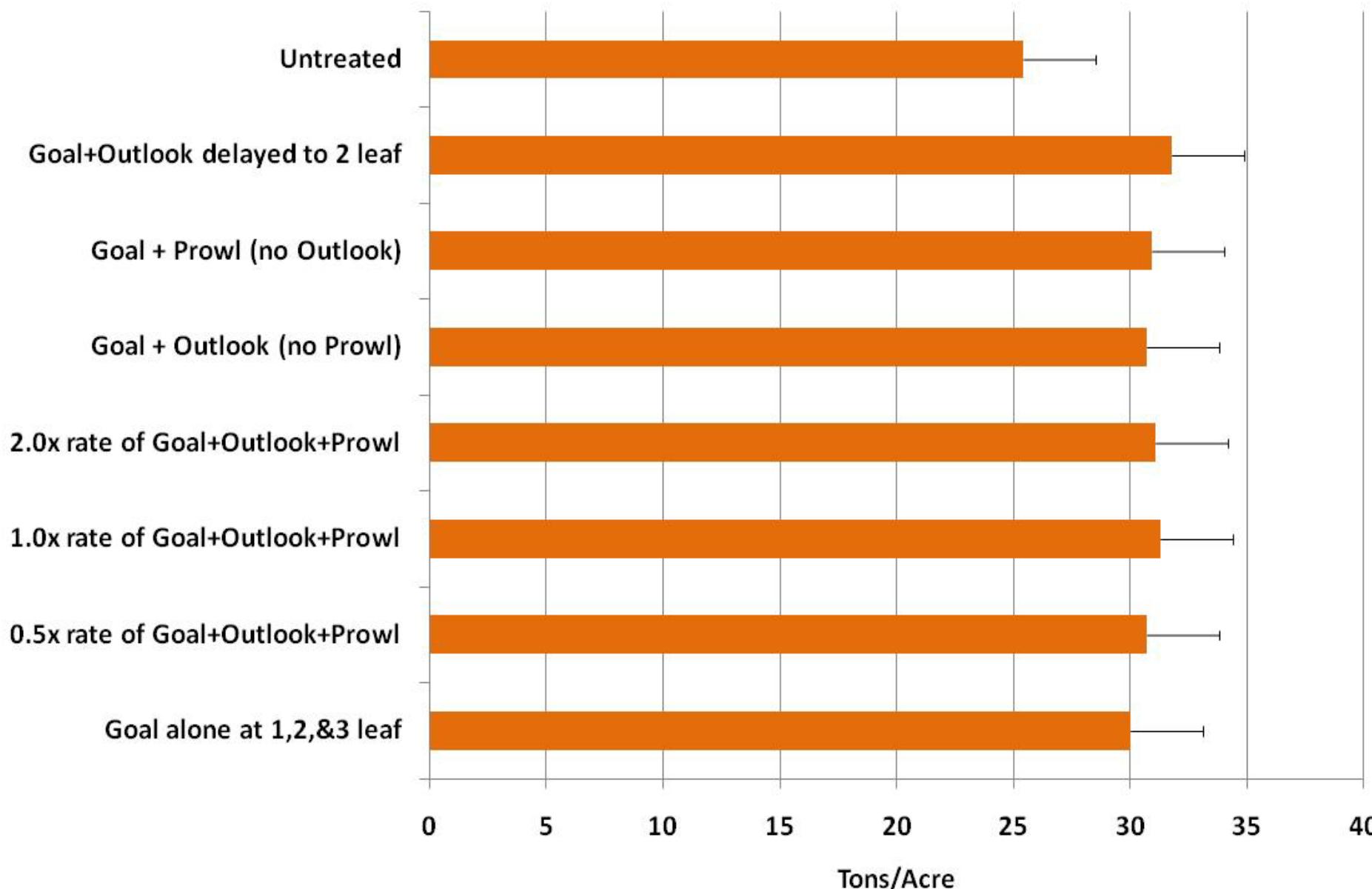
Injury from Goal + Outlook
at 1-leaf stage

Injury from Goal + Outlook
at 3-leaf stage



Onion Yield

■ Onion Yield (ton/acre)



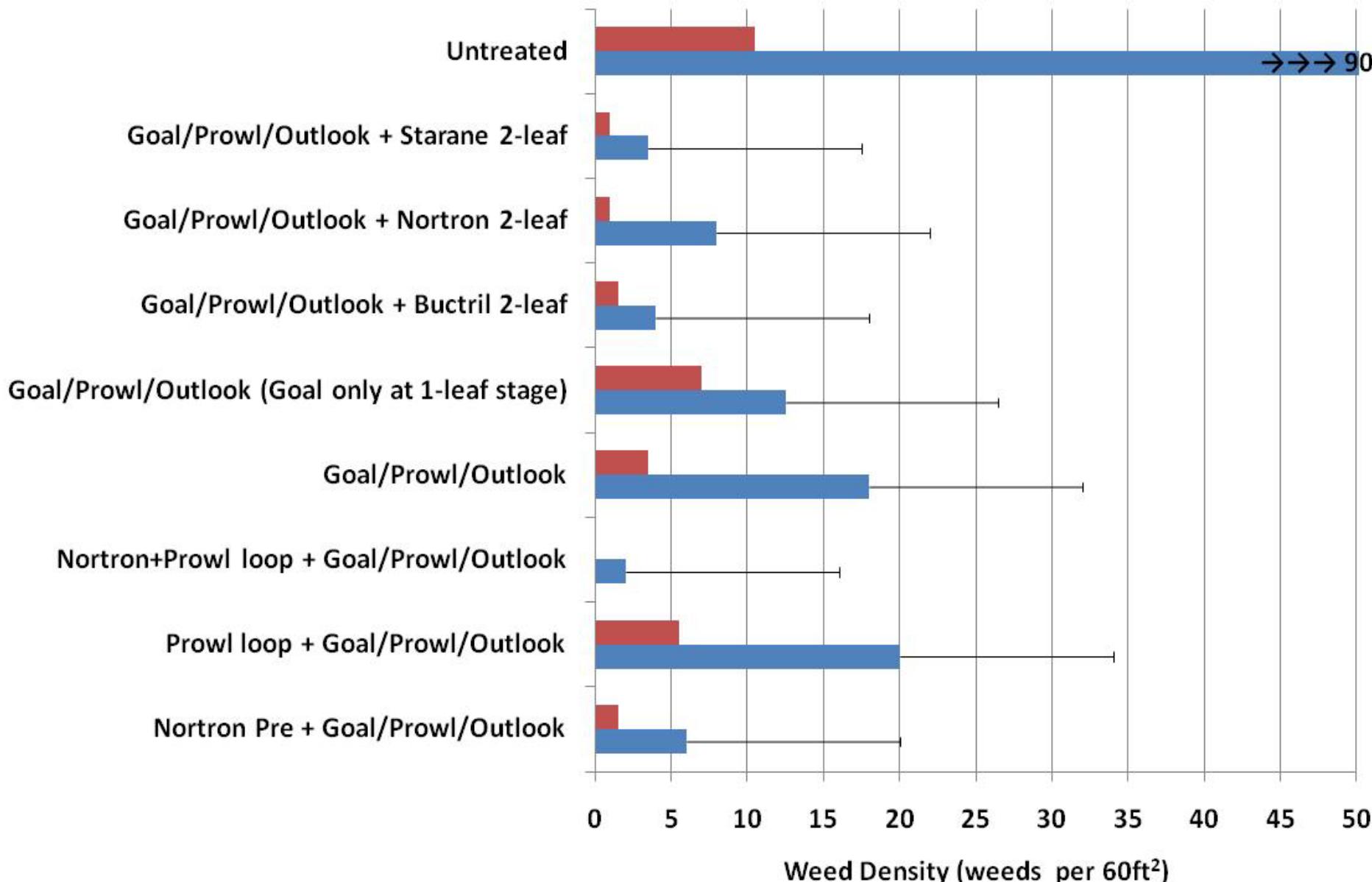
Weed Competition in Untreated Plots



Average Total Weed Density during July and August

■ Total Weed Density 8/3/09

■ Total Weed Density 7/8/09



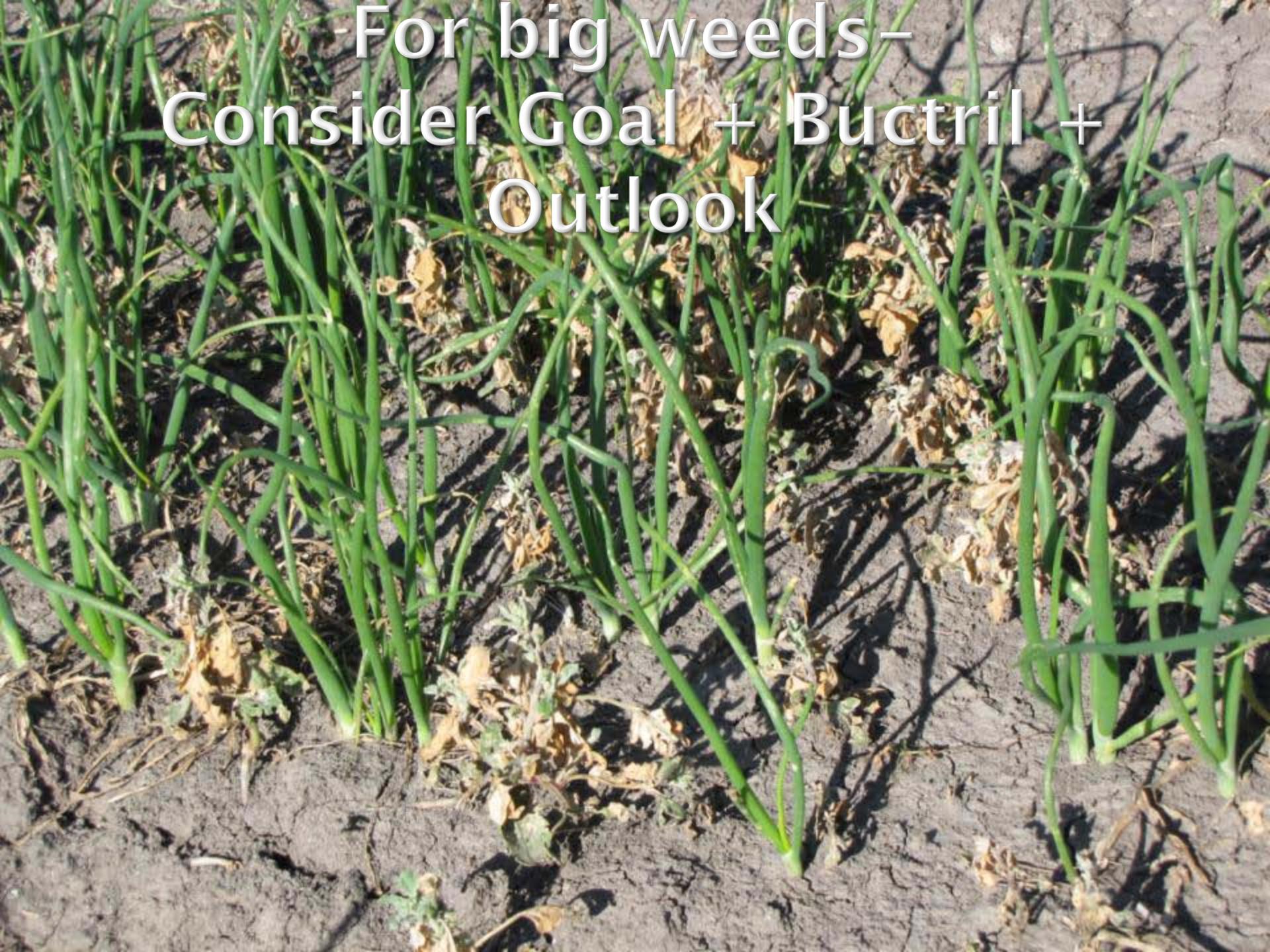
Weed Stand Counts

- All treatments reduced total weed cover compared to the non-weeded control.
- Pre-emergent herbicides:
 - Goal +Prowl H₂O +Outlook applied at 1 or 2 leaf stage reduced weed density by more than 60% compared to the control
 - Adding Nortron applied pre-emergent or at loop stage to Prowl and Outlook gave the best control of kochia
 - Delaying application of Outlook and Prowl until the 2-leaf stage did not decrease weed control if Goal was applied at the 1-leaf stage
- Post-emergent treatments:
 - Adding Buctril to Goal improved control of kochia and clover compared to Goal alone.
 - Adding Starane to Goal gave excellent control of kochia, but Starane did not appear to improve control of clover compared to Goal alone.
 - Difference in weed control from Goal formulations (Tender vs. 2XL) applied at the 1 and 2-leaf stage was not evident.
 - Applications at 3-4 leaf stage may have slightly improved control with some treatments but it was not statistically different

Weed Regrowth after 1-leaf Goal Treatment



For big weeds-
Consider Goal + Buctril +
Outlook

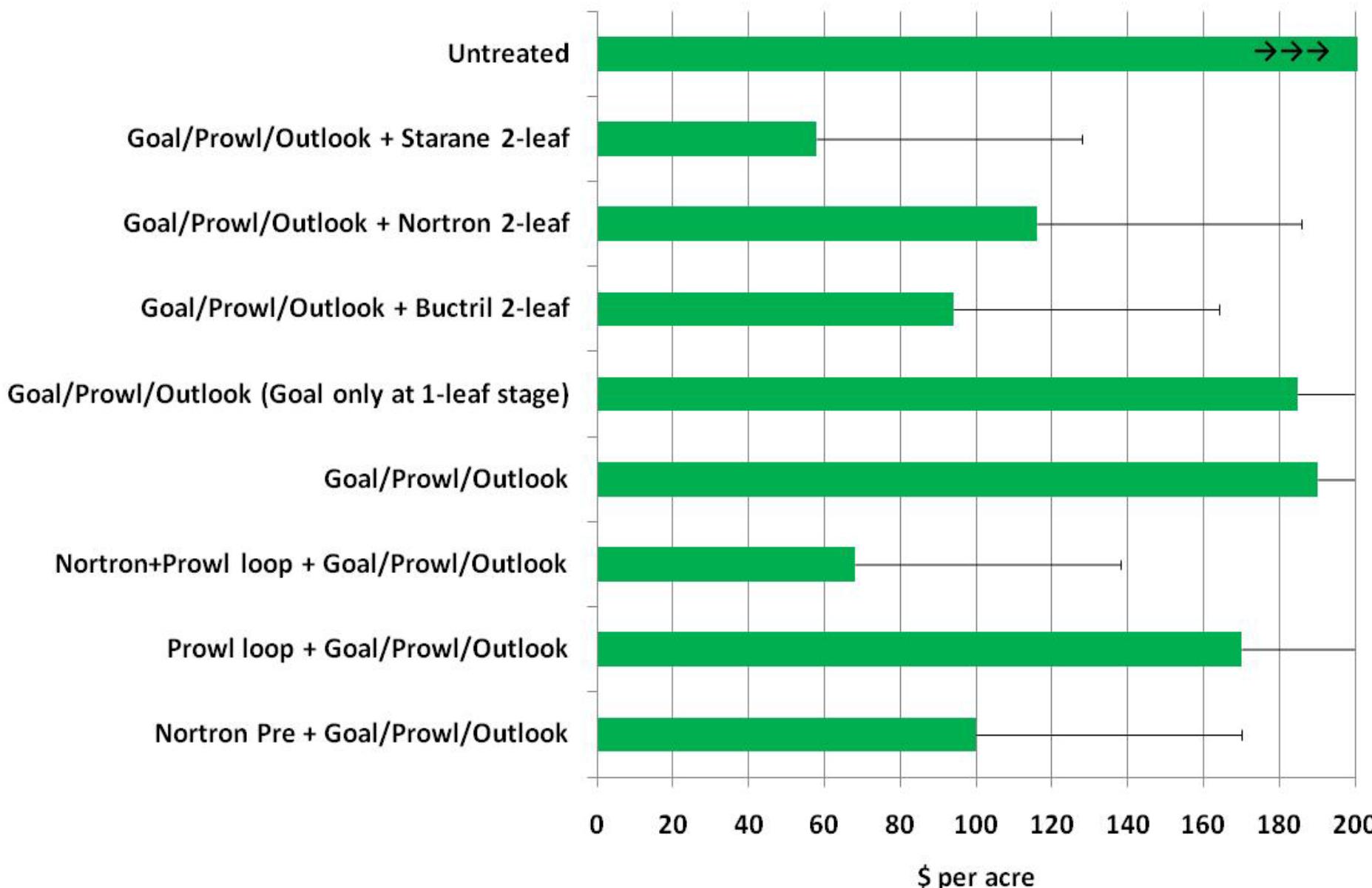


Treated vs. Untreated



Season Hand-weeding Cost (2 Hand-weeding Events in July and August)

■ Season Hand-weeding Cost (\$/acre)

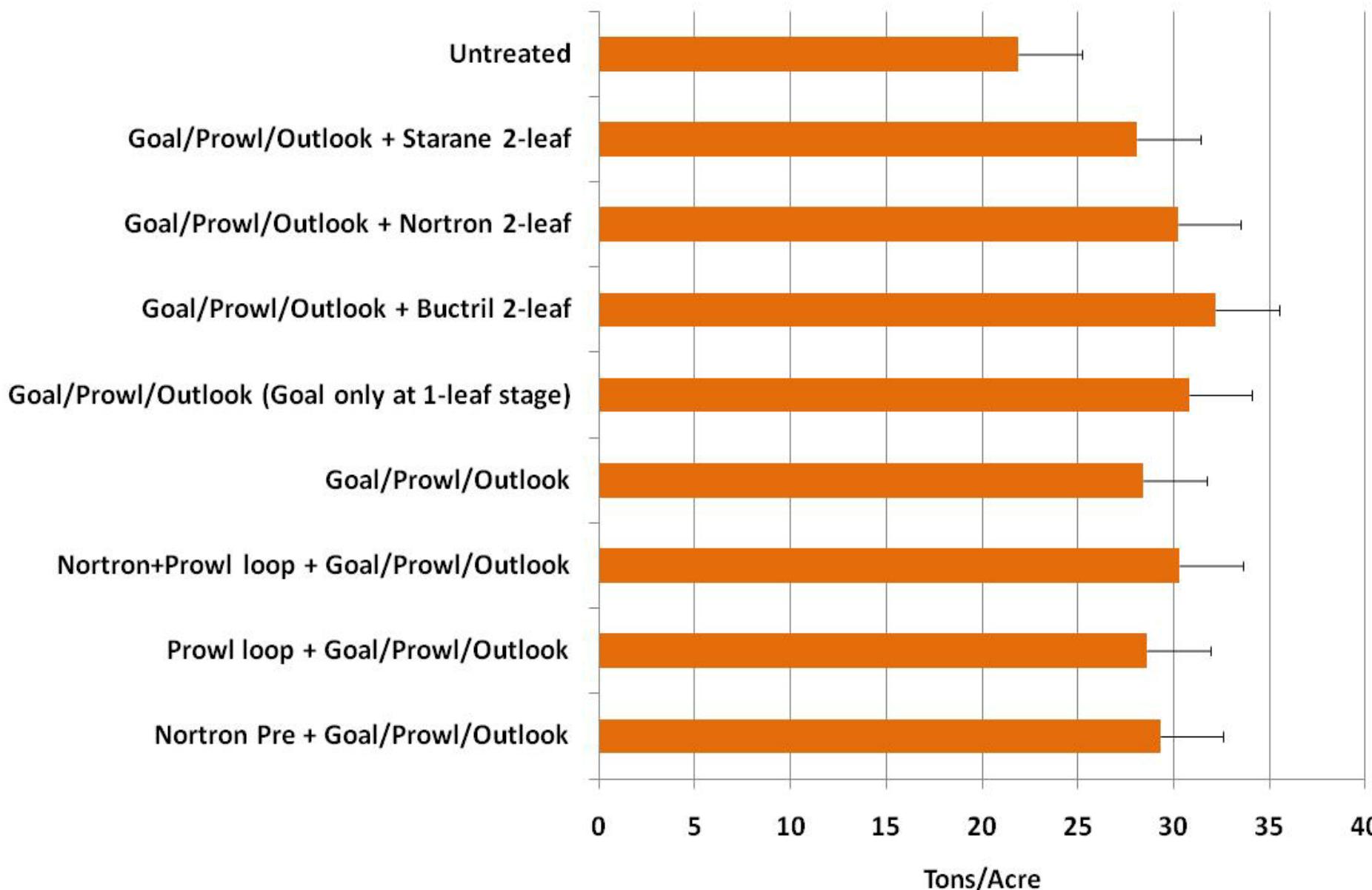


Injury from Starane + Goal



Onion Yield

■ Onion Yield (ton/acre)



Summary

- ❑ Goal at the 1-leaf stage was critical to weed control success
- ❑ Adding Nortron pre-emergent or at loop stage improved control of kochia
- ❑ Adding Buctril to Goal & Outlook at the 2-leaf stage improved control of large weeds
- ❑ We did not see a difference in efficacy between Goal 2 XL and Goaltender applied at 1-leaf stage

Plans for 2010

- ❑ Compare chemigation versus broadcast applications
- ❑ Look at herbicide efficacy on sandy mineral soils in the Klamath Basin
- ❑ Fine-tune treatment tank-mixes to maximize weed control and minimize injury

A photograph of a rice field showing young plants in rows. Several small yellow markers are placed in the soil between the plants. The field is bounded by white irrigation pipes.

Questions?