

# CHEMIGATION WEED CONTROL IN PROCESSING ONIONS

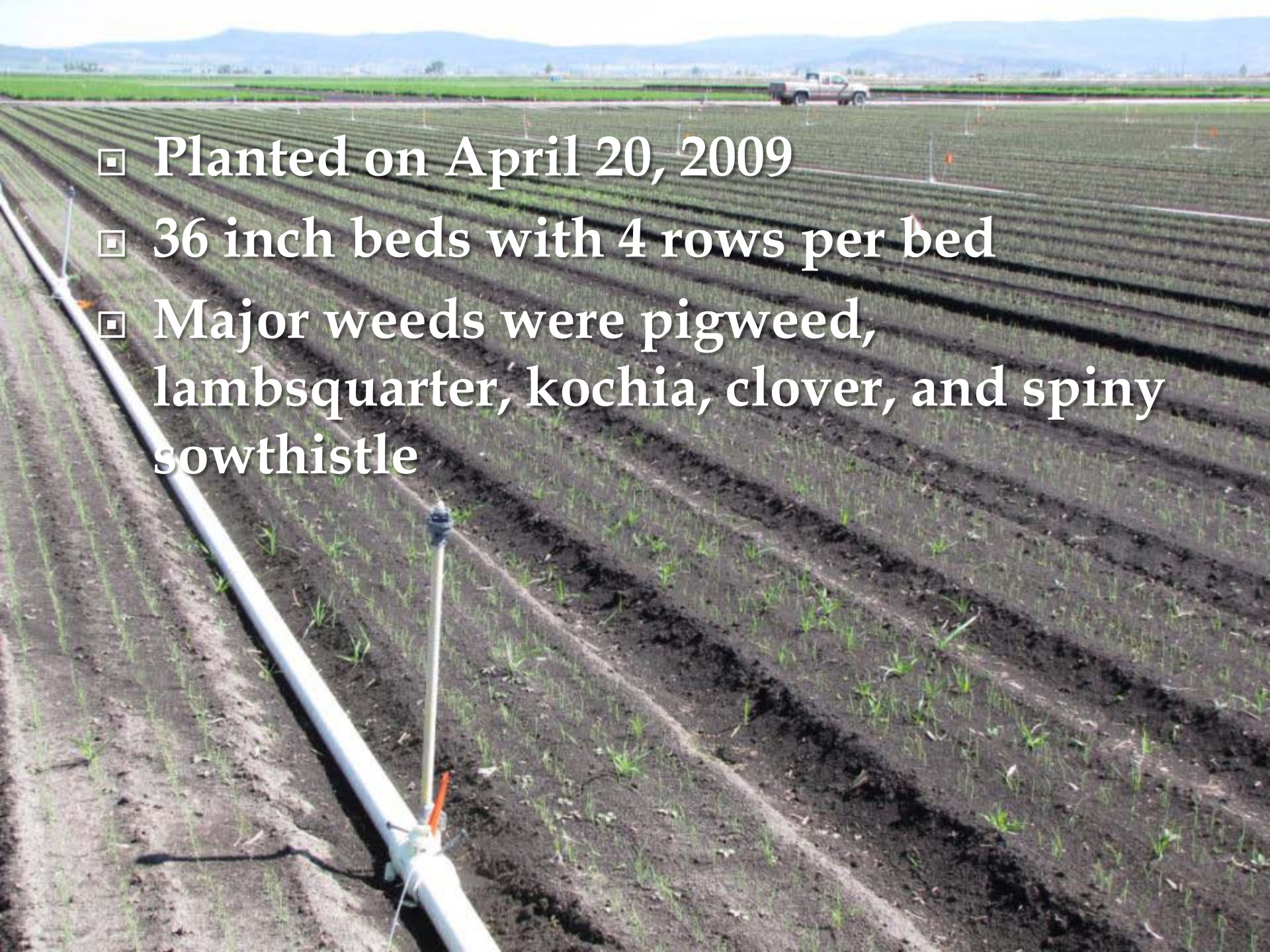
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# Research Objectives

- ▣ 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



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- ▣ 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 H<sub>2</sub>O 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 H2O	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 H2O	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 H2O	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 H2O	6 pt/a		
7	Goal 2xL	4 oz/a	12 oz/a	6 oz/a
	Outlook	21 oz/a	21 oz/a	
	Prowl H2O	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 H2O	4 pt/a		
10	Goal 2xL		6 oz/a	6 oz/a
	Outlook		21 oz/a	
	Prowl H2O	4 pt/a		

← Goal Alone

← 1/2 x rate

← 3/4x rate

← 1x rate

← 1 1/2x rate

← 2x rate

← Goal + Outlook

← Goal + Prowl

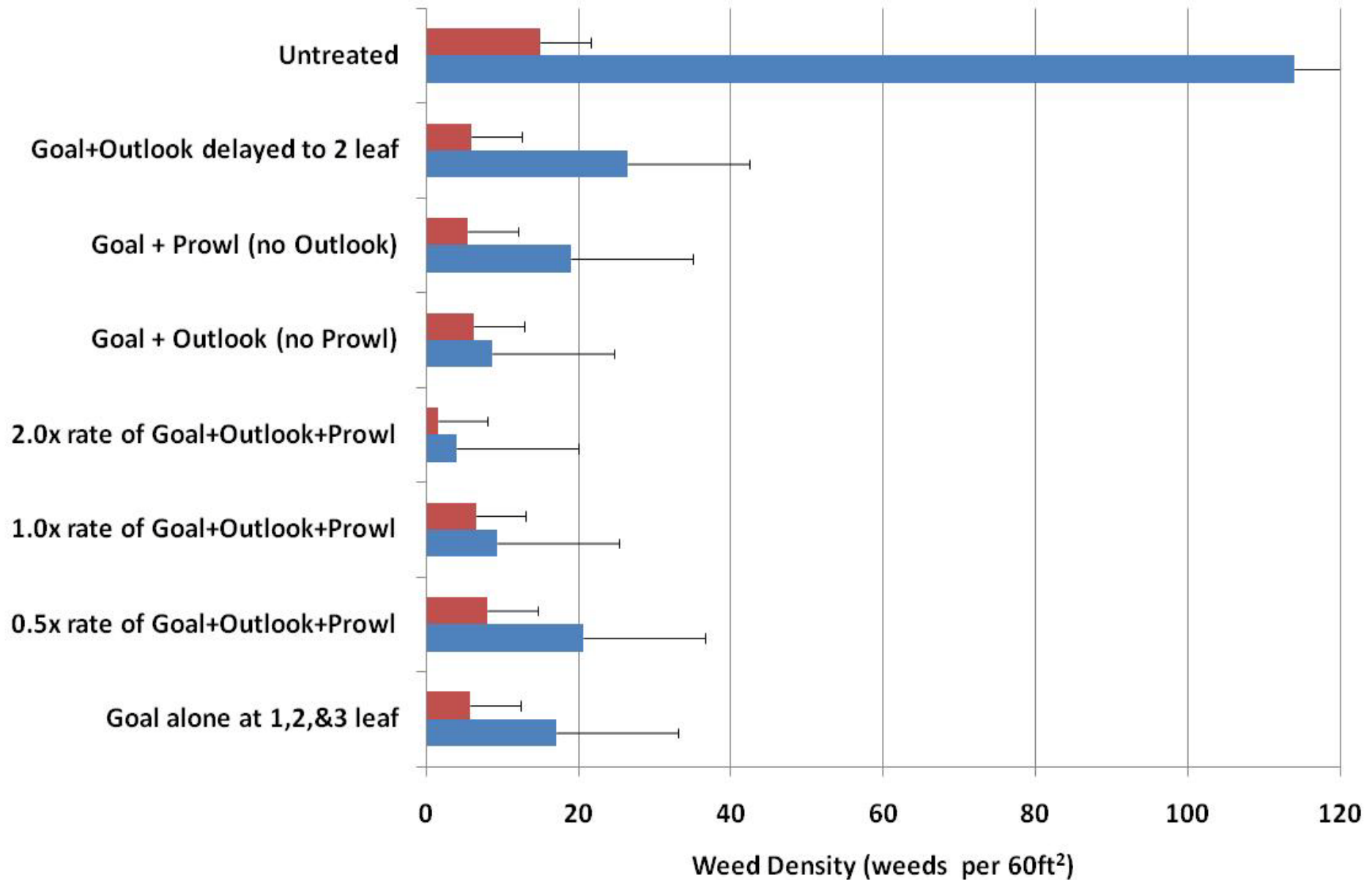
← Goal + Outlook  
delayed until 2-leaf

<sup>1</sup> 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





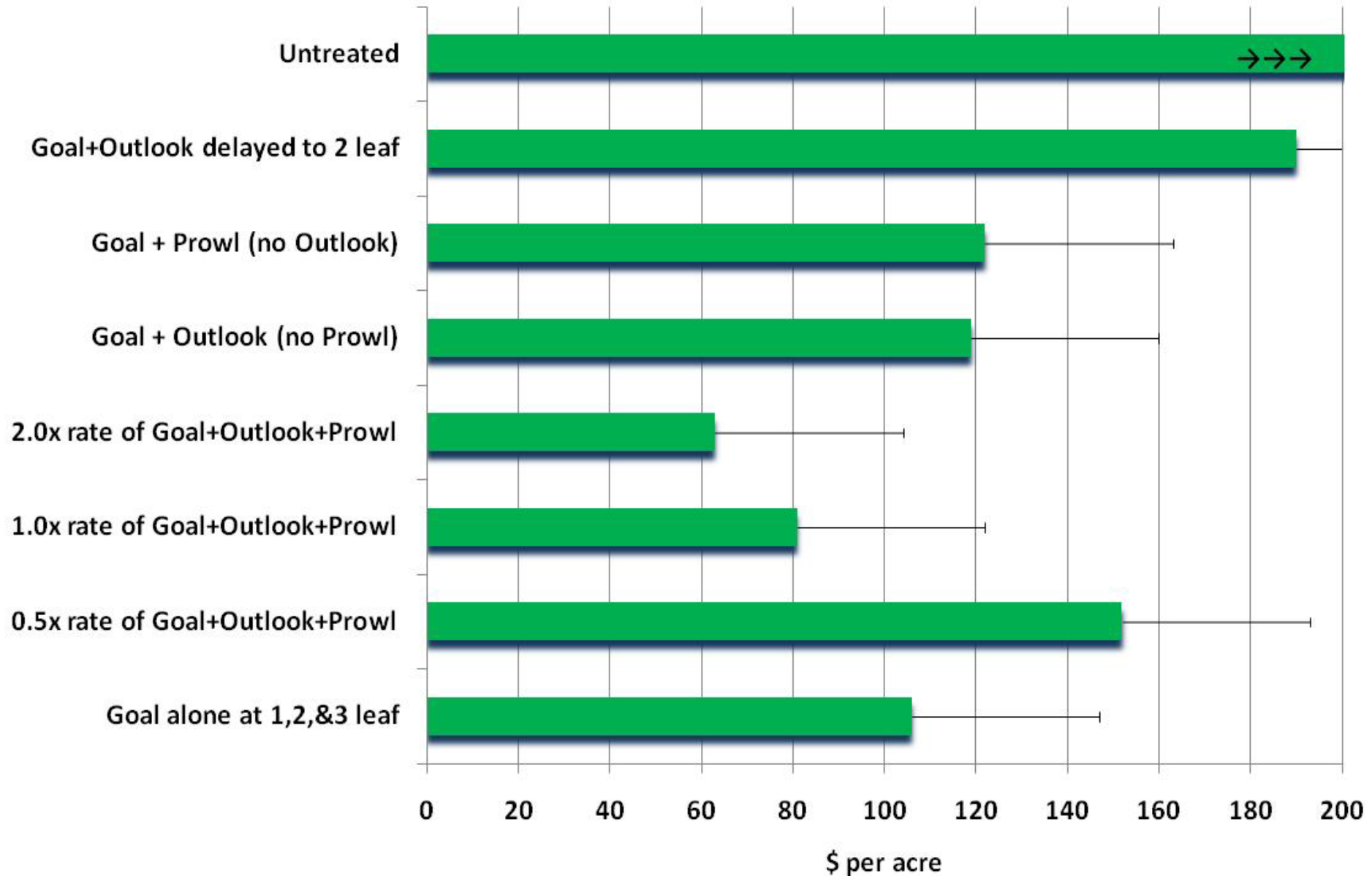
Weeds at 3-4 leaf stage





# 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 H<sub>2</sub>O tank-mixes

### *Onion Injury and Stand*

- The 1.5x and 2x rates of Goal/Outlook/Prowl H<sub>2</sub>O caused significant onion injury (stunting, curling, and chlorosis).
- 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





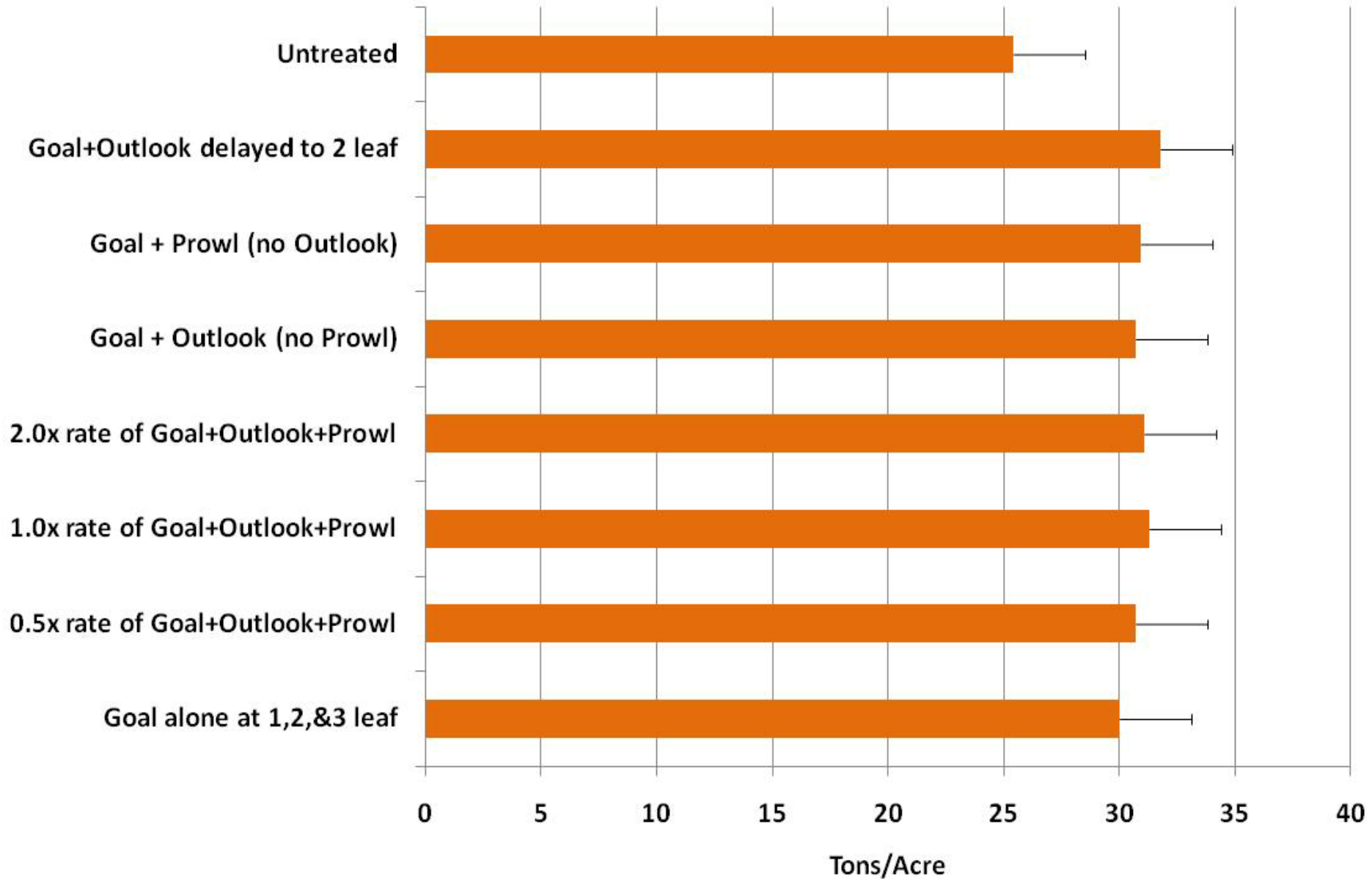
# Injury from Goal + Outlook at 3-leaf stage





# Onion Yield

■ Onion Yield (ton/acre)





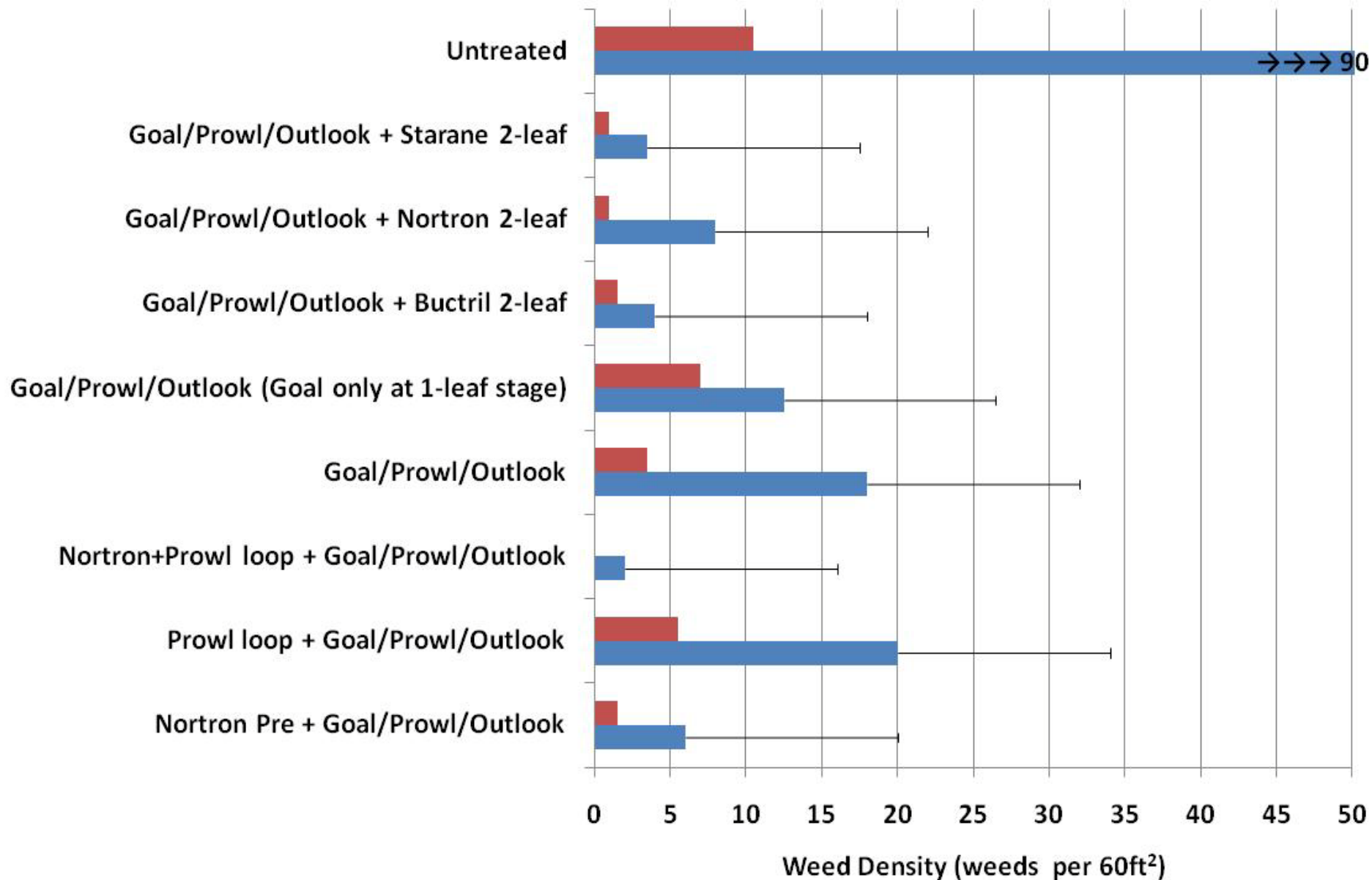




# Average Total Weed Density during July and August

■ 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 H<sub>2</sub>O +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

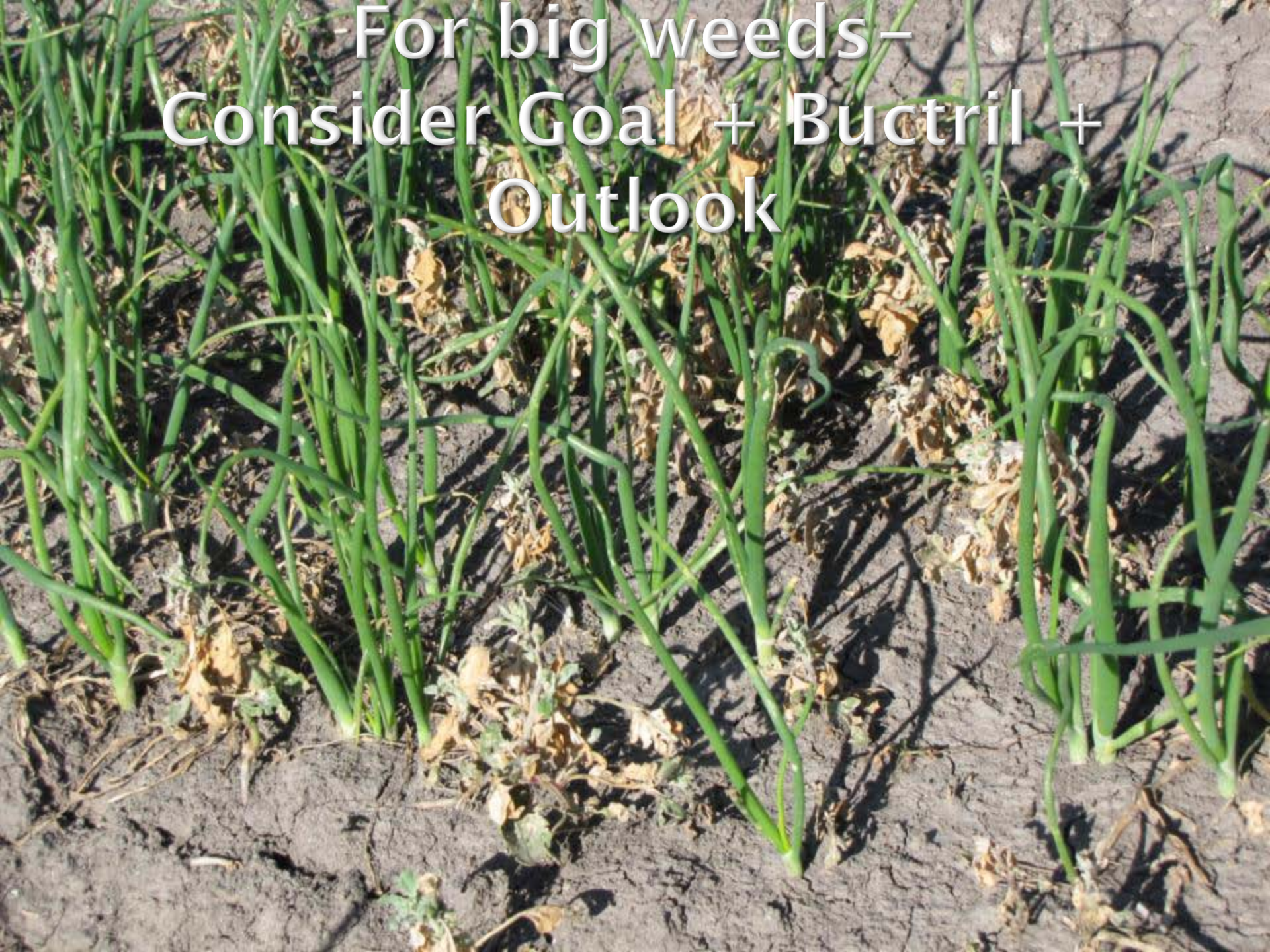


# Weed Regrowth after 1-leaf Goal Treatment





- For big weeds -  
Consider Goal + Buctril +  
Outlook





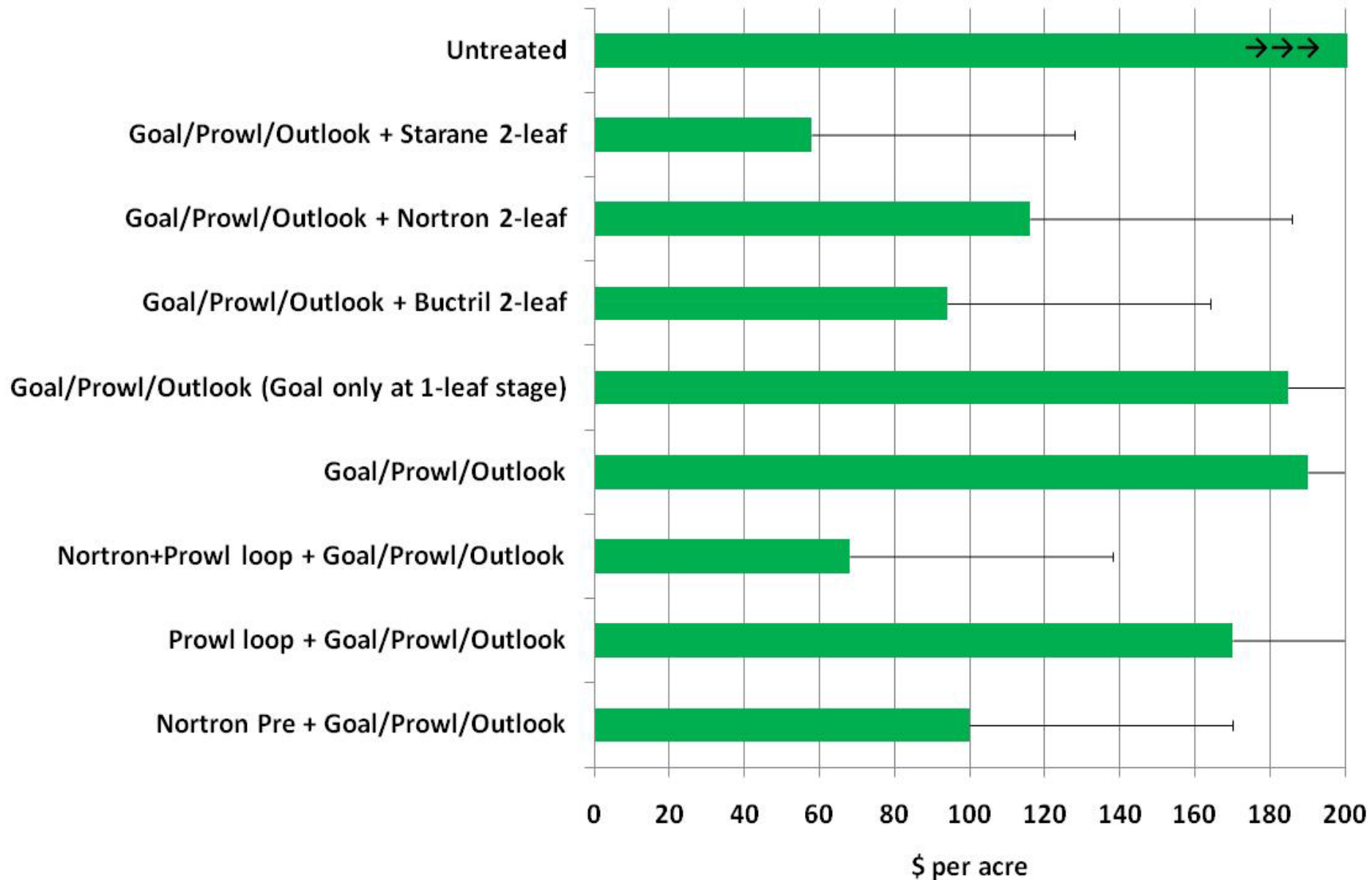
# Treated vs. Untreated





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

■ Season Hand-weeding Cost (\$/acre)





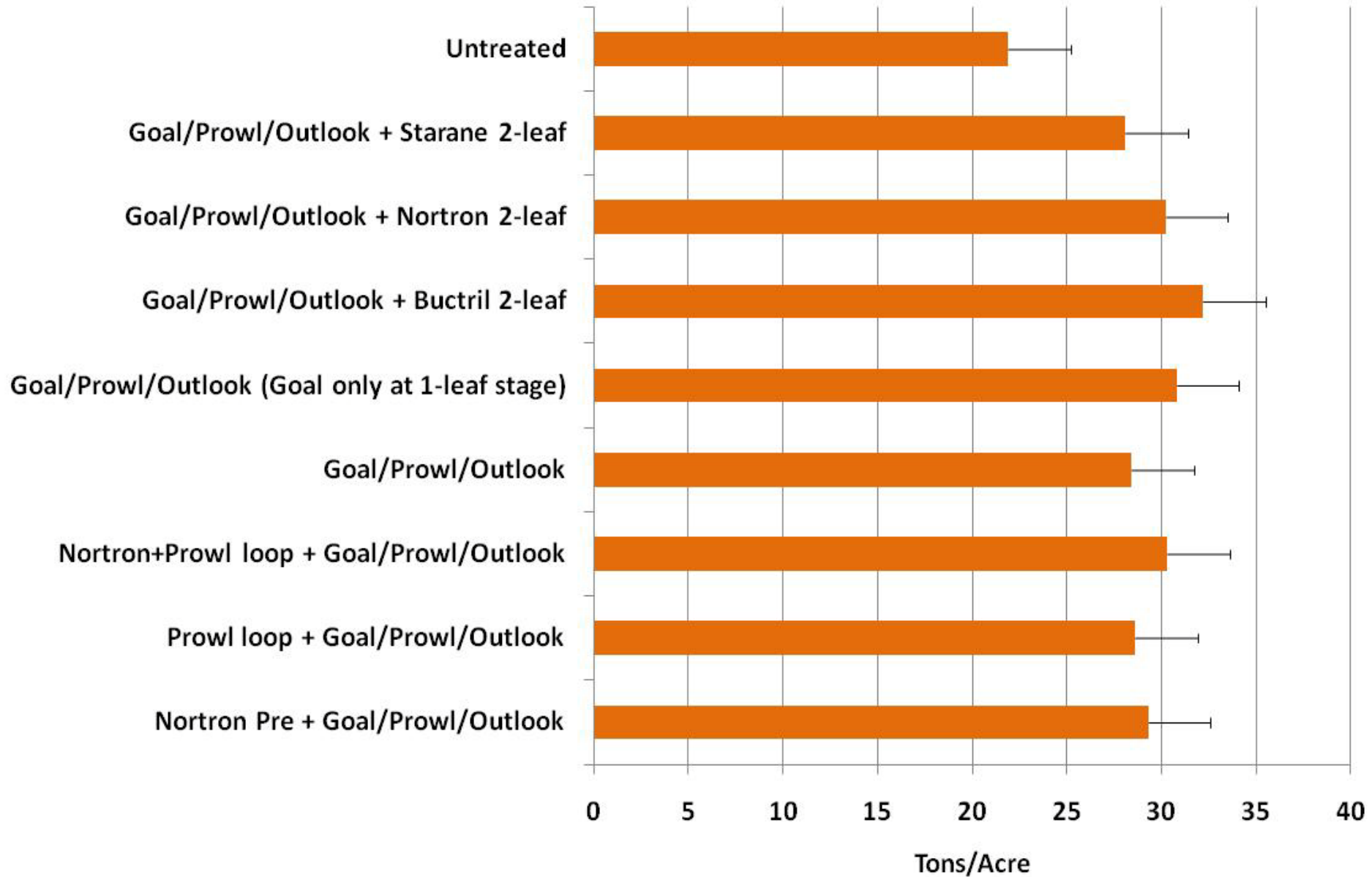
# Injury from Starane + Goal





# 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





Questions?