



Planting Decisions for Oklahoma Sunflower Production

Chad Godsey, Greg Hohman, Randy Taylor, and Rick
Kochenower

Oklahoma State University

National Sunflower Association Research Forum

Fargo, ND

Outline

- Planting Date
- Stand Establishment



Objectives

- Determine the optimum planting date for sunflower in Oklahoma.
- Evaluate the use of various planter attachments and planter adjustments to optimize plant establishment.

Methods – Planting Date

- Plots were established near Stillwater and Lahoma, OK (rain-fed).
 - April 13, April 30, May 28, June 15, July 12, and July 27
- Three hybrids: 820HO, s668, and s671 planted on each planting date

Methods

- Randomized complete block with 4 replications.
- Plots were 10 ft wide and 25 ft in length and planted with a Monosem planter.
- Best management practices followed.

Methods - Establishment

- Sunflower was no-till seeded into wheat stubble as a double crop.
- All plots were planted with a 4-row John Deere 7300 row crop planter with a vacuum metering system on 30 inch row spacing.
- Factors included:
 - residue clearing (with and without row cleaner)
 - seed firmer (with and without Keeton)
 - closing wheel type (standard Deere and standard Deere with one Martin spike)
 - speed (5 and 7 mph)
- Performance evaluation was based on percent emergence, emergence rate index (ERI), mean plant spacing, standard deviation in plant spacing, percent multiples, percent misses, quality of feed (QOF) index, precision index, and grain yield.
- This study had three replications and was implemented at two sites: a rainfed site in north central Oklahoma and an irrigated site in the Oklahoma panhandle.

Plant and Soil Sciences Extension



Definitions

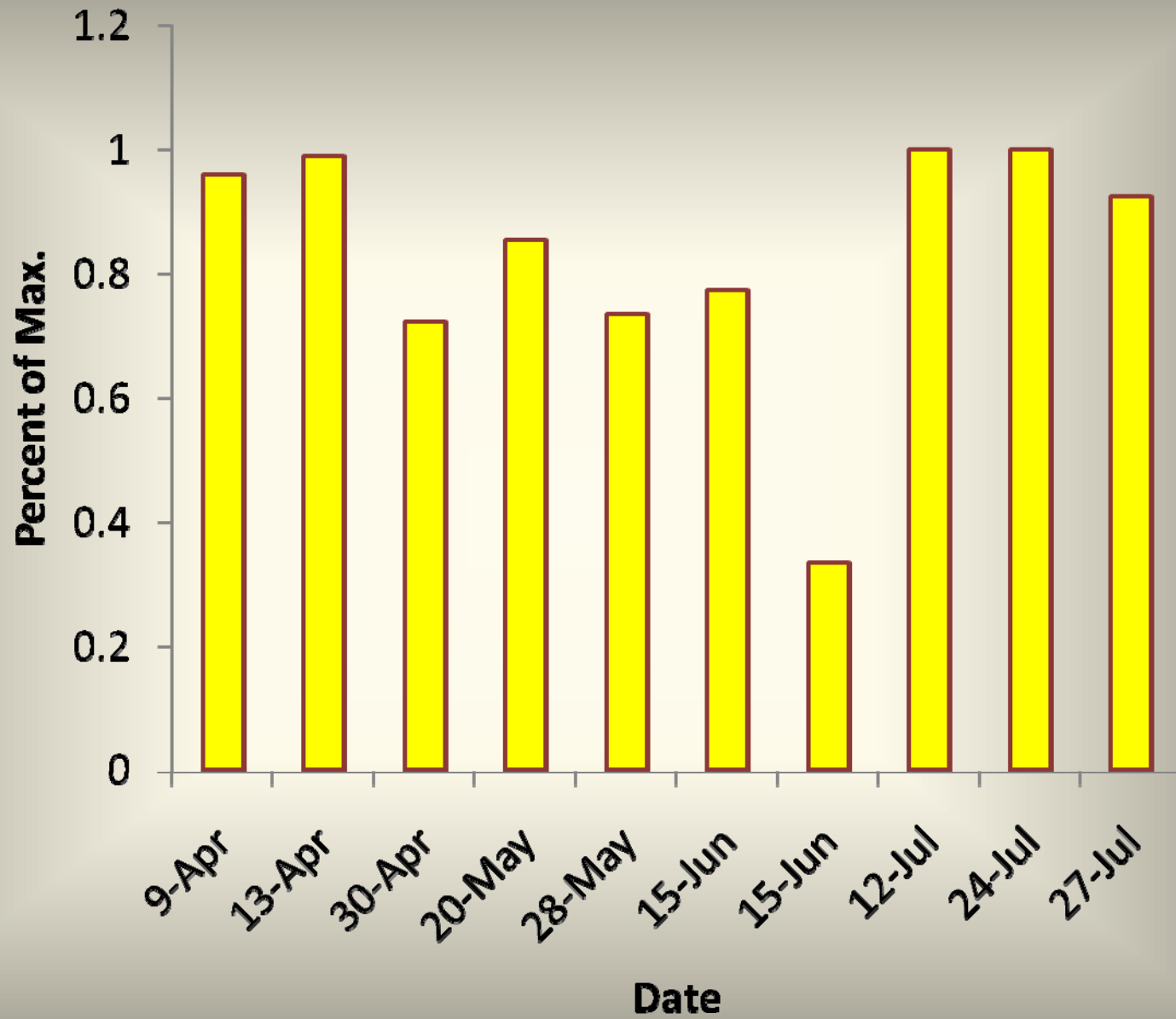
- percent emergence
- emergence rate index (ERI) = % per day
- mean plant spacing
- standard deviation in plant spacing
- percent multiples = <0.5 of target population
- percent misses = >1.5 times target spacing
- quality of feed (QOF) index
- precision index = std dev. after multiples and misses taken out, lower is better

Results – Planting Date

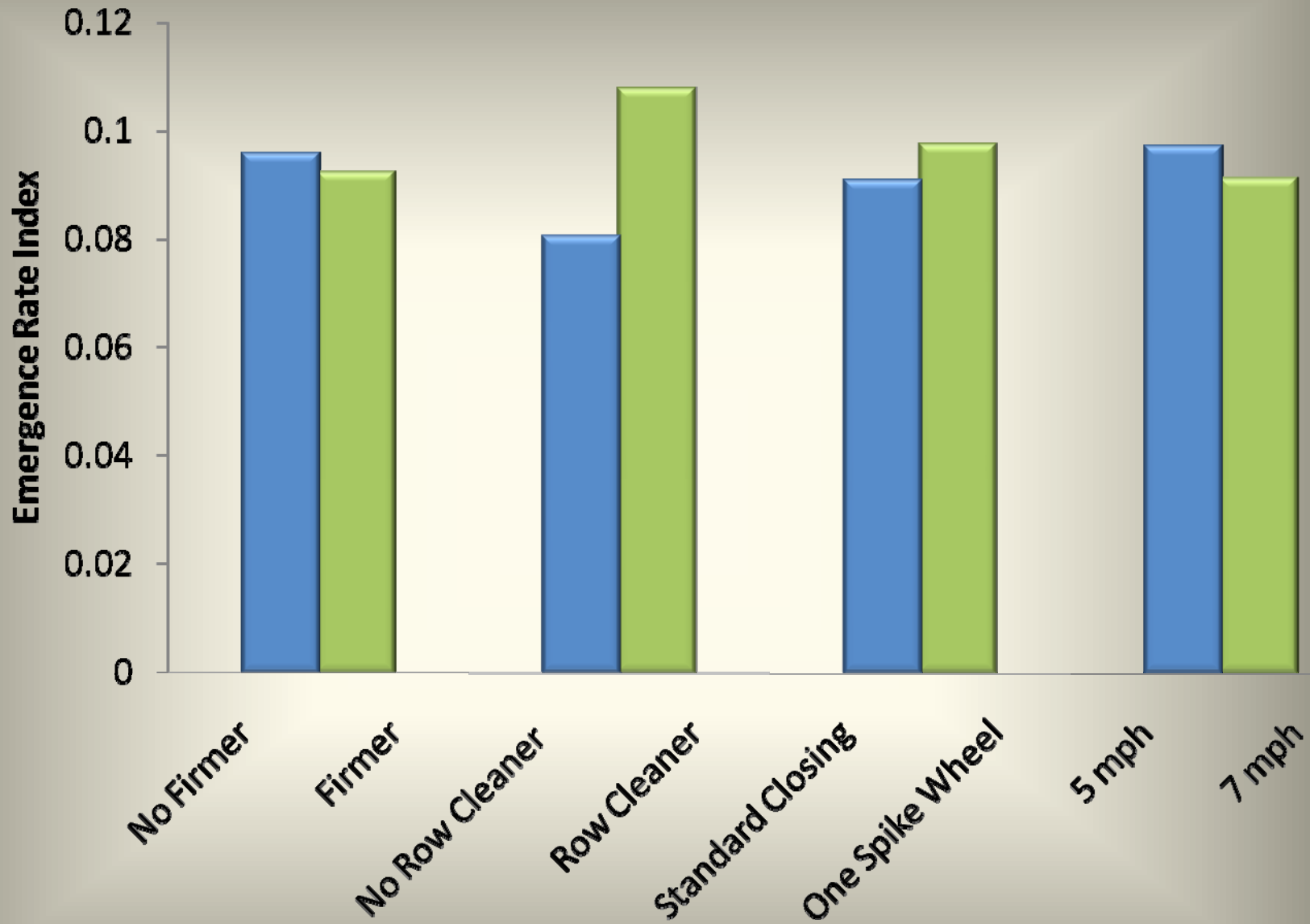
Effect of planting date on seed yield of three sunflower hybrids in Stillwater and Lahoma, OK.

Planting Date	Stillwater	Lahoma
	- - - lb/ac - - -	- - - lb/ac - - -
13-Apr	2363 a	1335 b
30-Apr	1725 b	2123 a
28-May	1754 b	757 c
15-Jun	797 c	na
12-Jul	2391 a	na
27-Jul	2211 a	na

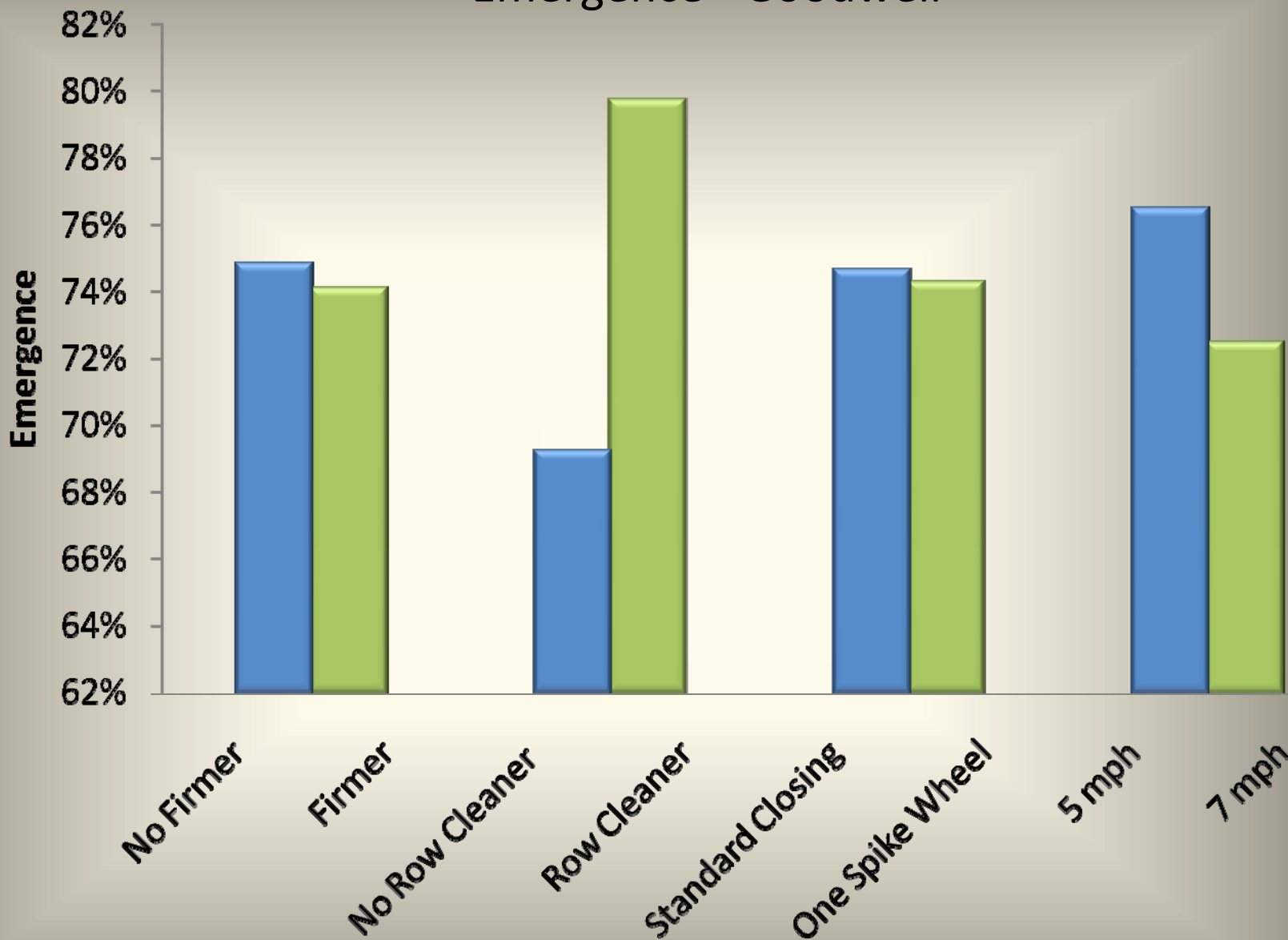
Plant and Soil Sciences Extension



ERI - Goodwell



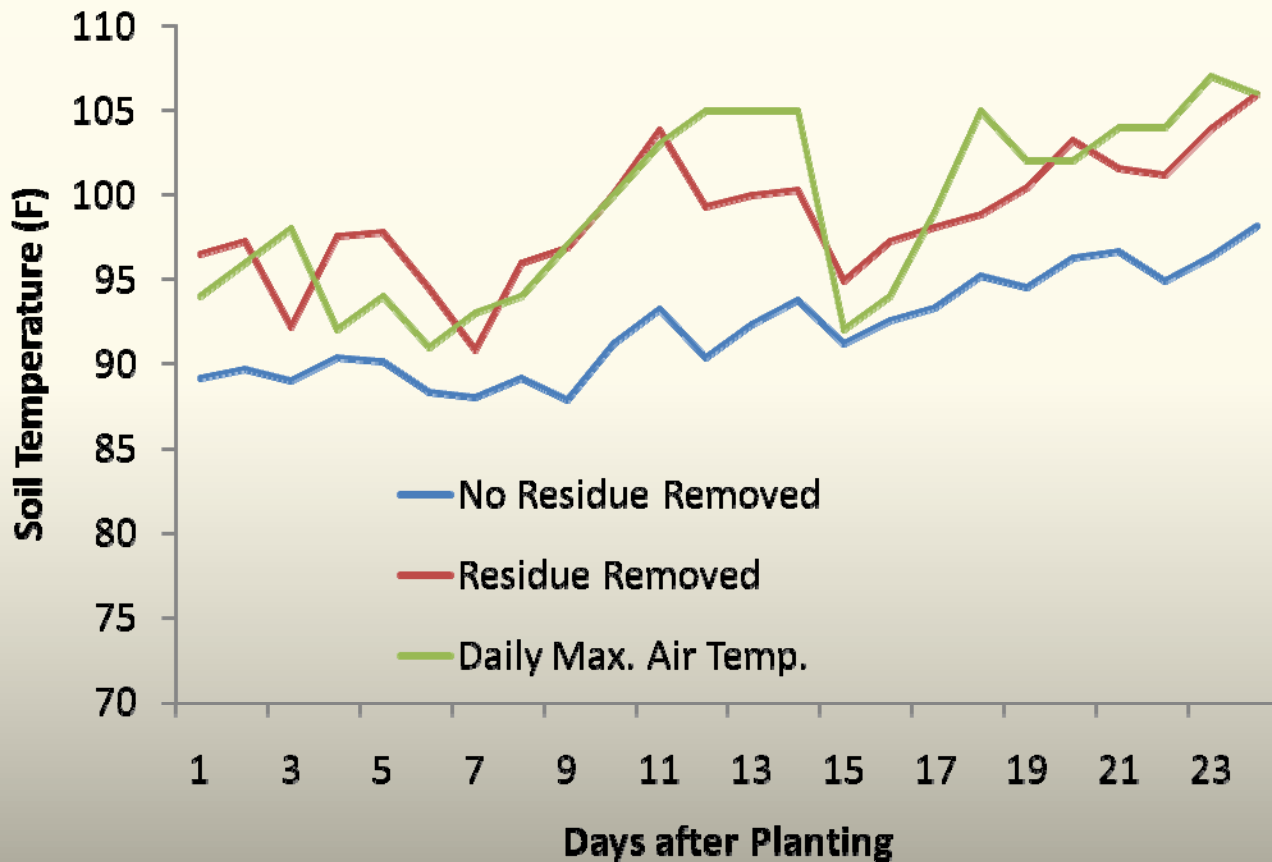
Emergence - Goodwell



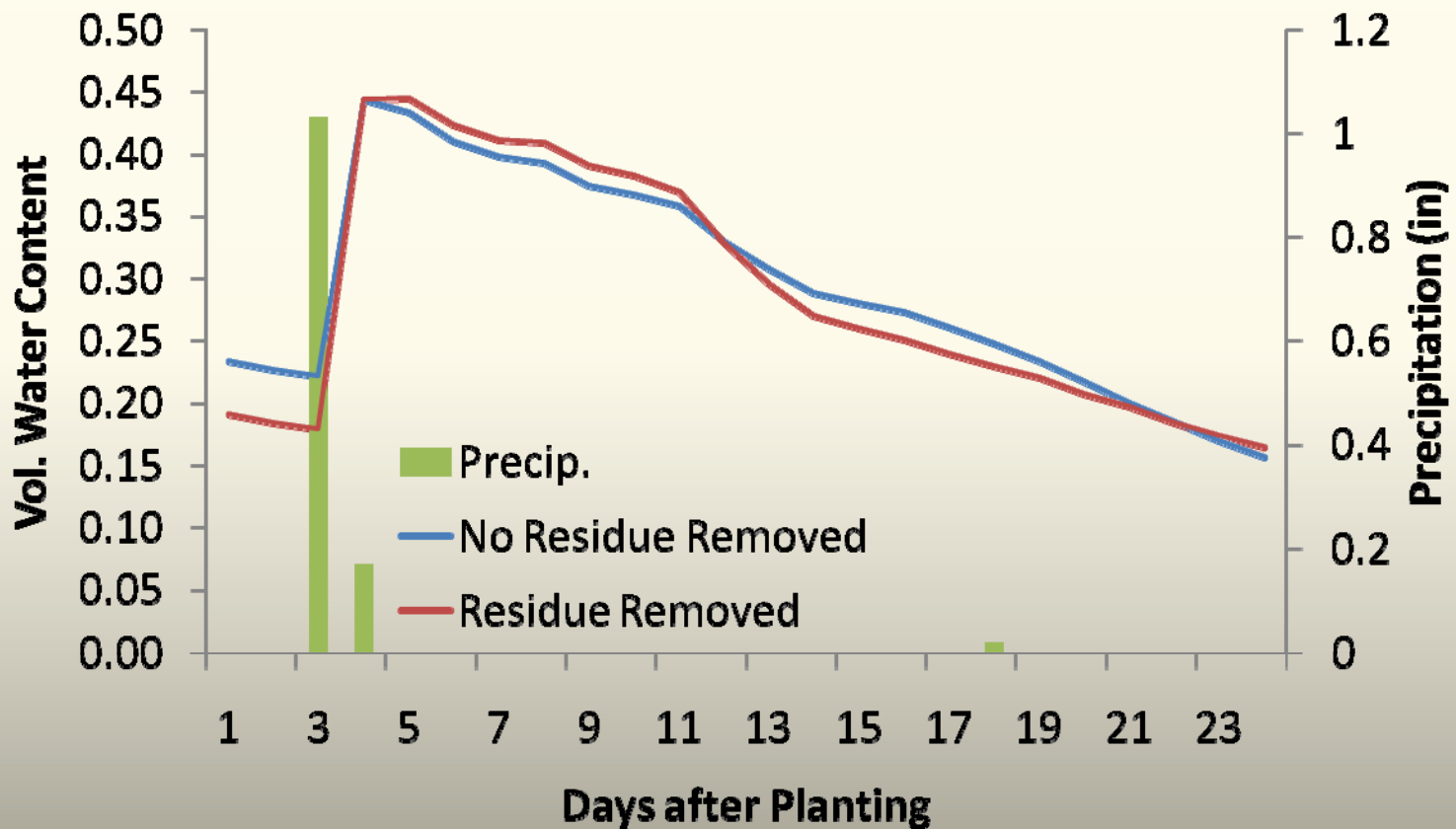
Results – Stand Establishment

- Trends at the rainfed site favor the use of a **seed firmer** and single **spike closing wheel**, operating without residue cleaners.
- Trends at the irrigated site favor the use of a **seed firmer**, a residue cleaner and single **spike closing wheel** and a slower planting speed.

Soil Temperature



Soil Moisture in the Seed Zone



Plant and Soil Sciences Extension



Evaporative Losses

- **Row Cleaners = 0.1 inches in 72 hours**
- **No Row Cleaners = 0.2 inches in 72 hours**



Summary

- Planting Date
 - Early or late appears to be best. Late planting has opportunity to avoid heath moth problems.
- Stand Establishment
 - Seed firmer and spike closing wheel appear to be favorable for obtaining good stand, regardless of conditions.
 - Row cleaners are favorable when temperatures are cooler and soil moisture is available.

Acknowledgments

- National Sunflower Association