

# Edge-of-Field Monitoring for Arkansas Discovery Farms

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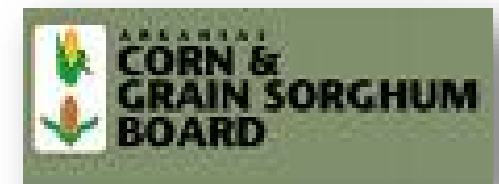
# Thank You to the ones that do the Work

**Program Associates:** Cory Hallmark, Larry Barry, Lee Riley and Brittany Singleton, and Amanda Free





# Some of our sponsors



# What is a Discovery Farm?

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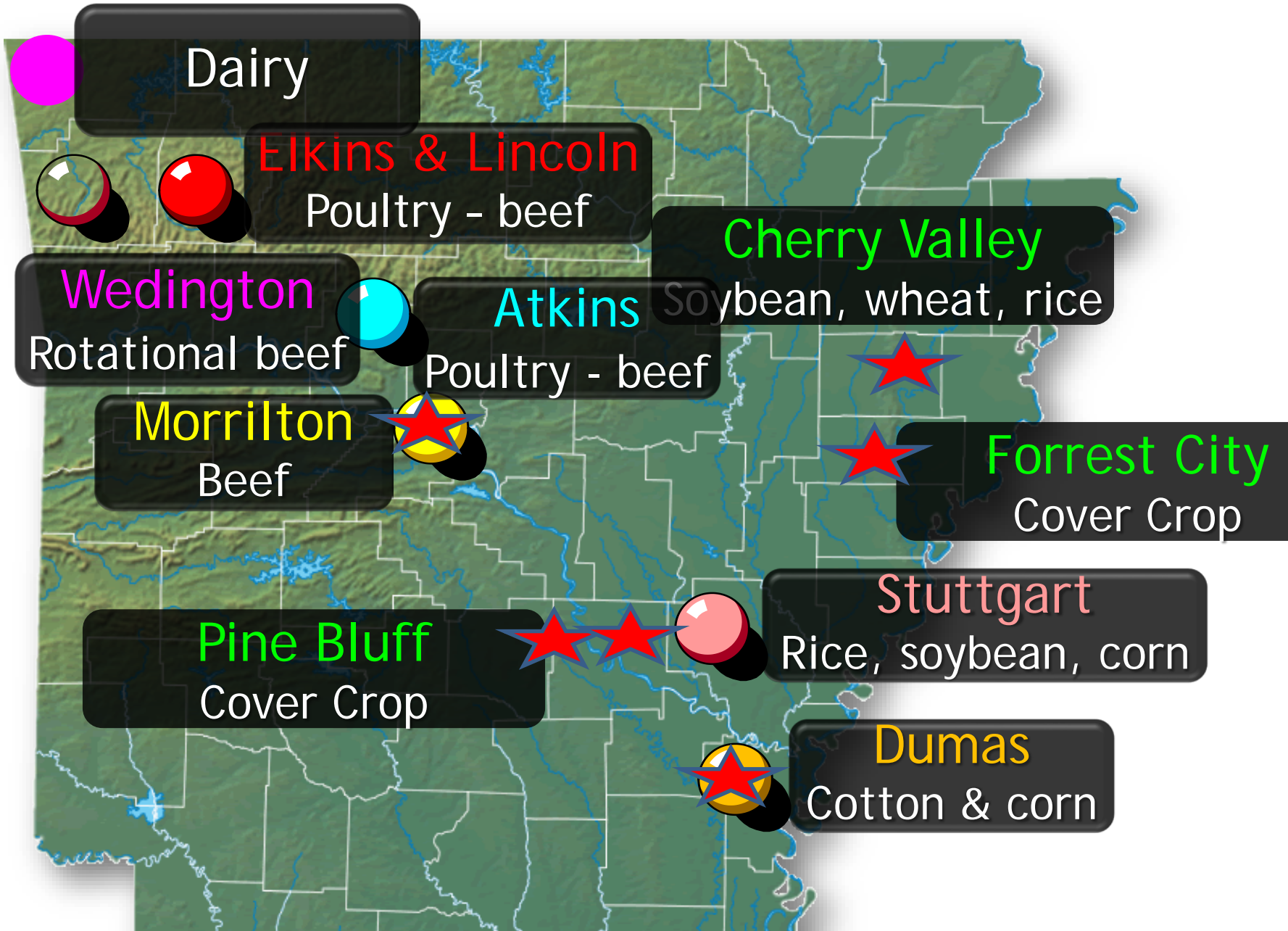
- *Real Working Farms that have volunteered to help us document the effect of agriculture and conservation on water quality and quantity*



# Why we need the program

- Address Water Quality Concerns
- Quantify Nutrient and Sediment Loss so that we can:
  - Measure Progress
  - Develop Solutions
- Involve Agricultural Producers in the Solution Process





Red Stars indicate MRBI Locations

# Things We Monitor

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- Hydrologic Inputs – Irrigation and Precipitation
- Runoff Volume
- N, P and Suspended Solids in Runoff



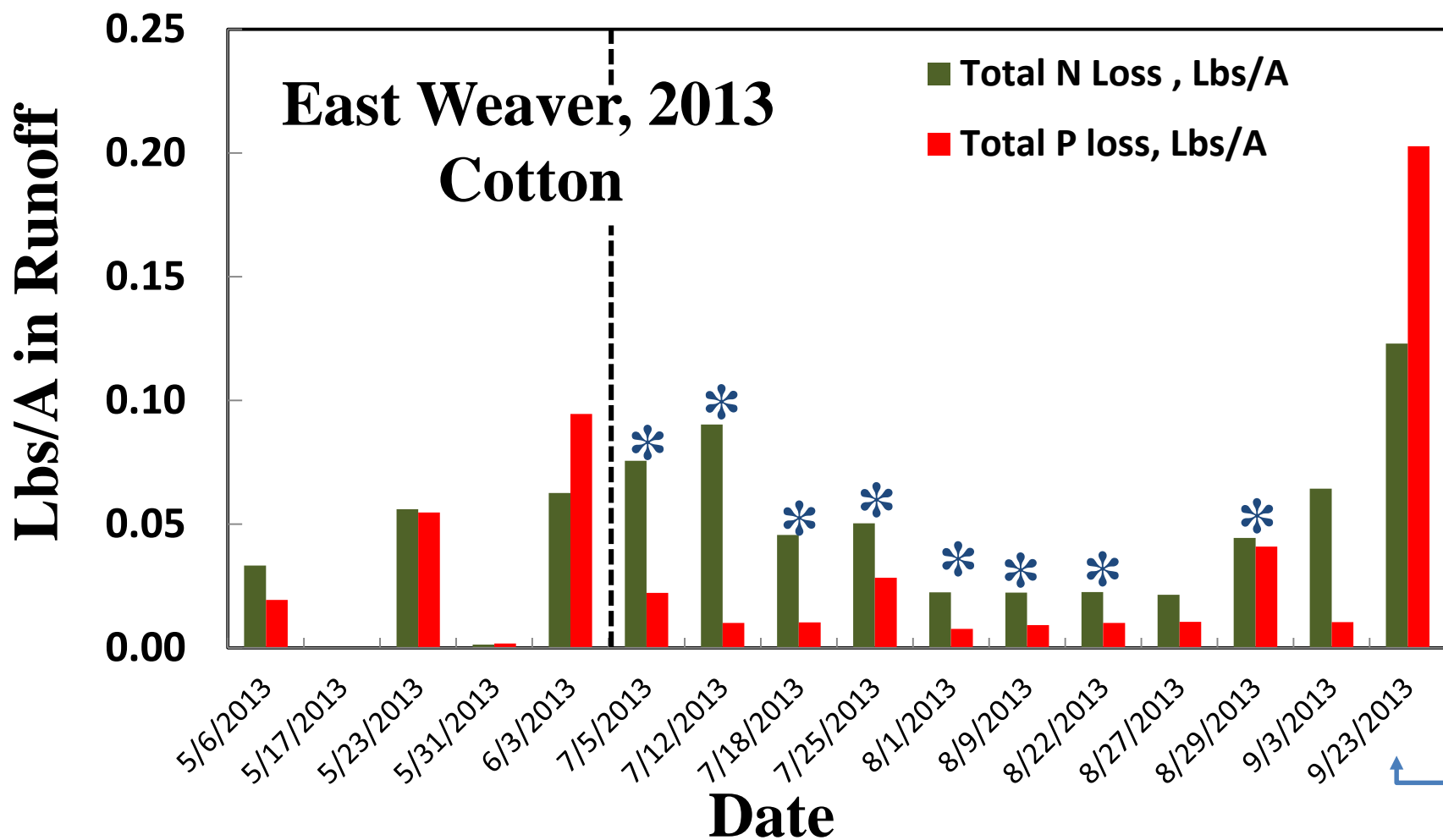
# Results

- The effect of hydrology and crop production on nutrient losses during the year
- The Effect of Cover Crops on sediment loss
- The Effect of Irrigation Delivery on Runoff Volume and Water Quality
- Water Quality: Rainfall vs Irrigation



# 2013 Nutrients loss in Runoff (16 Events)

**N – 20 lbs broadcast on June 13 + 89 lbs liquid knifed in on June 17**  
**P – 27 lbs broadcast on June 13**



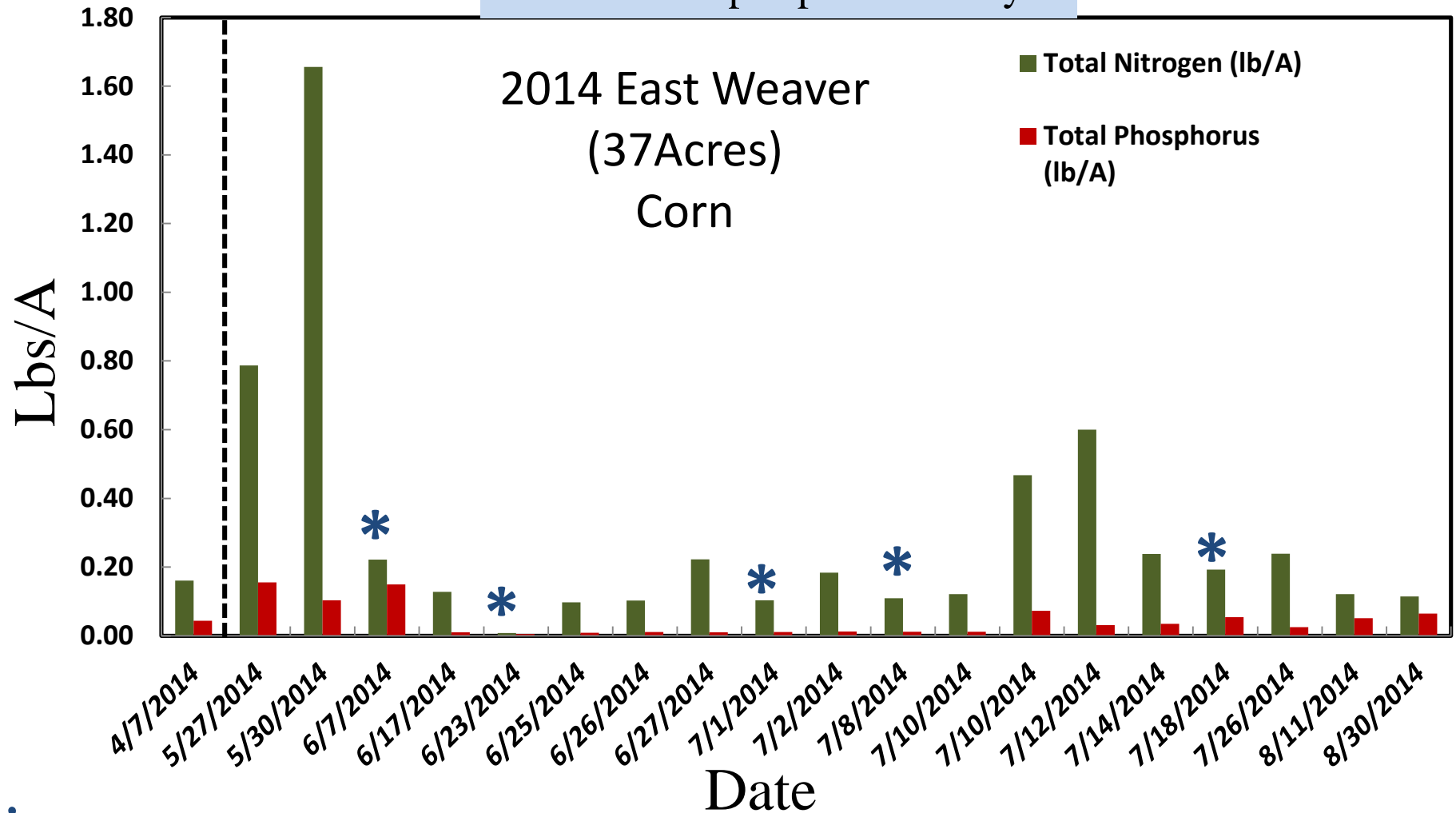
\* Indicates irrigation event

4 inches of rain

# 2014 Nutrient Losses by Event (20)

N - 92 lbs as pre-plant on May 5 + 177 lbs. as liquid incorporated on May 22 on North half and 161 lbs broadcast on South Half

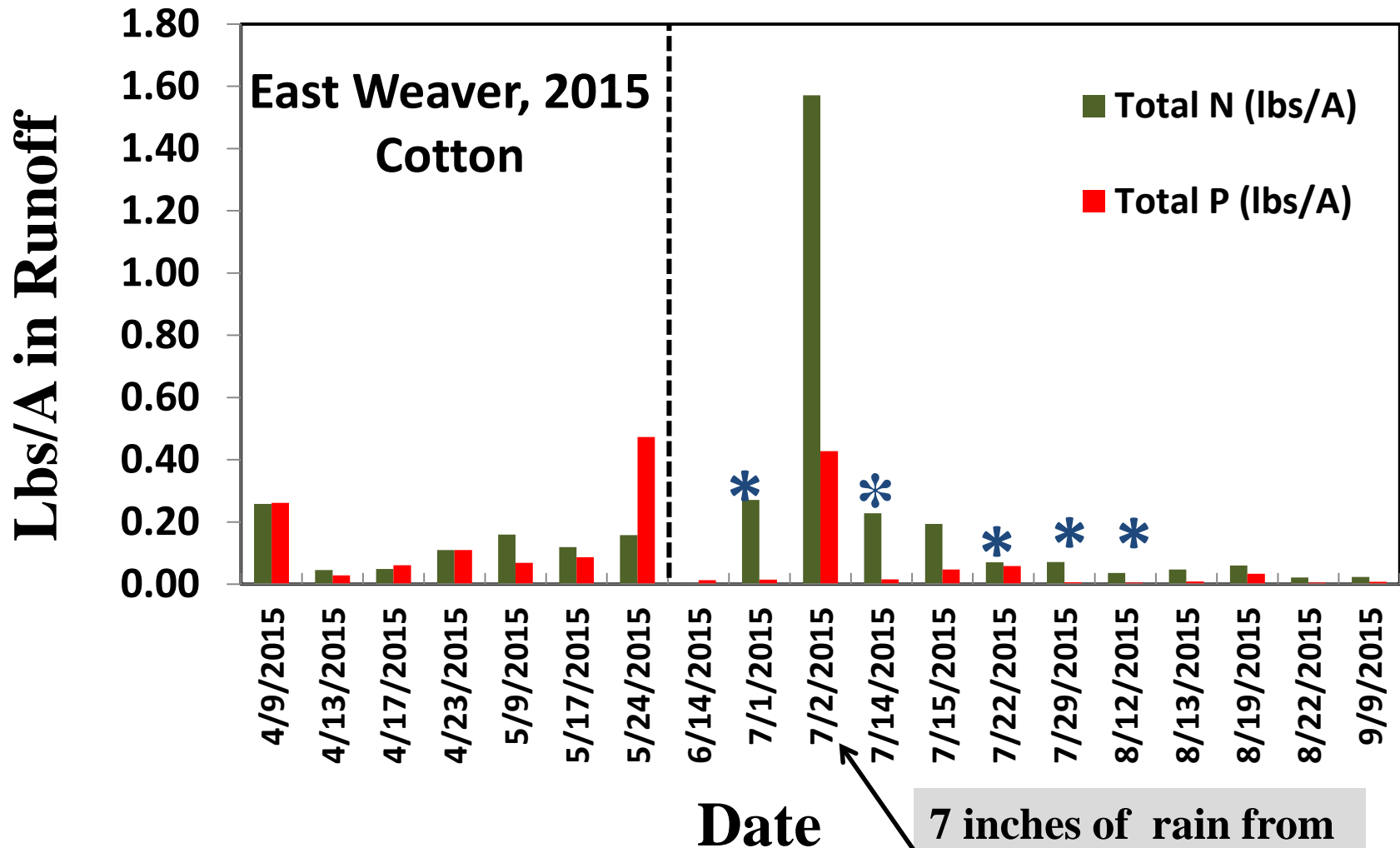
P- 48 Lbs. as pre-plant on May 5



# 2015 Nutrients loss in Runoff (16 Events)

N - 22 lbs. Broadcast on June 4 + 96 lbs as liquid knifed in June 9

P – 30 Lbs. broadcast on June 4





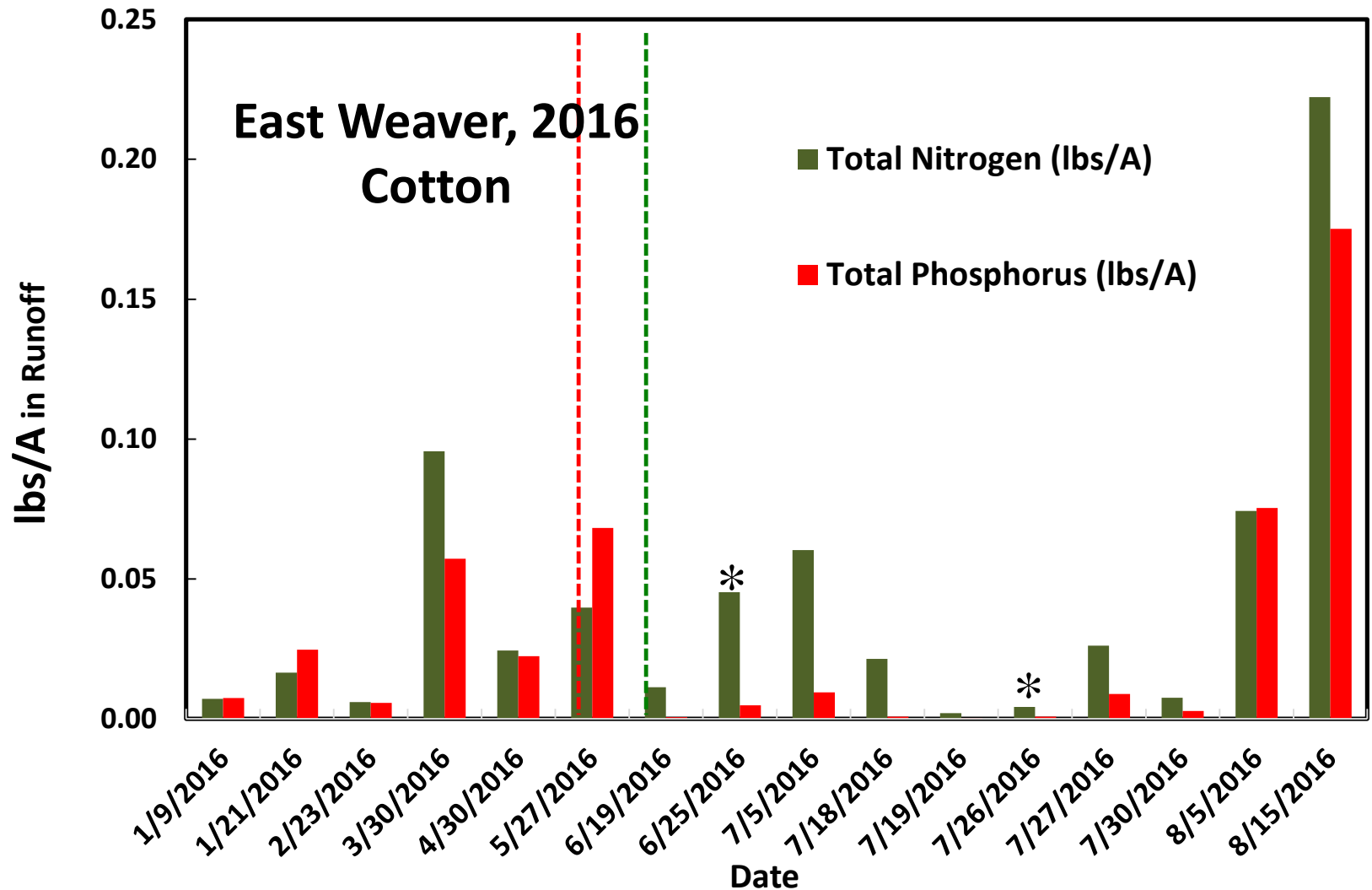
# 2016 Nutrients in Runoff

**N - 95 lbs liquid knifed in on June 17**

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**P - 30 lbs broadcast on May 26**

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**\* Indicates irrigation event**



# No-Till



# Cover

# Till



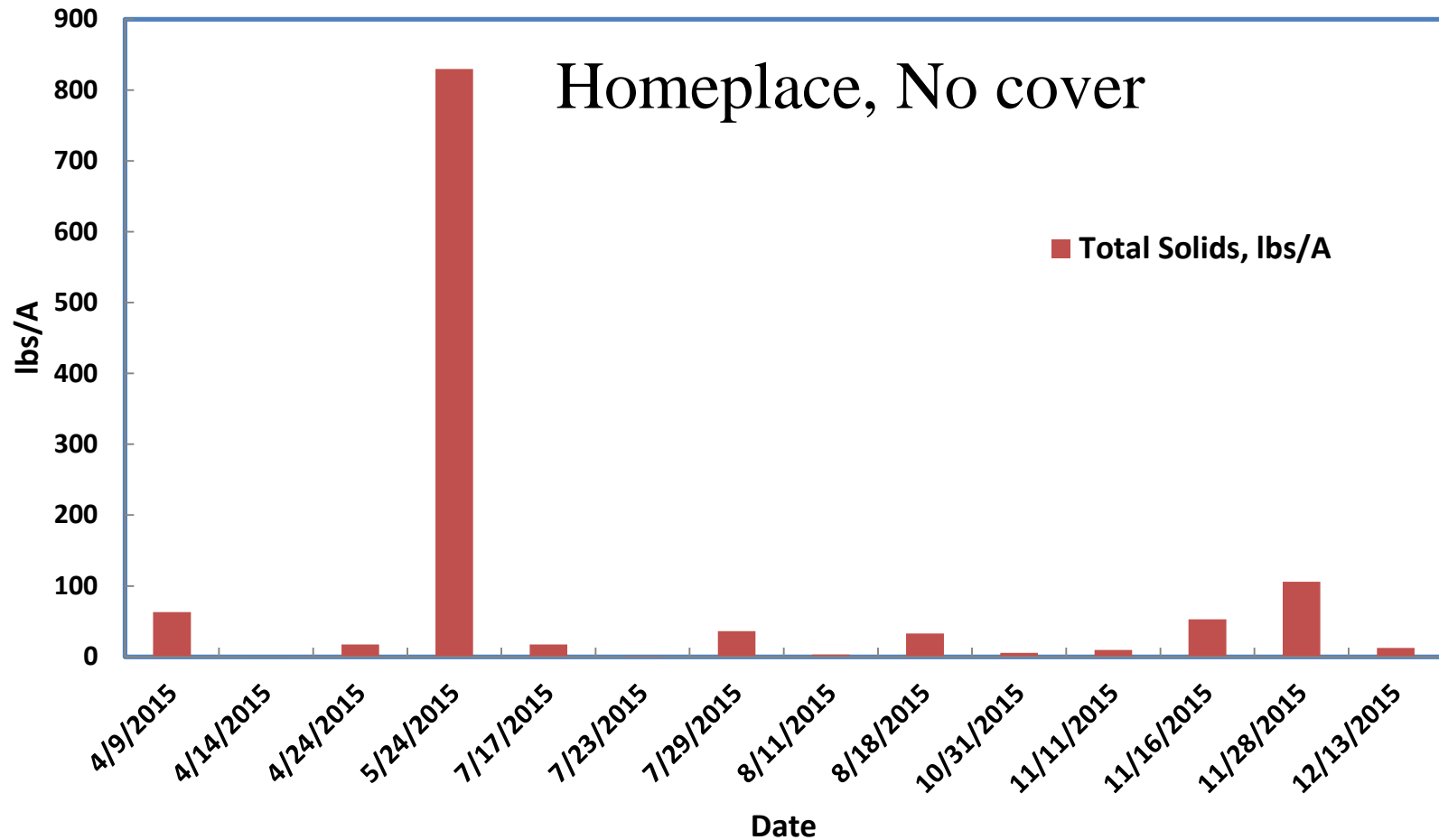
# No Cover



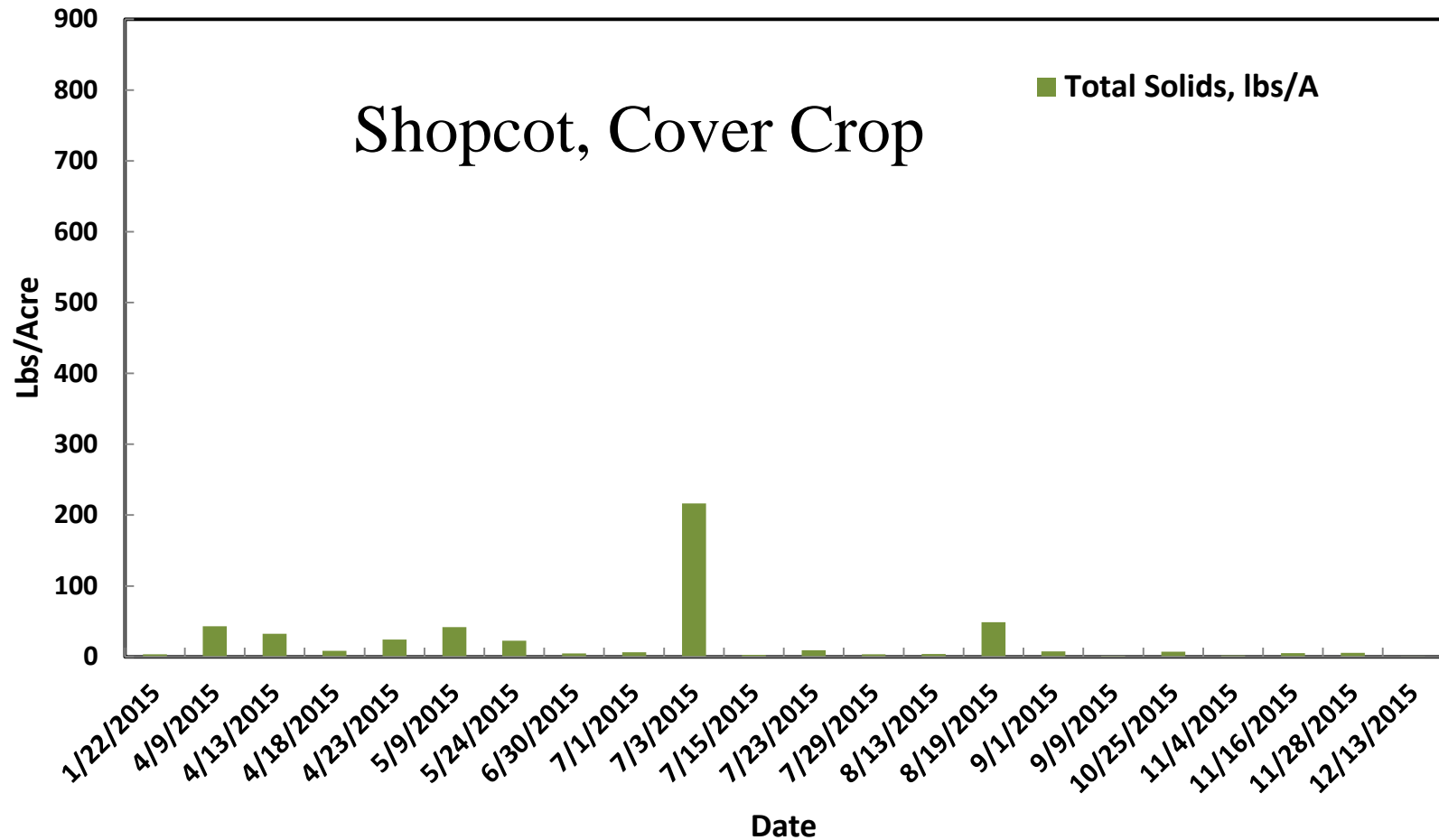
# Conservation Practice: Cover Crops



# Total Suspended Solids, lbs./A



# Total Suspended Solids, lbs./A





# Documenting the Effects of Irrigation Water Management on water use in Cross County

- Paired Comparison for surge valve
- Field divided in half: Control and Treatment
- Irrigation flow was measured for both halves
- Runoff volume and quality for both halves

Rainfall runoff



Irrigation runoff





# Comparison of Losses Between Rainfall and Irrigation in 2015 at Homeplace

Event	Runoff Volume	Total Nitrate+ Nitrite	Total Ortho Phosphate	Total N	Total P	Total Solids
	Gallons	-----Lbs./A-----				
Rainfall	150,552	2.07	0.387	3.64	1.10	350
Irrigation	19,986	0.03	0.002	0.16	0.02	19



Farmer Involvement



# Meeting with the EPA Chief



**Thank You**

