

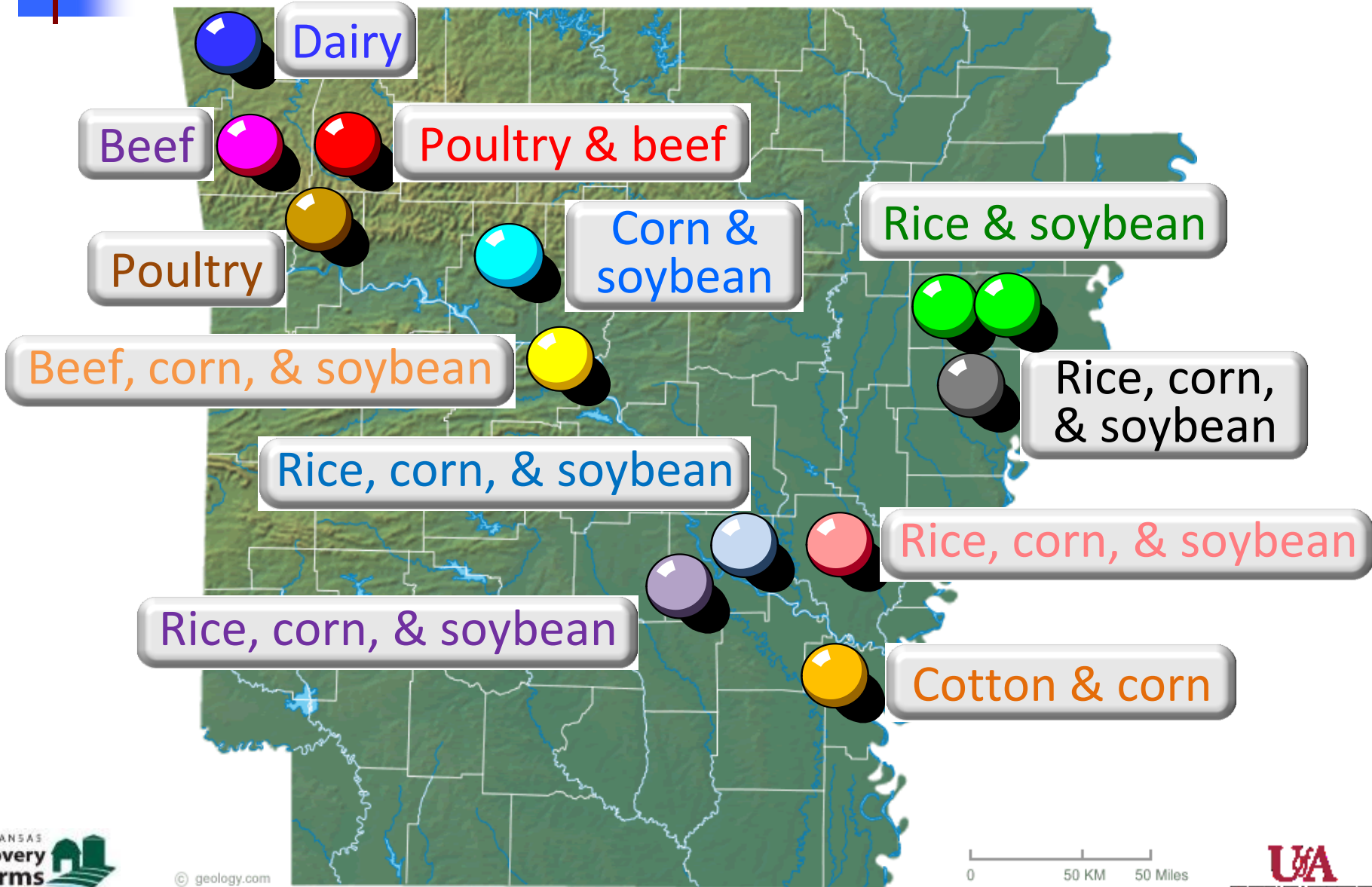


# The Arkansas Discovery Farm Program

- On-farm research and demonstration
- Address local and regional water issues
- Sound science, unbiased, stakeholder led
- Farmer empowerment, promote conservation
- Document practice effectiveness



# Discovery Farms



# Marley Farm

Elkins, Beaver Lake - Upper White River Watershed

- Pastures (800 ha) & woodland (600 ha)
- 300 head beef & 230,000 broilers
- Evaluate runoff from poultry houses
- Nutrient & sediment trapping efficiency of grassed waterway

# Data for 2013 through 2015

Flume 2

Flume 3

Flume	Flow gals/acre/year	Total P	Total N
		lbs/acre/year	
2	693,720	0.4	1.4
3	80,540	0.2	0.4

An aerial photograph of a farm with various fields, a road, and a building. A central text box contains information about the farm. A label 'Flume 1' is in the top right. A blue arrow points from the left edge of the text box to a road on the left. A blue line points from the bottom of the text box to a pond in the bottom right. A dashed yellow line outlines the text box.

Flume 1

## Morrow Farm

Wedington, Illinois River Watershed

- 180 ac, ~140 head cattle & 40 ewes
- Evaluate effect rotational grazing on soil health & water quality

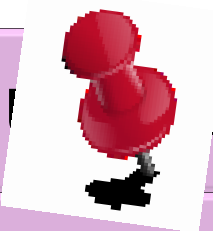
**Flow, gallons/  
acre/year**

**Total P**

**Total N**

**lbs/acre/year**

**2014 (9 events)**



**Upstream**

9,410

0.10

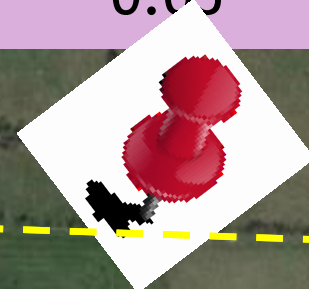
0.24

**Downstream**

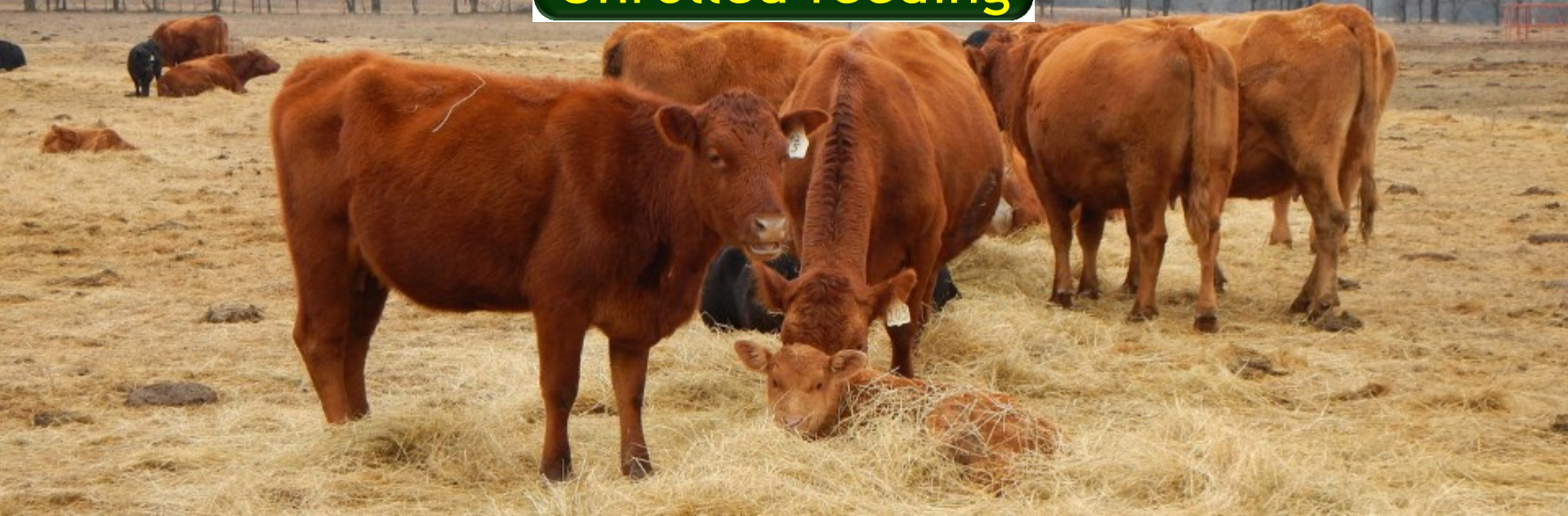
6,640

0.05

0.17



# Unrolled feeding



# Ring feeding



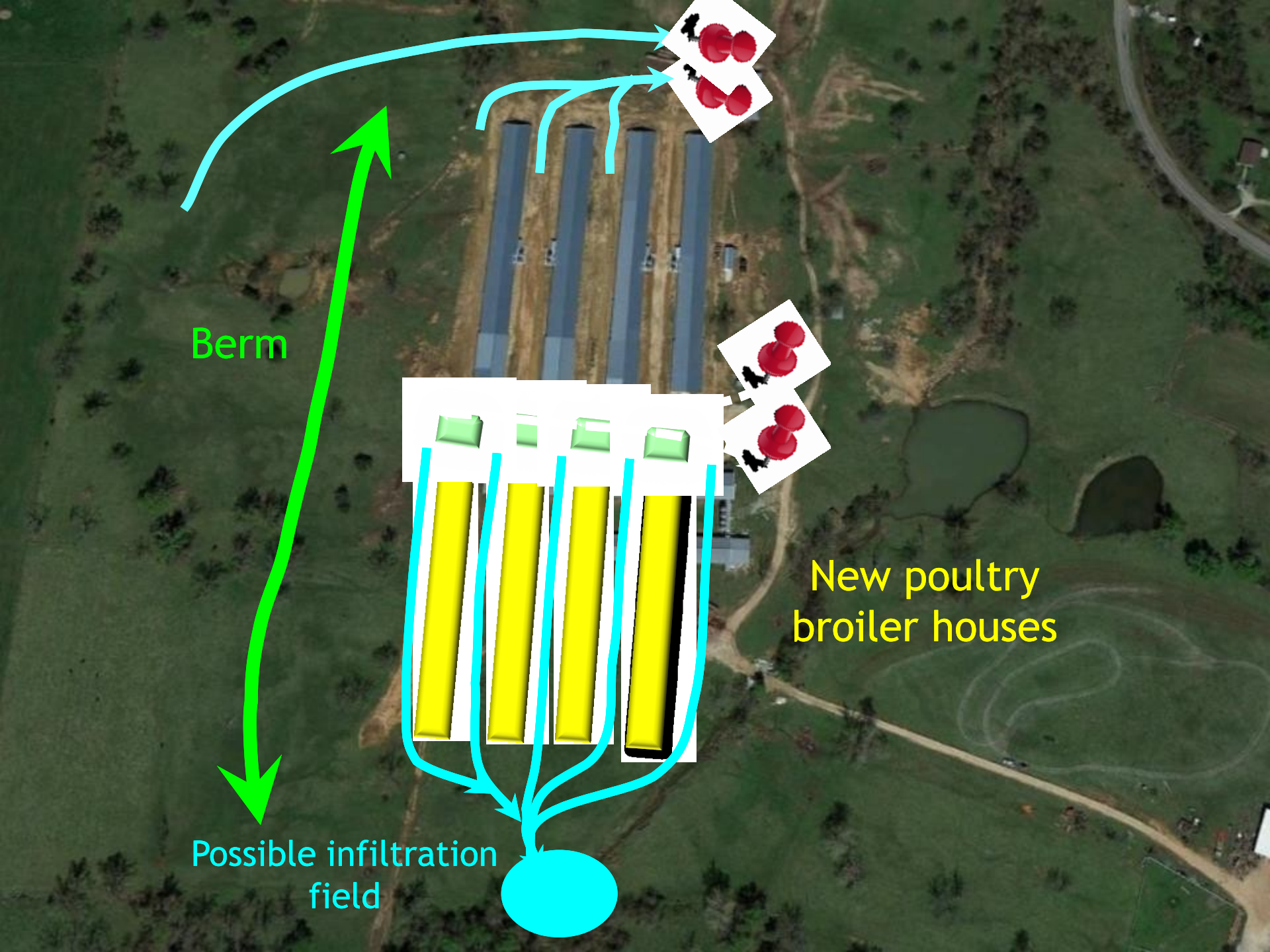




## Moore Farm

Lincoln, Illinois River Watershed

- 200 ac corn - wheat
- ~200,000 poultry broilers



Berm

New poultry  
broiler houses

Possible infiltration  
field



2



6



New

Original

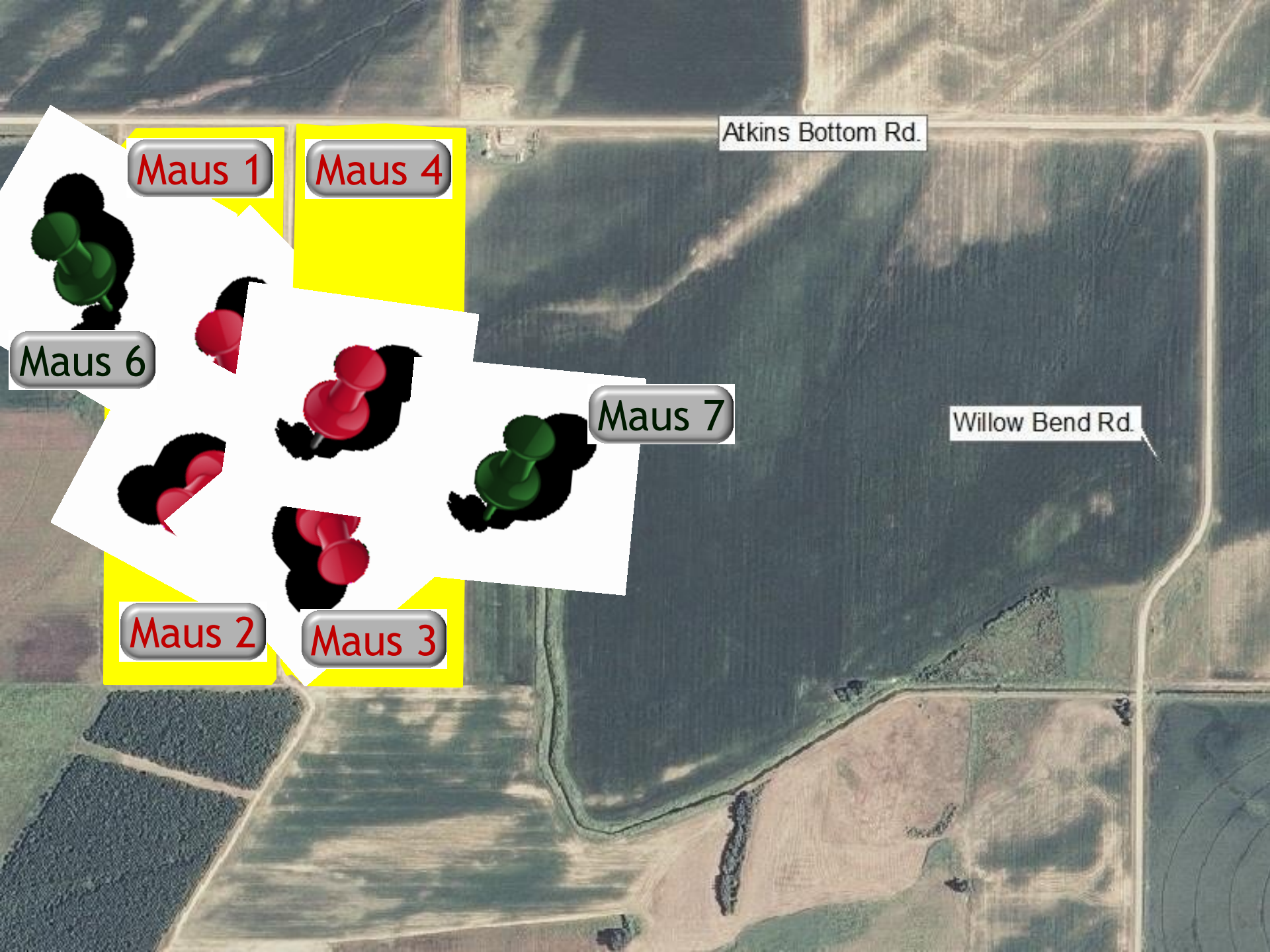




## Maus Farm

Atkins, Point Remove - Lake Conway  
Watershed

- Corn (200 ac), wheat (200 ac), rice (240 ac), and soybean (400 ac), woodland (55 ac)
- Evaluate effect of cover crops on nutrient & sediment runoff



Maus 1

Maus 4

Atkins Bottom Rd.

Maus 6

Maus 7

Willow Bend Rd.

Maus 2

Maus 3

Drainage return  
for 1200 acres

Tail-water recovery

## Dabbs Farm

Stuttgart, Arkansas Co., Bayou Meto Watershed

- Soybean (400 ha), rice (4400 ha), corn (100 ha), wheat (50 ha), hay (20 ha)
- Water harvesting & conservation

graded  
rice

our  
ee

Sampling sites

Image USDA Farm Service Agency  
© 2011 Google

34°21'58.34" N 91°31'45.74" W elev 199 ft

Goetz-Hartlow R  
2010 Google

Eye alt 9542 ft



**Loss,  
lbs/ac/year**

**Percent  
loss**

**Nitrogen**

Pasture	Elkins	0.3	0.2
Corn	Atkins	1.7	1.4
Cotton	Dumas	6.1	5.6
Corn	Dumas	4.4	1.6

**Phosphorus**

Pasture	Elkins	0.1	0.2
Corn	Atkins	0.5	2.3
Cotton	Dumas	1.9	4.6
Corn	Dumas	0.9	2.2

Du

- Soy

- Cor

buf



POLYTUBING



RUNOFF  
WATER

RUN TIME (HOURS)

Animations by: AR & MS Soybean Promotion Boards

# Irrigation & water use efficiency

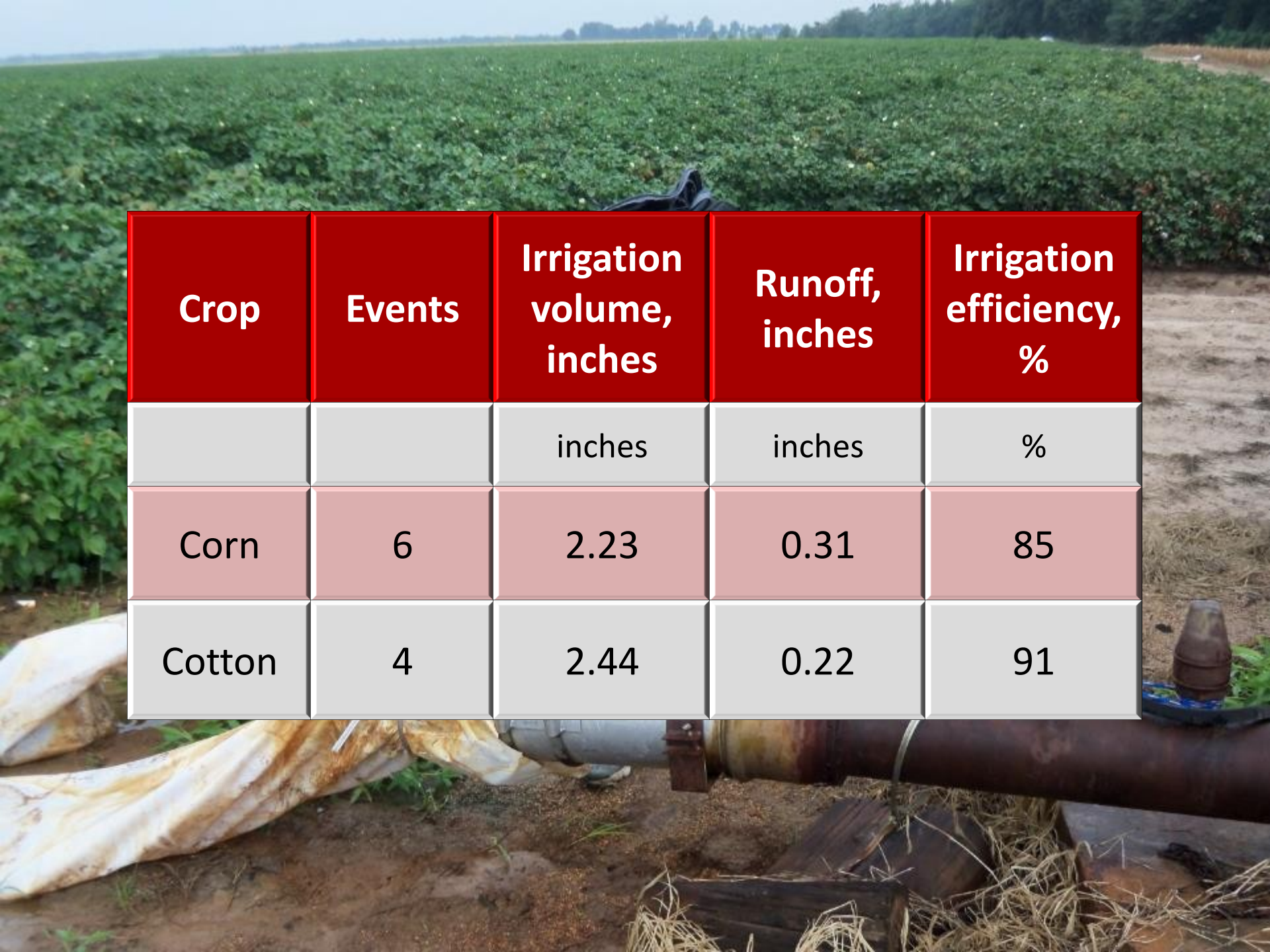


PHAUCET - Pipe Hole and Universal Crown Evaluation Tool

# Using PHACET



Animations by: AR & MS Soybean Promotion Boards



<b>Crop</b>	<b>Events</b>	<b>Irrigation volume, inches</b>	<b>Runoff, inches</b>	<b>Irrigation efficiency, %</b>
		inches	inches	%
Corn	6	2.23	0.31	85
Cotton	4	2.44	0.22	91



# Major findings to date

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- Loss of nutrients less than earlier model estimates
- Conservation practices decrease nutrient loss
- Irrigation water use-efficiency improved with use of PHAUCET
- Wet year of 2015 decreased conservation effectiveness
- Outreach to other farmers and diverse groups at state, regional, & national levels