WATER QUALITY DEMONSTRATION SITE

Deaf Smith County, TX

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West Texas A&M University
Texas A&M AgriLife Research
Texas Cattle Feeders Association
Texas A&M AgriLife Extension
Soil Water TSSWCB

Task 9: BMP Effectiveness Monitoring

- Objective: Monitor implementation of manure/ compost BMPs through collection of water runoff using automatic water samplers, soil samples within fields, soil samples within buffer zones, down-gradient soil samples, manure samples, and water well samples.

- Task 9.2: ….install automatic water samplers to collect runoff from the control and treatment plots. Water samples will be analyzed for nutrients and bacteria…

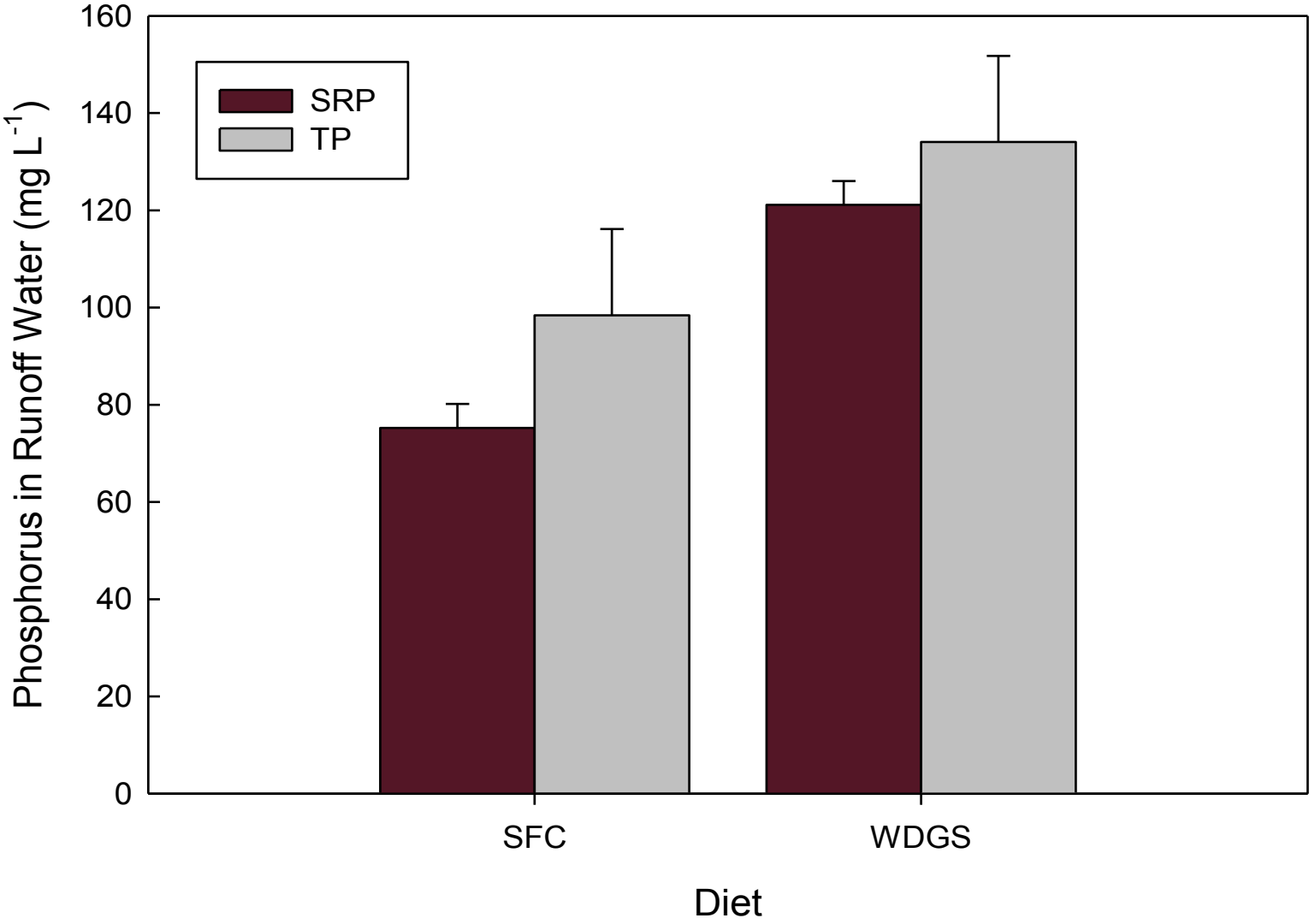
Nutrient Management BMPs

- Do you -
- 1. Know nutrient content in soil?
- 2. Know nutrient content in manure?
- 3. Know application rate?

Manure Nutrients

Diet	Total N (%)	Total P (%)	WEP (mg/kg)
DRC	3.18	0.84	1855
SFC	3.28	1.01	1982
15% WDGS	3.33	1.07	2587
30% WDGS	3.54	1.07	2573
45% WDGS	3.80	1.37	2885
60% WDGS	4.34	1.61	2925

Feedlot Runoff



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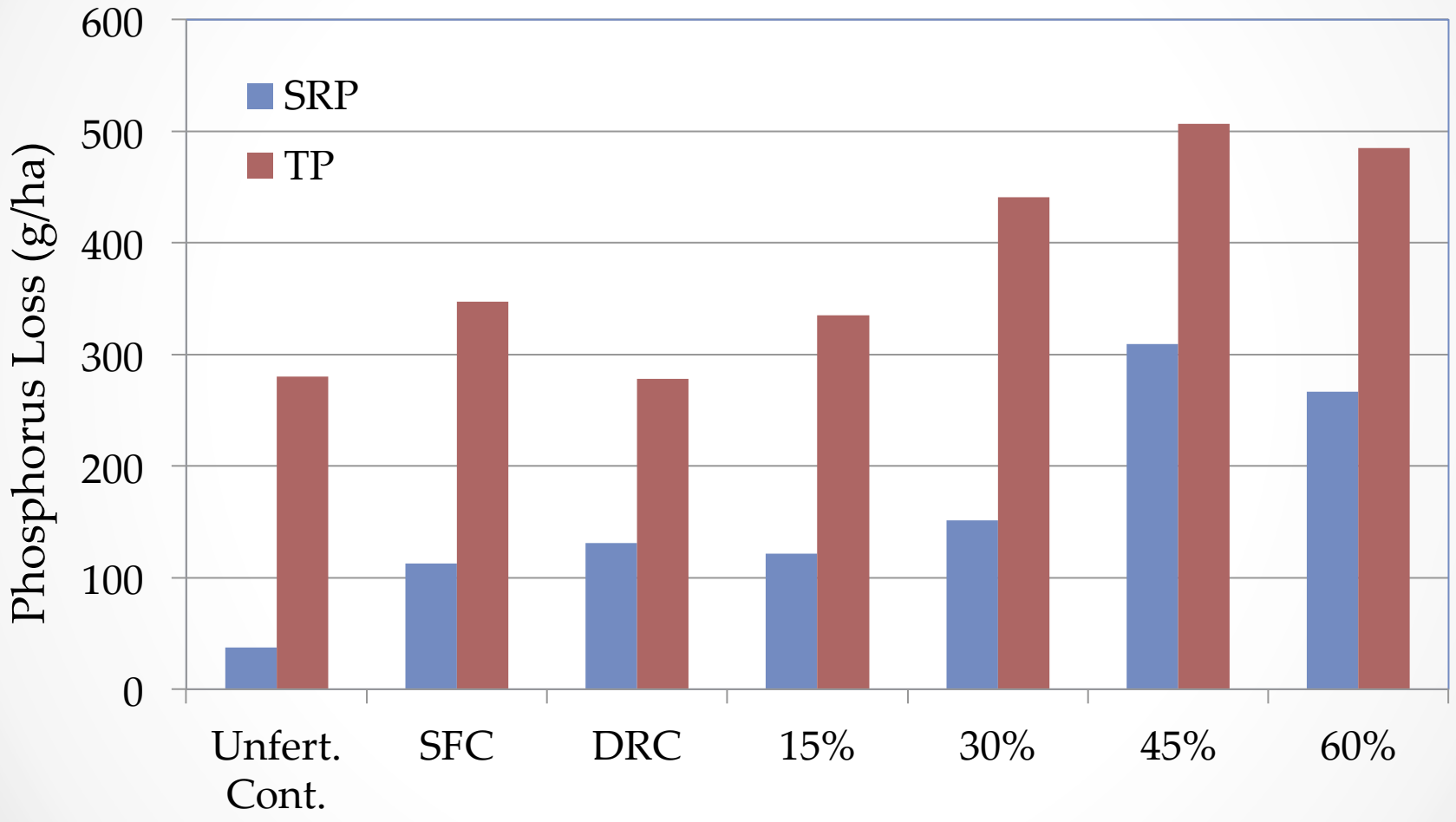
Application Site Runoff



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Fertilizer Treatments

- 10 T/ac manure/yr
- 20 T/ac manure/3 yr
- 4 T/ac compost/yr
- Commercial fertilizer

Plot Construction

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Runoff Flumes

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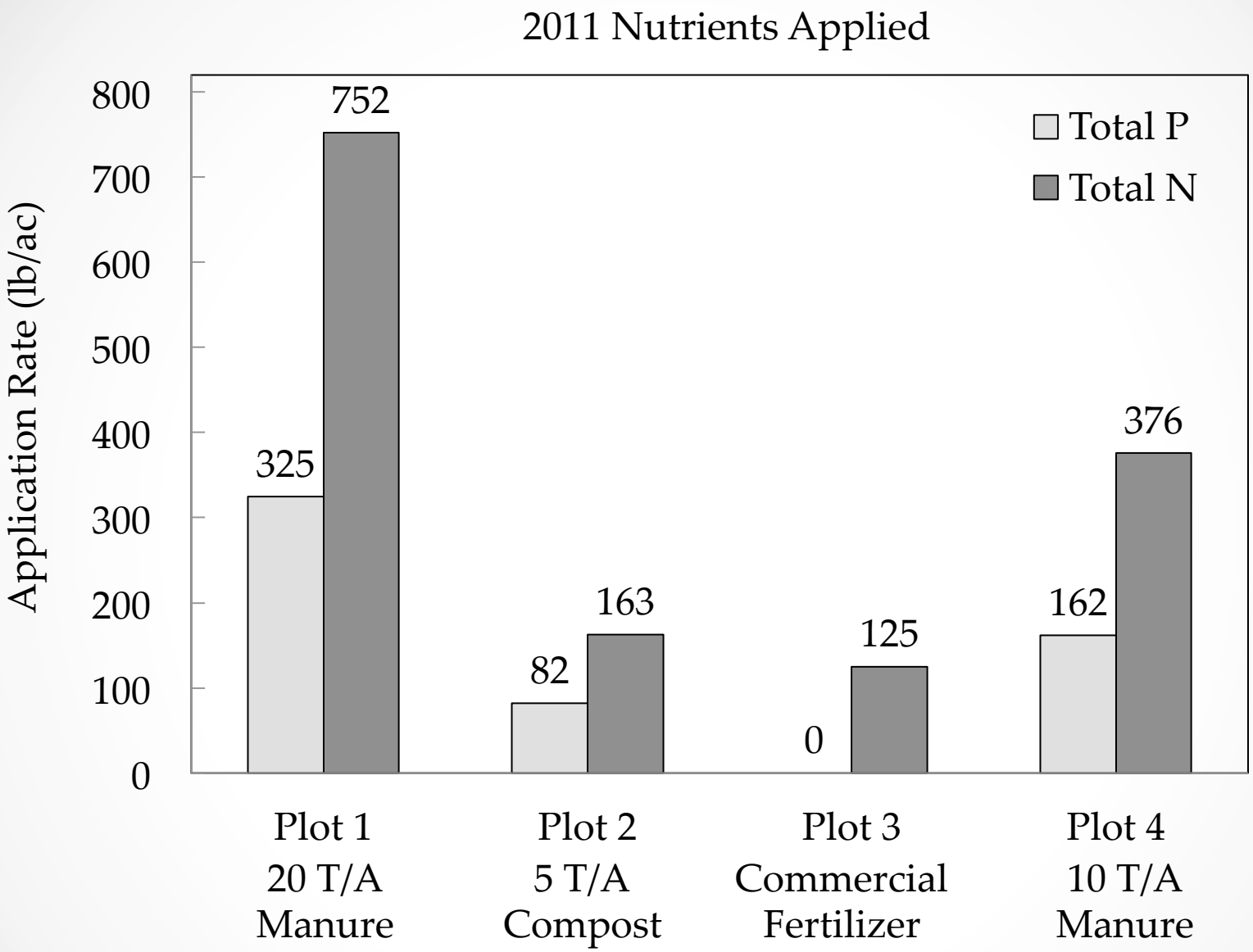

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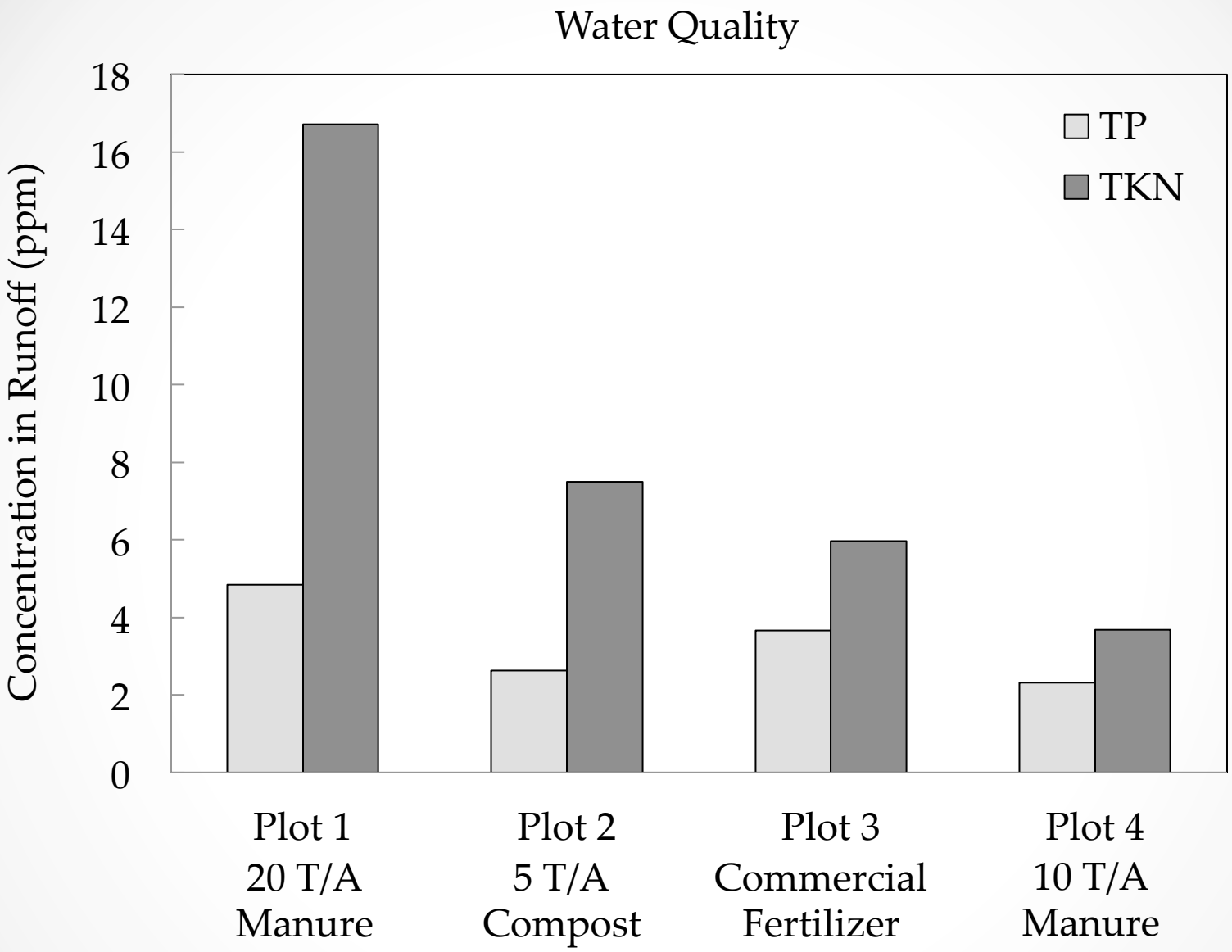

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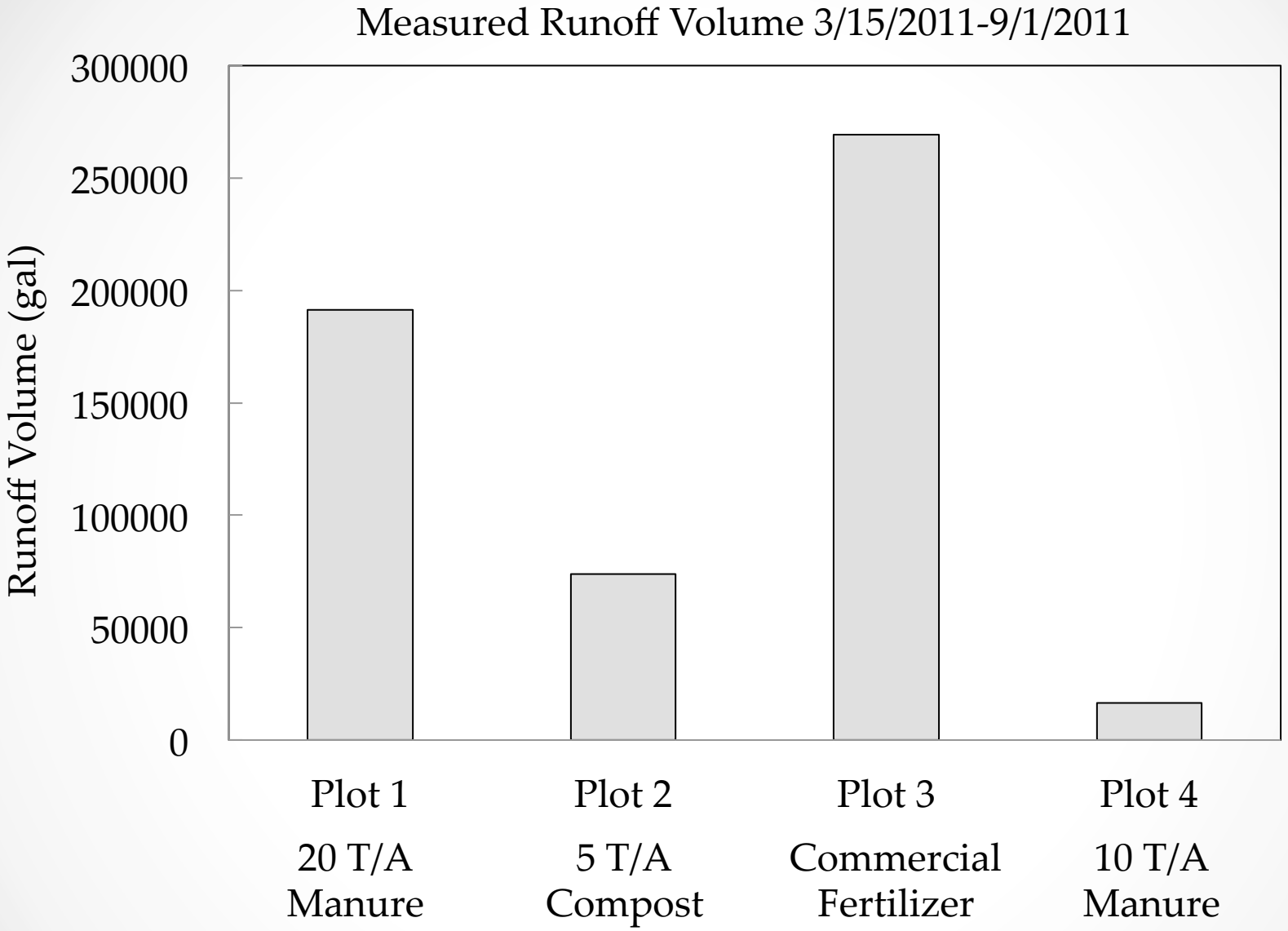

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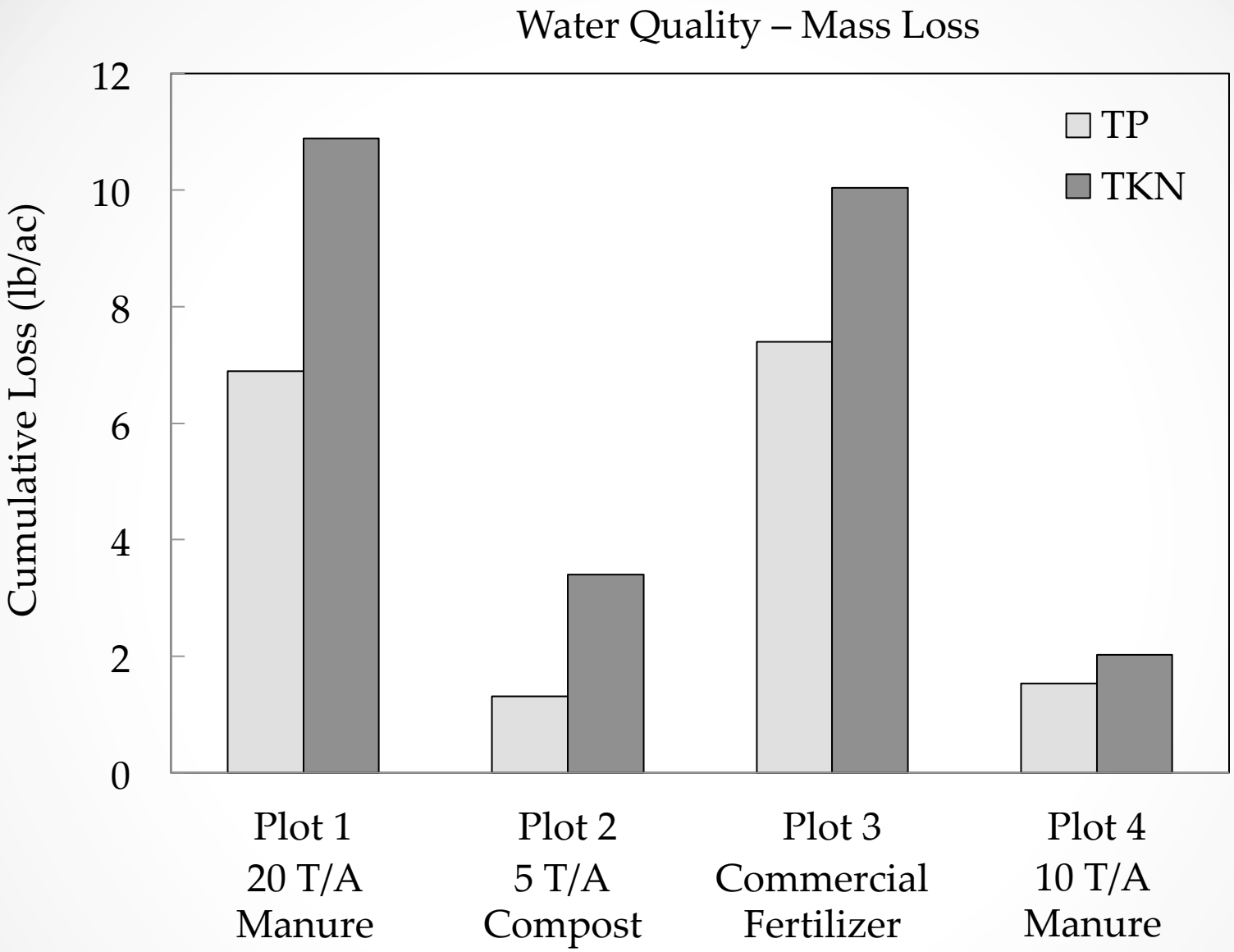

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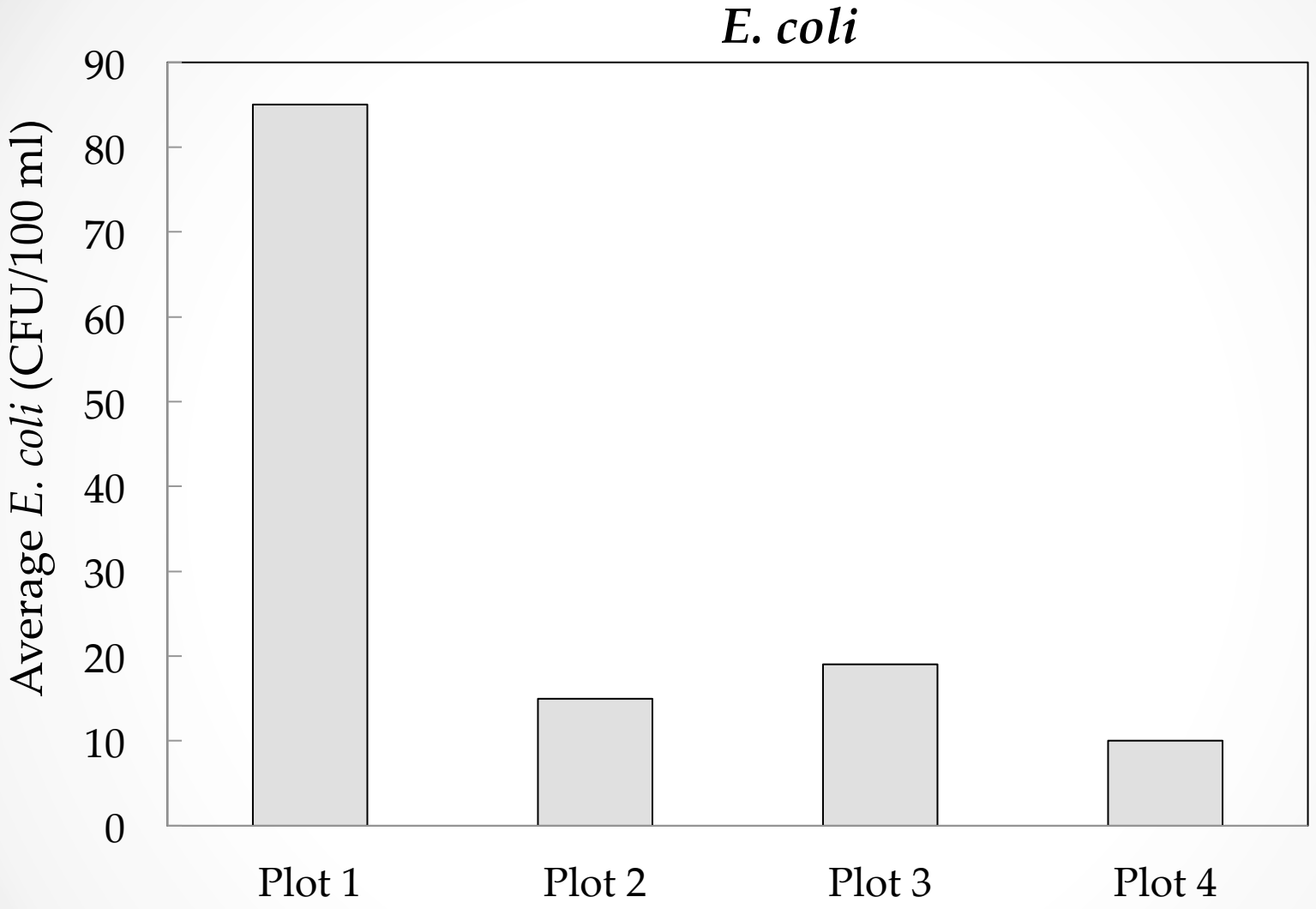

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Silage Harvesting

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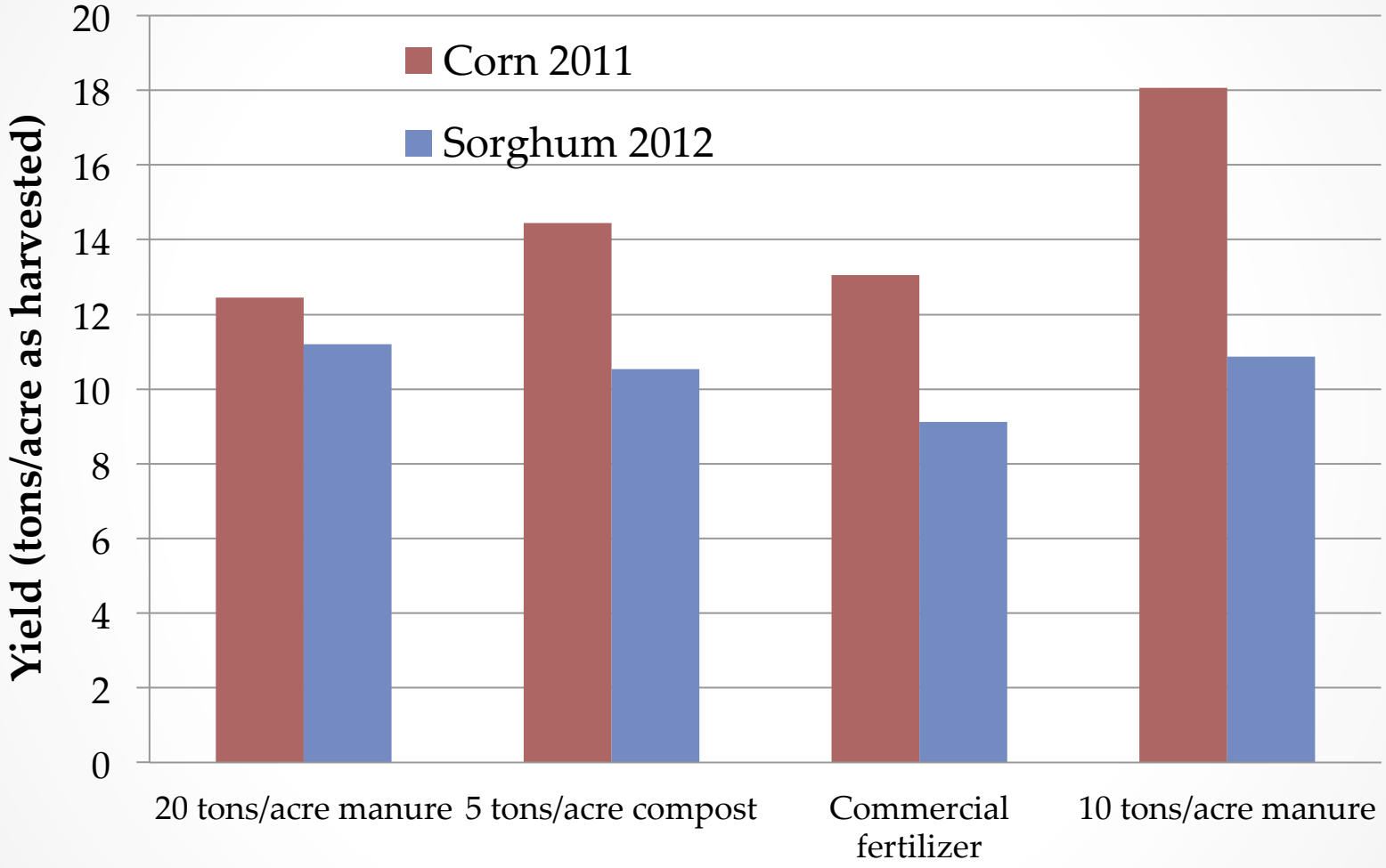
Silage Yield Data (2011 and 2012)



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	Treatment	2010 Soil Test P (lb/ac)†	2010 Soil NO_3 (lb/ac)‡	2011 Soil Test P (lb/ac)	2011 Soil NO_3 (lb/ac)
Plot 1	Manure (20 ton/ac)	**160**	**138**	**323**	**209**
Plot 2	Compost (5 ton/ac)	**247**	**209**	**232**	**167**
Plot 3	Commercial Fertilizer	**209**	**205**	**178**	**136**
Plot 4	Manure (10 ton/ac)	**130**	**253**	**213**	**182**

†0-6″

‡ 0-24″

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Conclusions

- Manure should be analyzed for nutrients prior to land application to account for changes in nutrient content due to management practice (i.e. diet formulations, pen surface).
- Soil test will indicate current nutrient levels and any noted deficiencies.
- Is your spreader calibrated to deliver targeted goal?
- Nutrients do have the potential to move off-site due to irrigation.