

In-Field Stockpiling of Poultry Litter

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THE ISSUES

- Temporary field storage is common in the Delmarva Region
- Is there a basis for requiring covering of litter after 14 days in the field?
- Local growers suggest covering with poly is not very practical
- Current Delaware policy allows uncovered piles for up to 150 days if certain procedures are followed

Current Level of Knowledge

- No information on nutrient losses from “production-size” litter piles
- All previous information on nutrient losses is from small “research-size” piles
- Some previous studies have used poly under the research pile to collect runoff
- The DNMC et al. decided that information was needed on production-size litter piles

Objectives of this Work

- Determine the quantity and types of nutrients being lost from production-size piles
- Evaluate the impact of storage length (i.e., number of days) on nutrient losses
- Evaluate “alternative” methods of storage (i.e., something other than “nothing” or using a poly cover)

OBSERVATIONS











Total rain: 9.8"

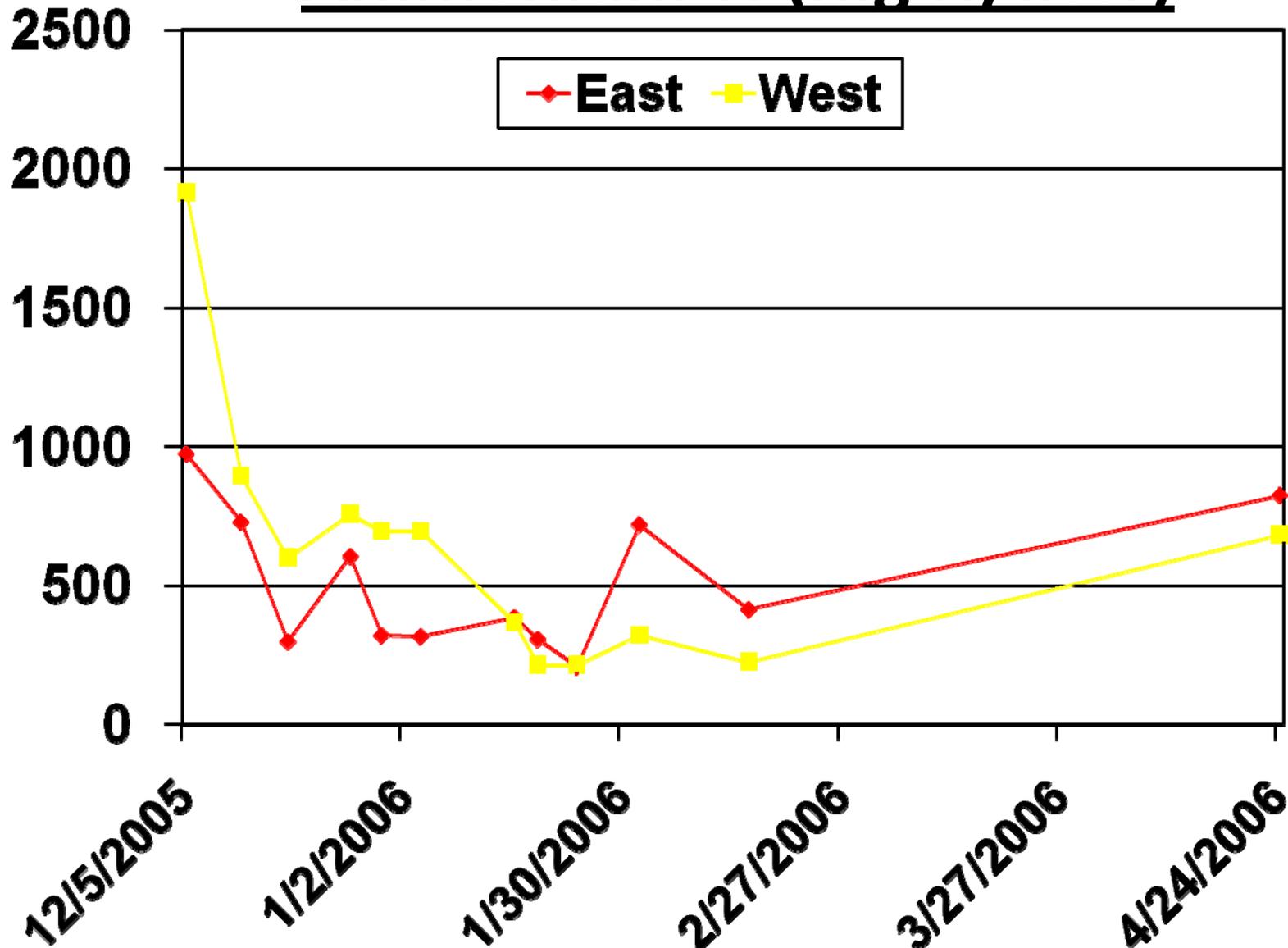


March 20, 2006

DATA

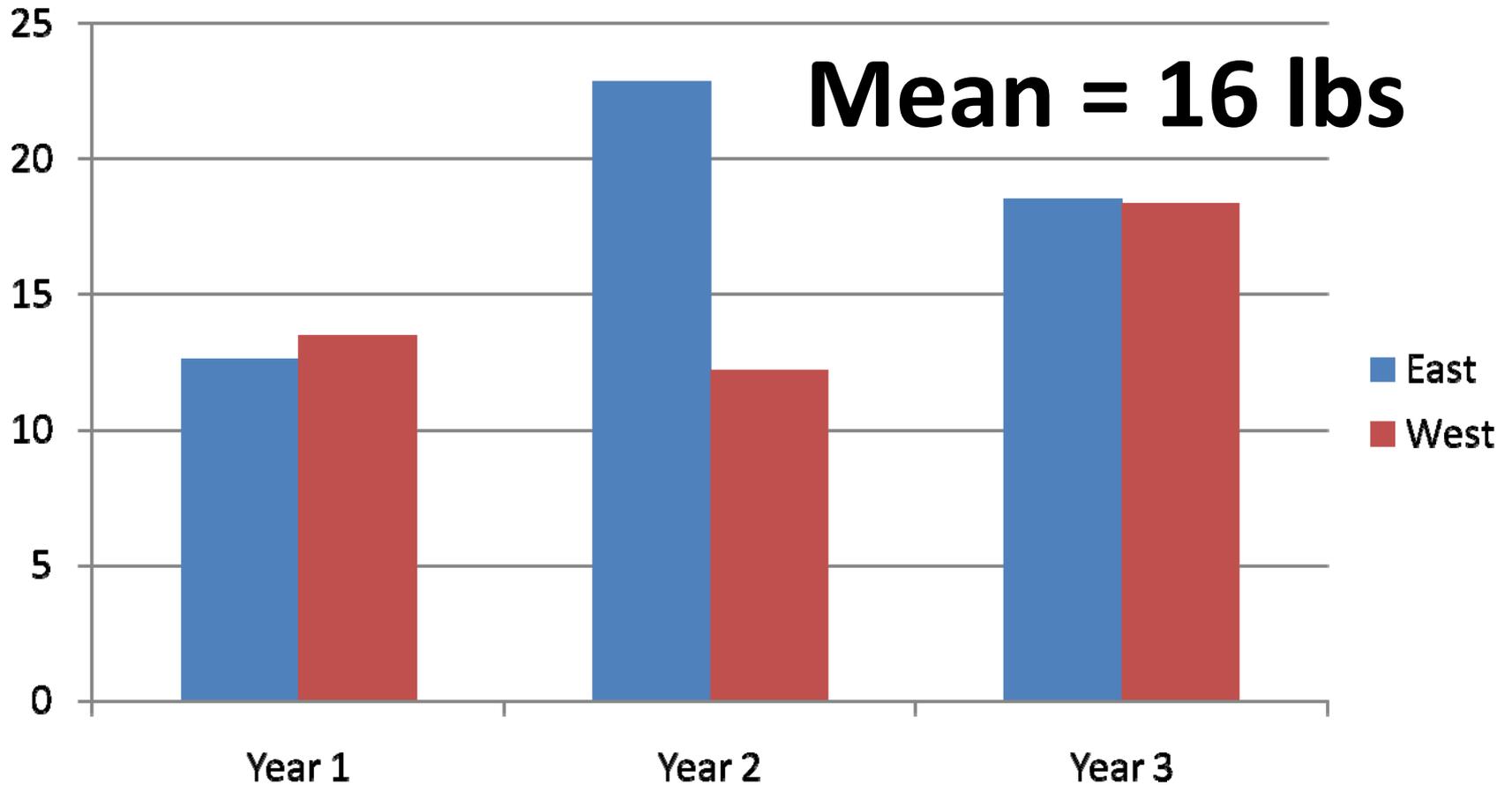
Runoff

Ammonium-N (mg N/liter)

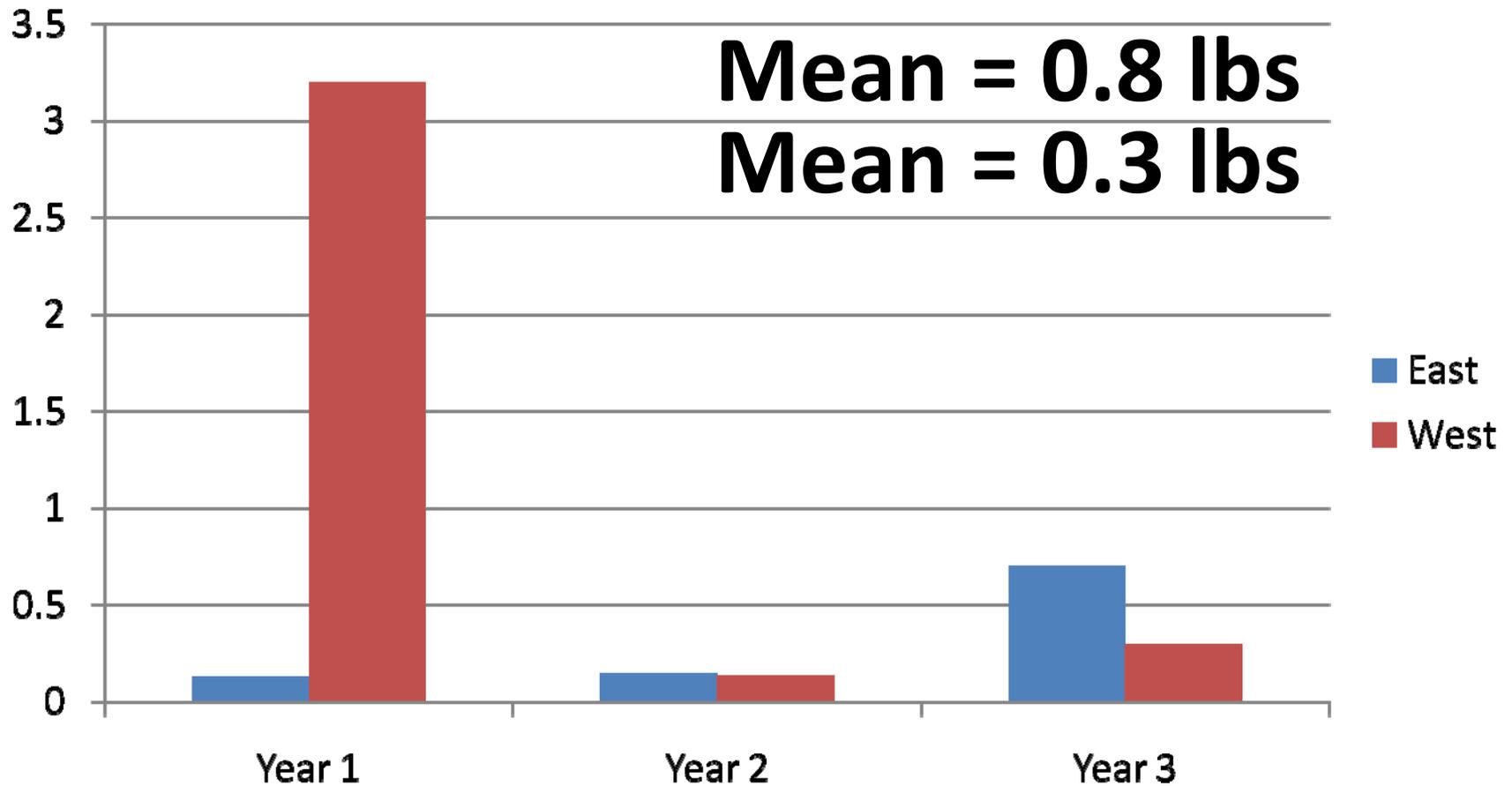


Year 1

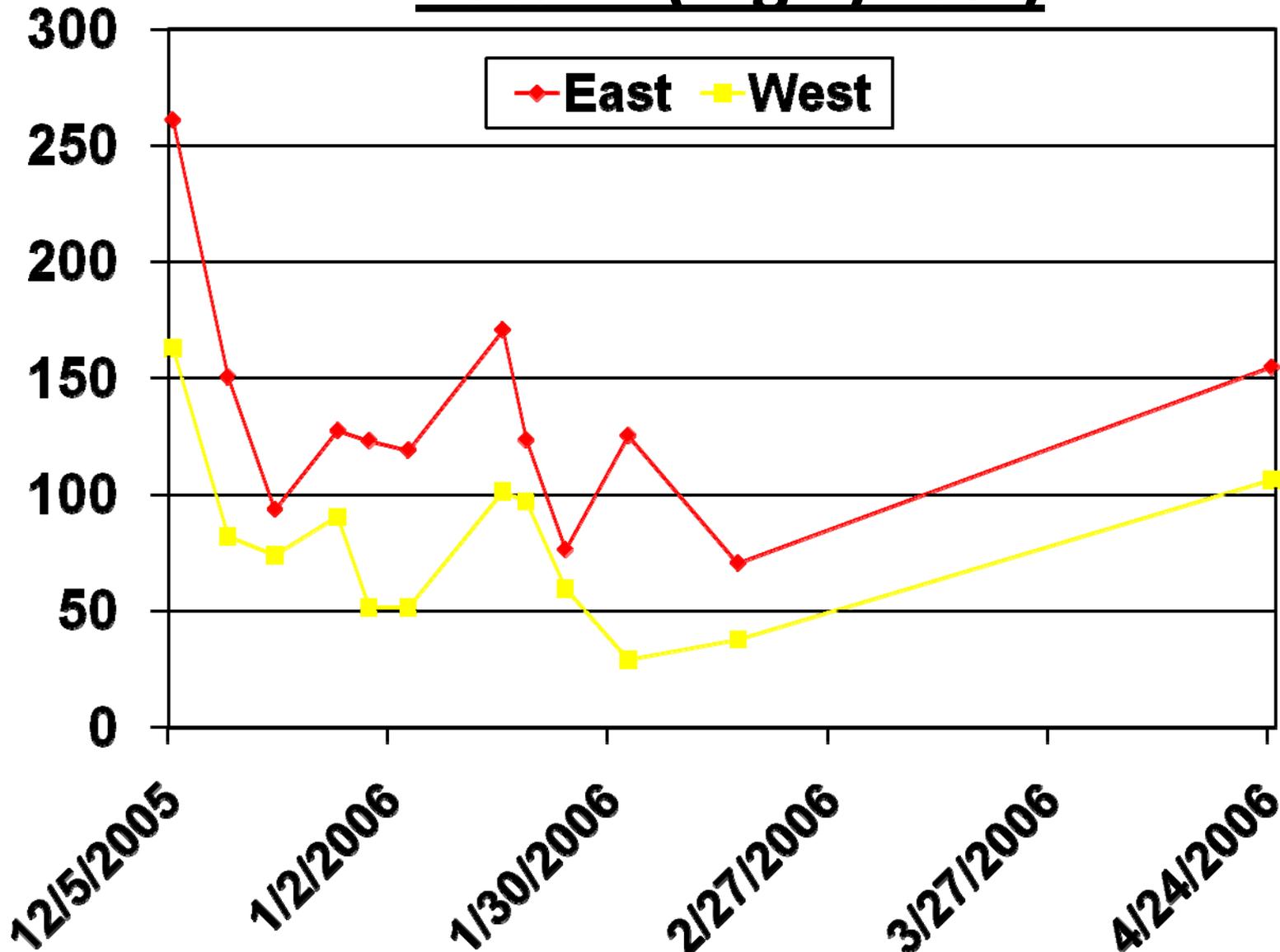
Ammonium-N (lbs) in 100' x 18'



Nitrate-N (lbs) in 100' x 18'

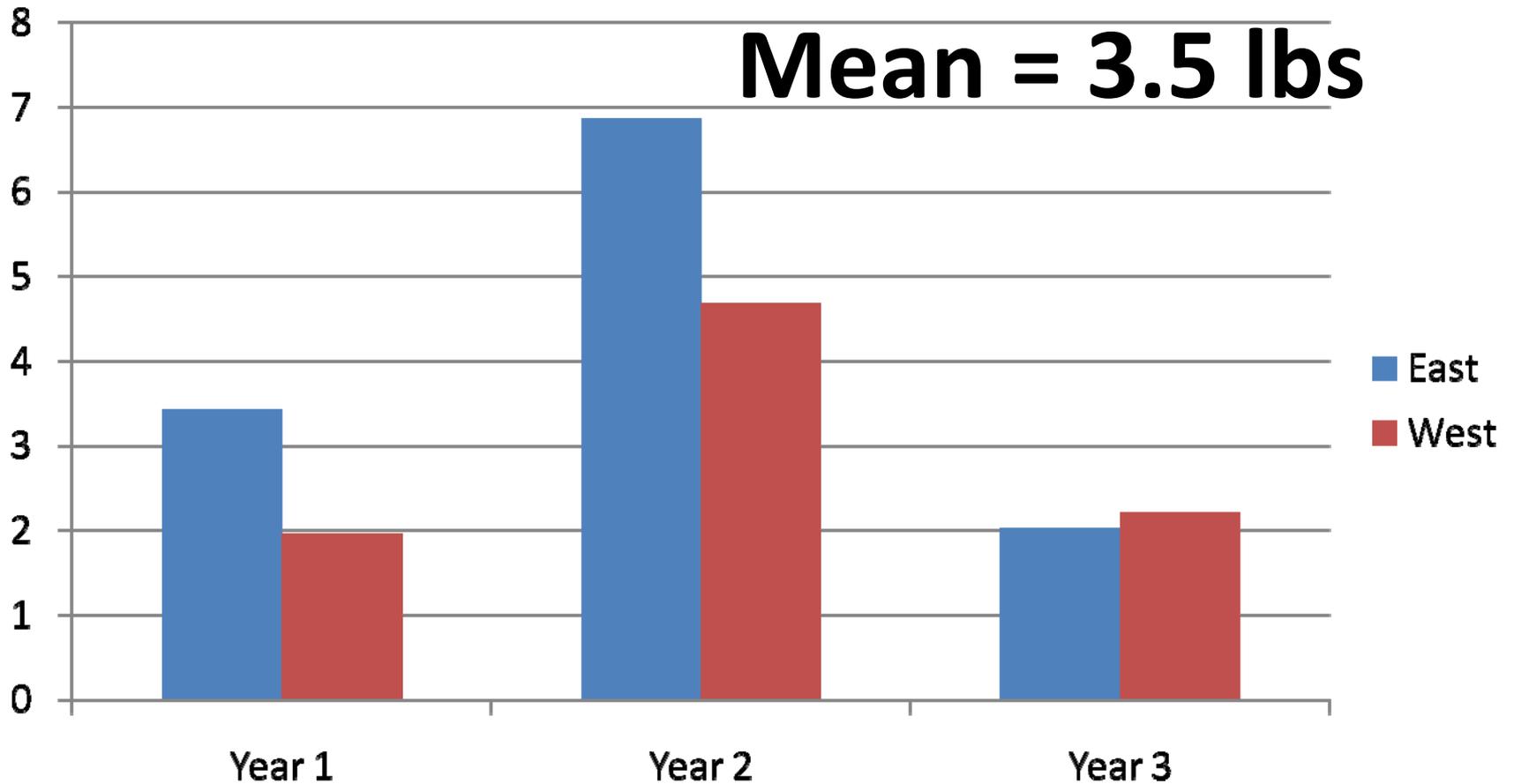


Total P (mg P/liter)

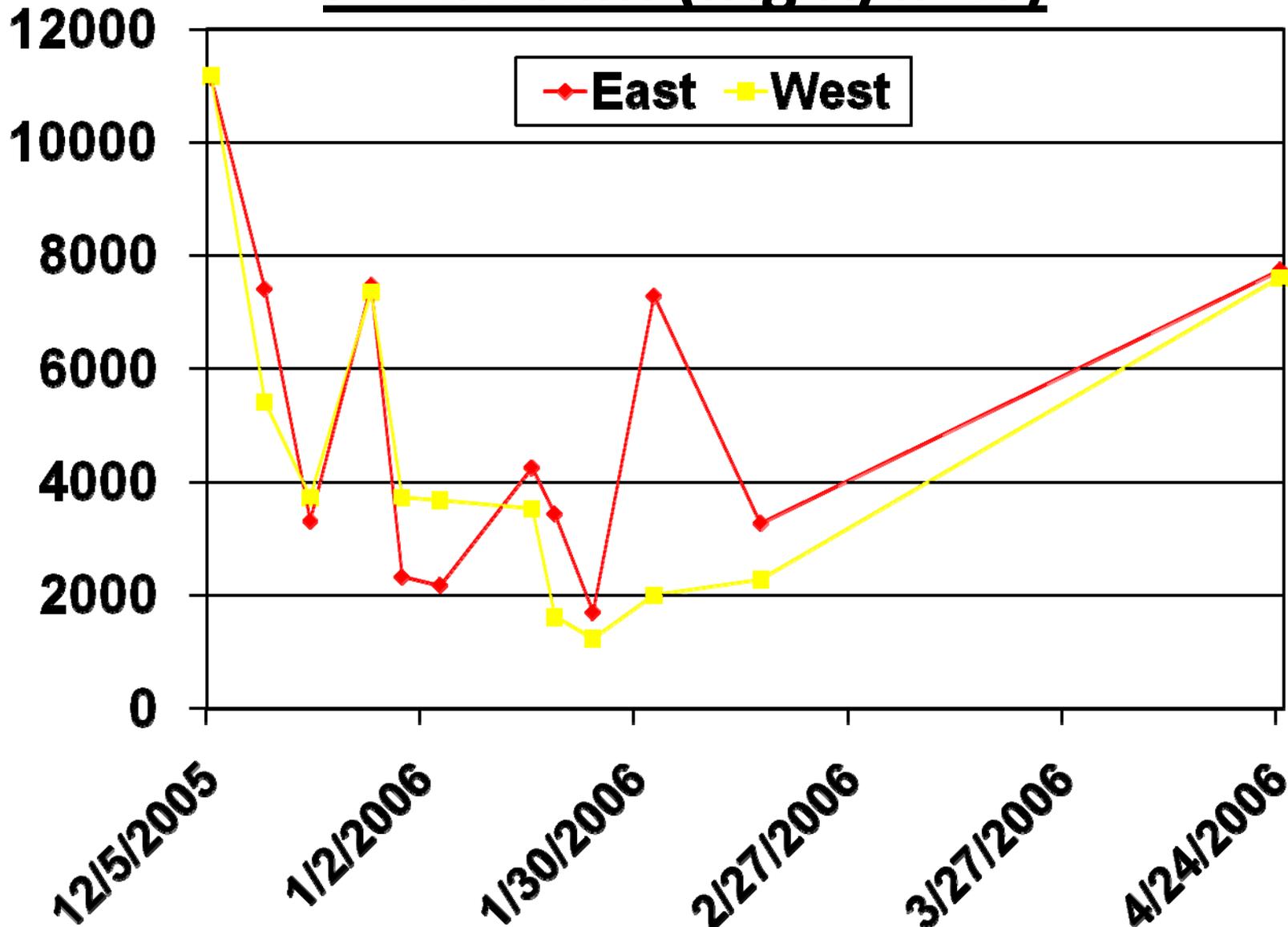


Year 1

Total P (lbs) in 100' x 18'



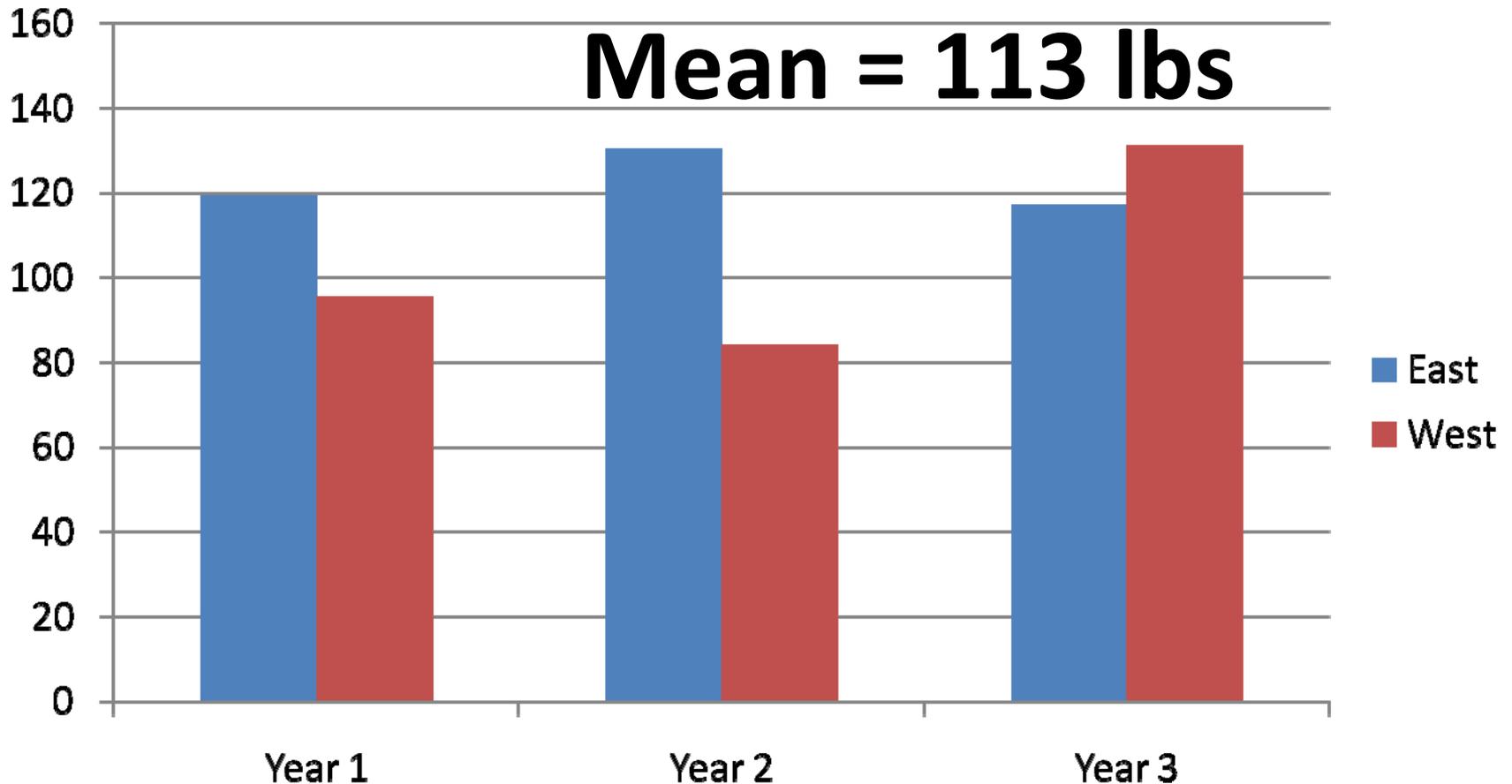
Potassium (mg K/liter)



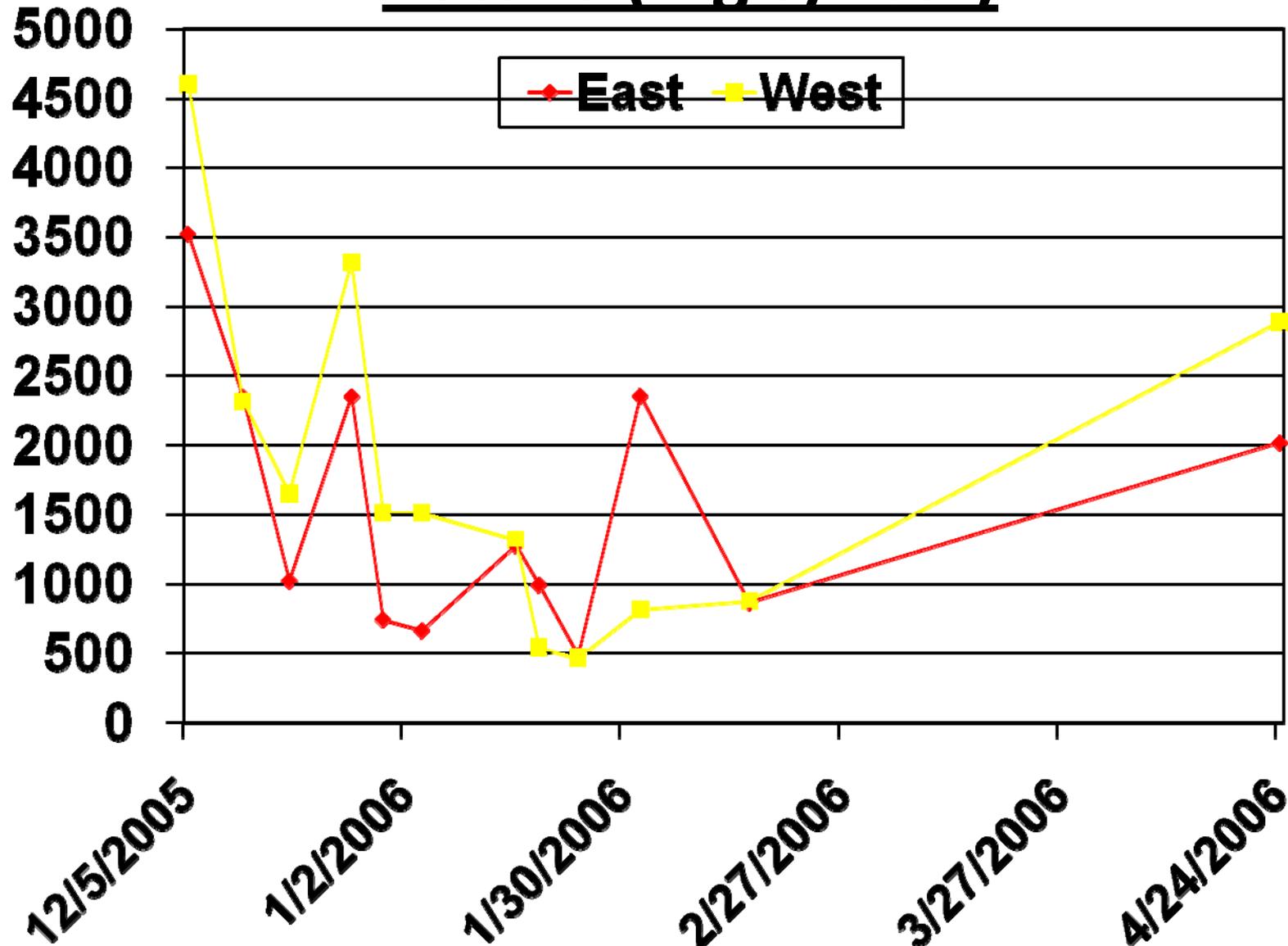
Year 1

Potassium (lbs) in 100' x 18'

Whatman #2

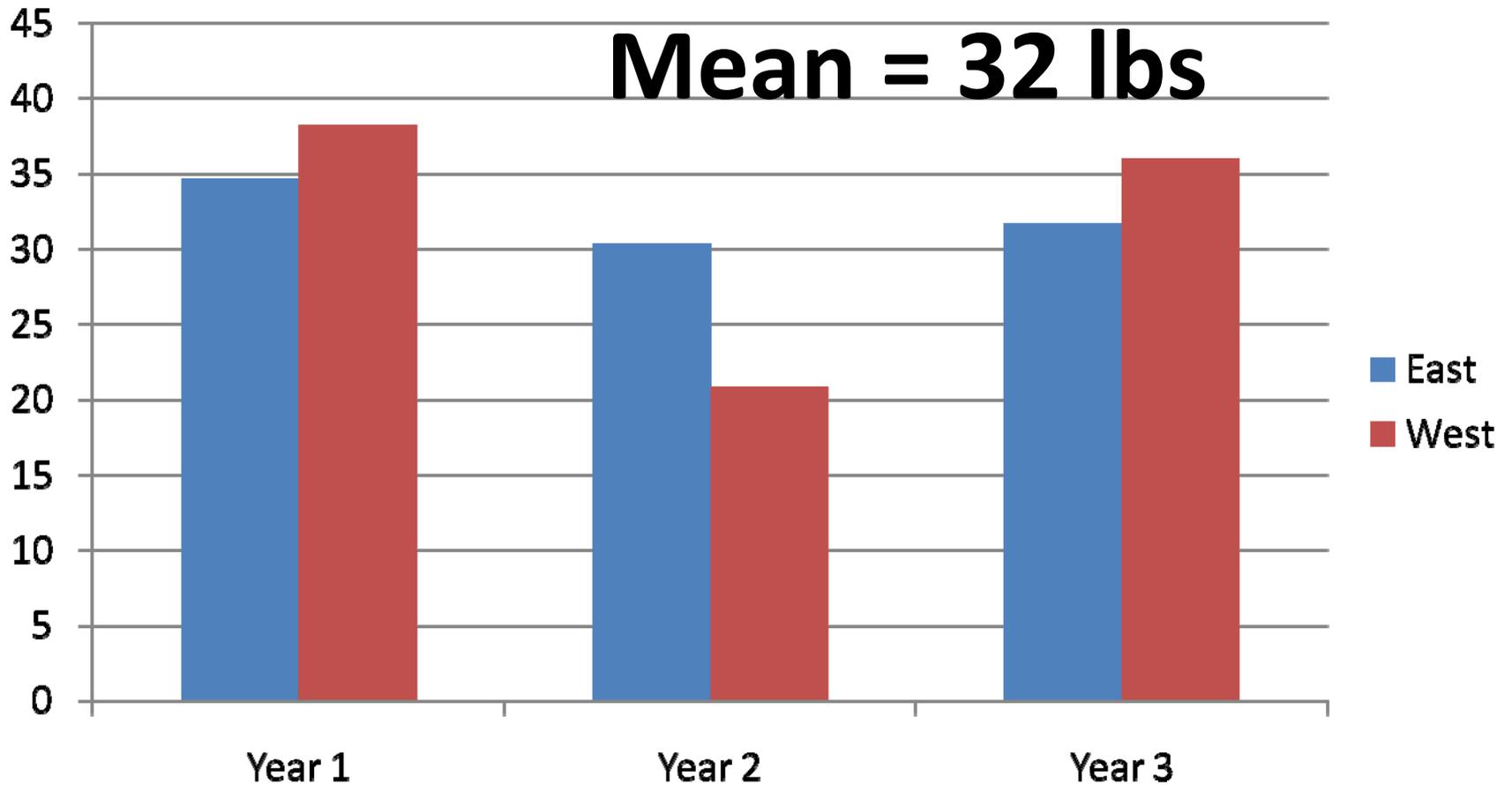


Total S (mg S/liter)



Year 1

Total S (lbs) in 100' x 18'

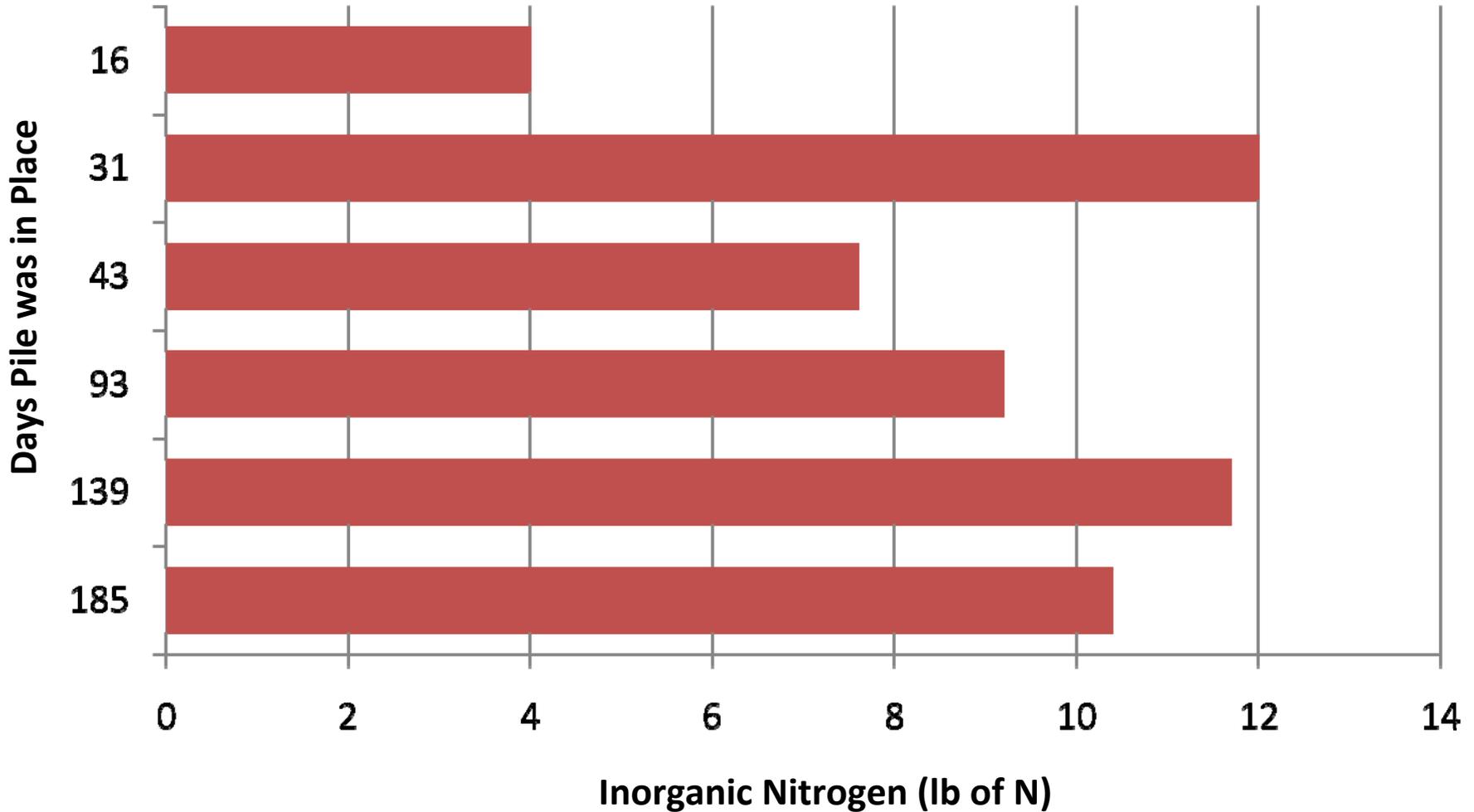


DATA

Soil

Loading to 3' Depth

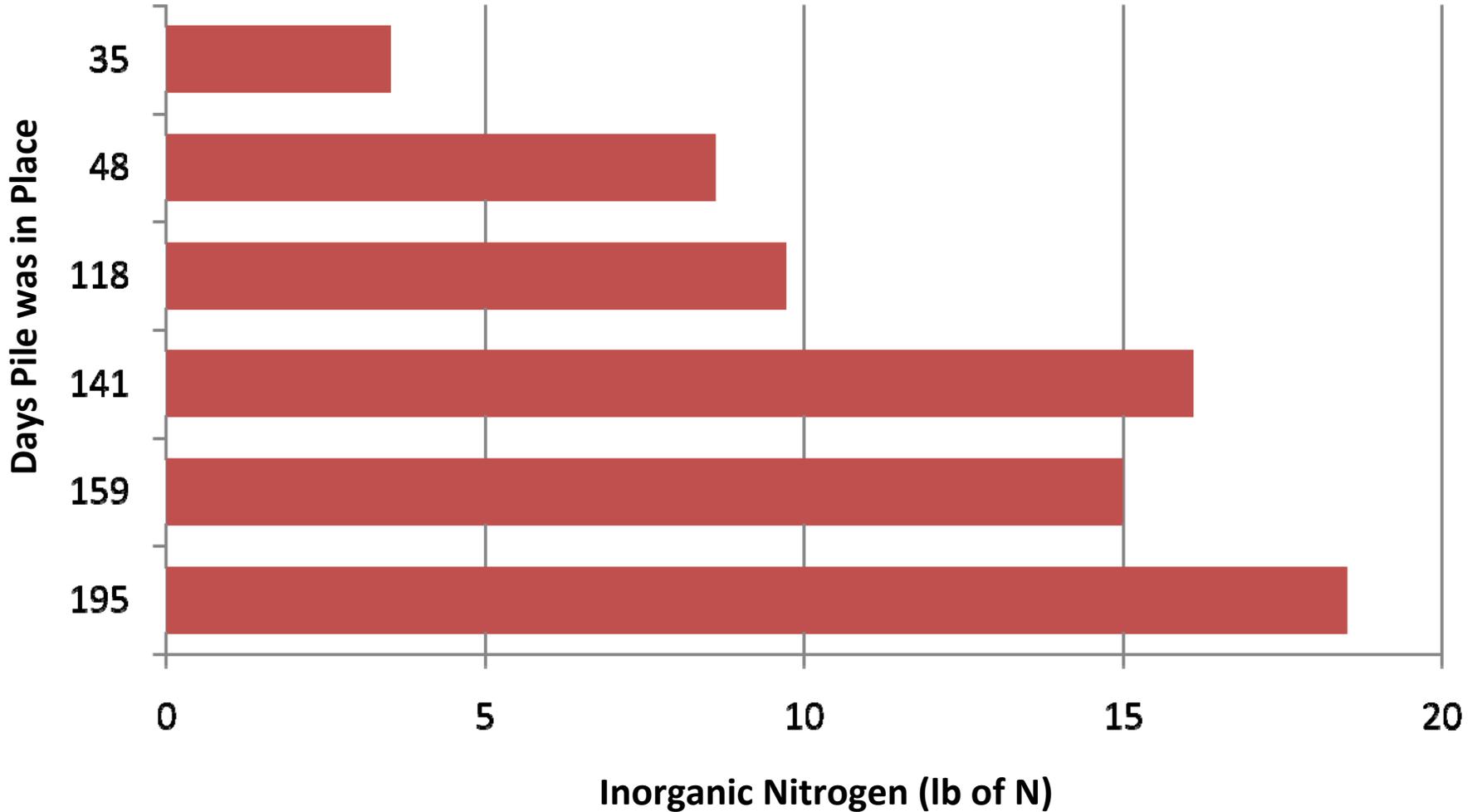
Assumed Pile Size: 100 ft X 18 ft



Year 1

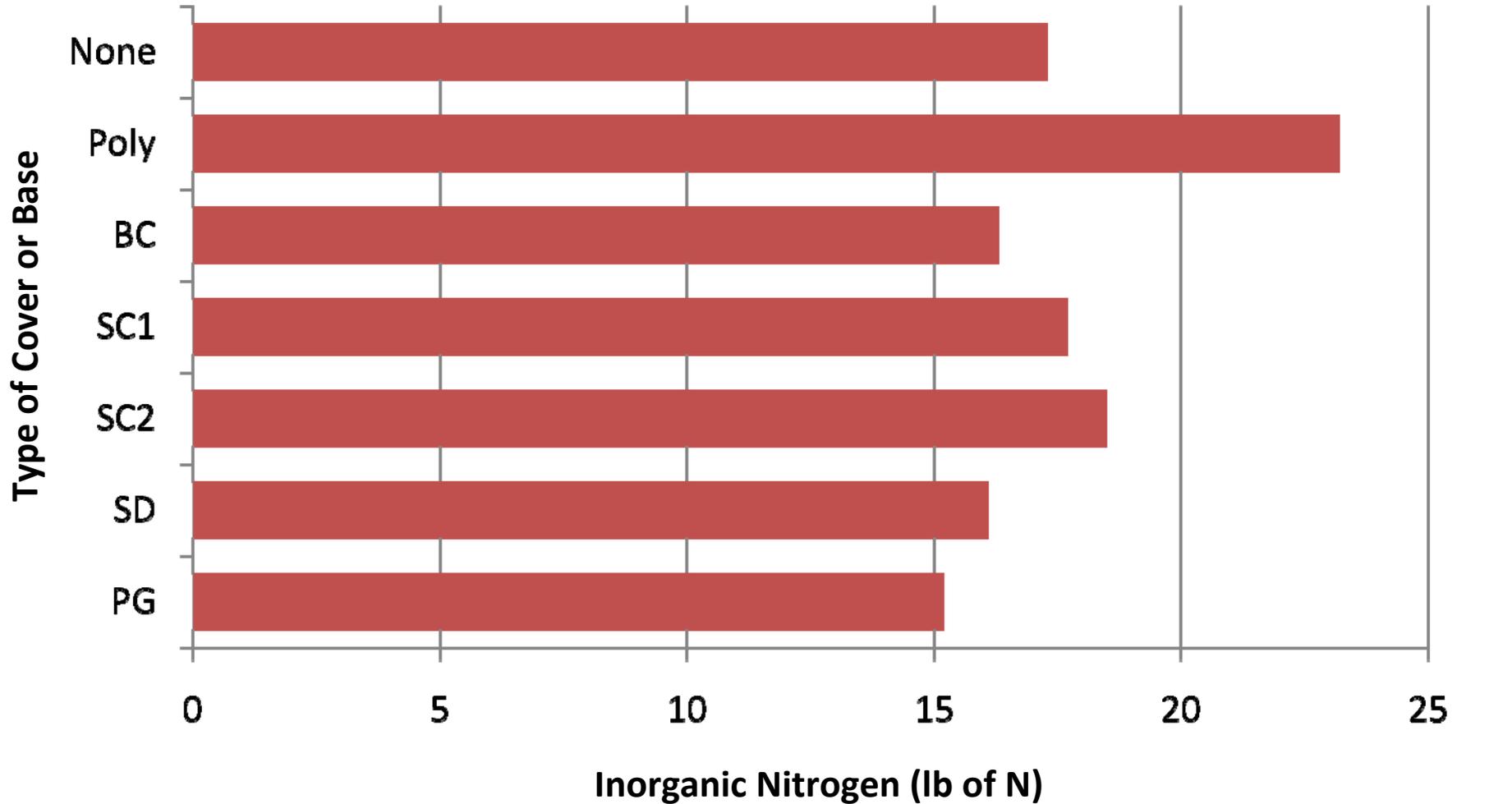
Loading to 4' Depth

Assumed Pile Size: 100 ft X 18 ft



Loading to 3' Depth

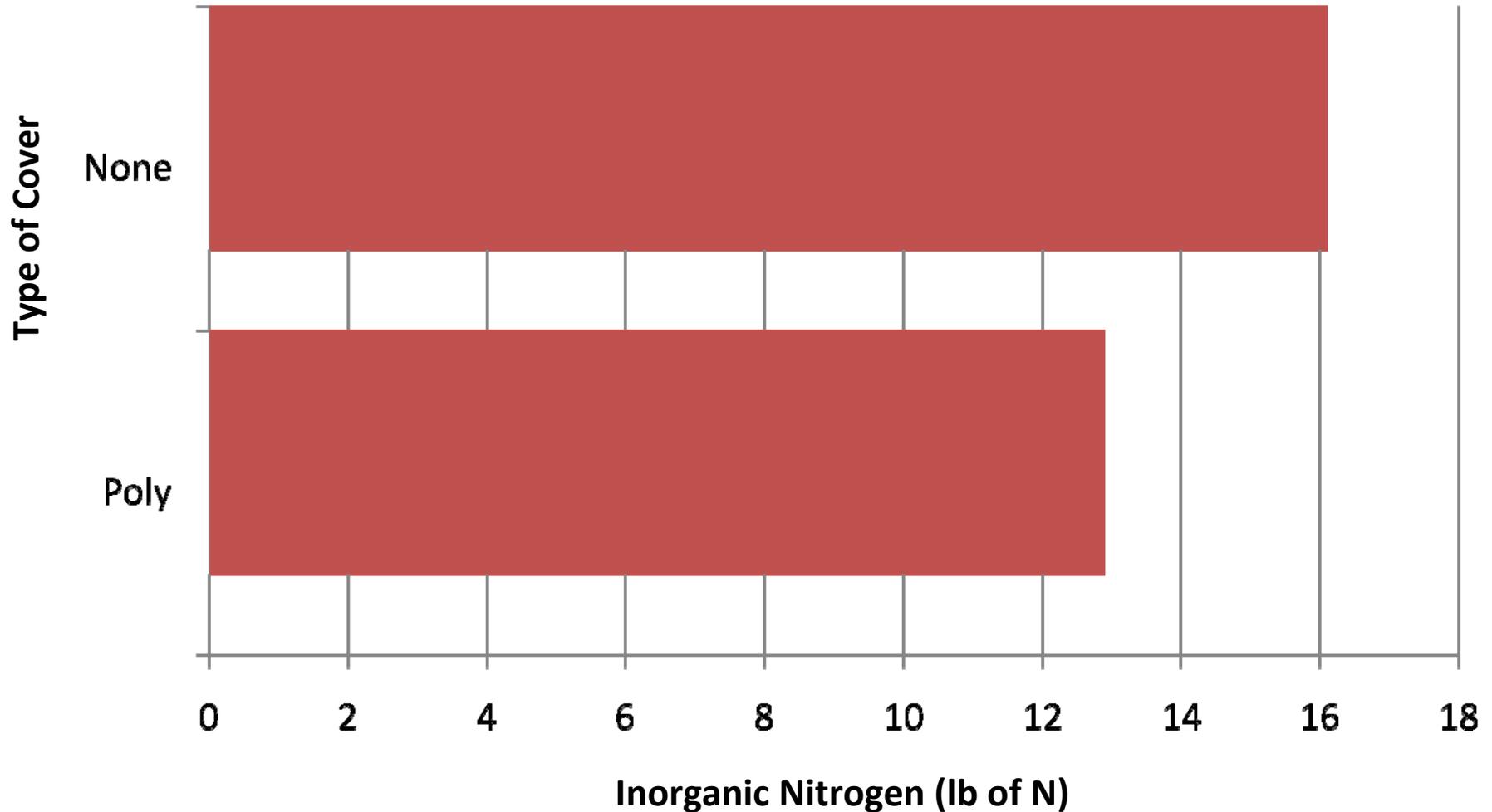
Assumed Pile Size: 100 ft X 18 ft



Year 1

POLY vs NO COVER (4 Reps)

Assumed Pile Size: 100 ft X 18 ft

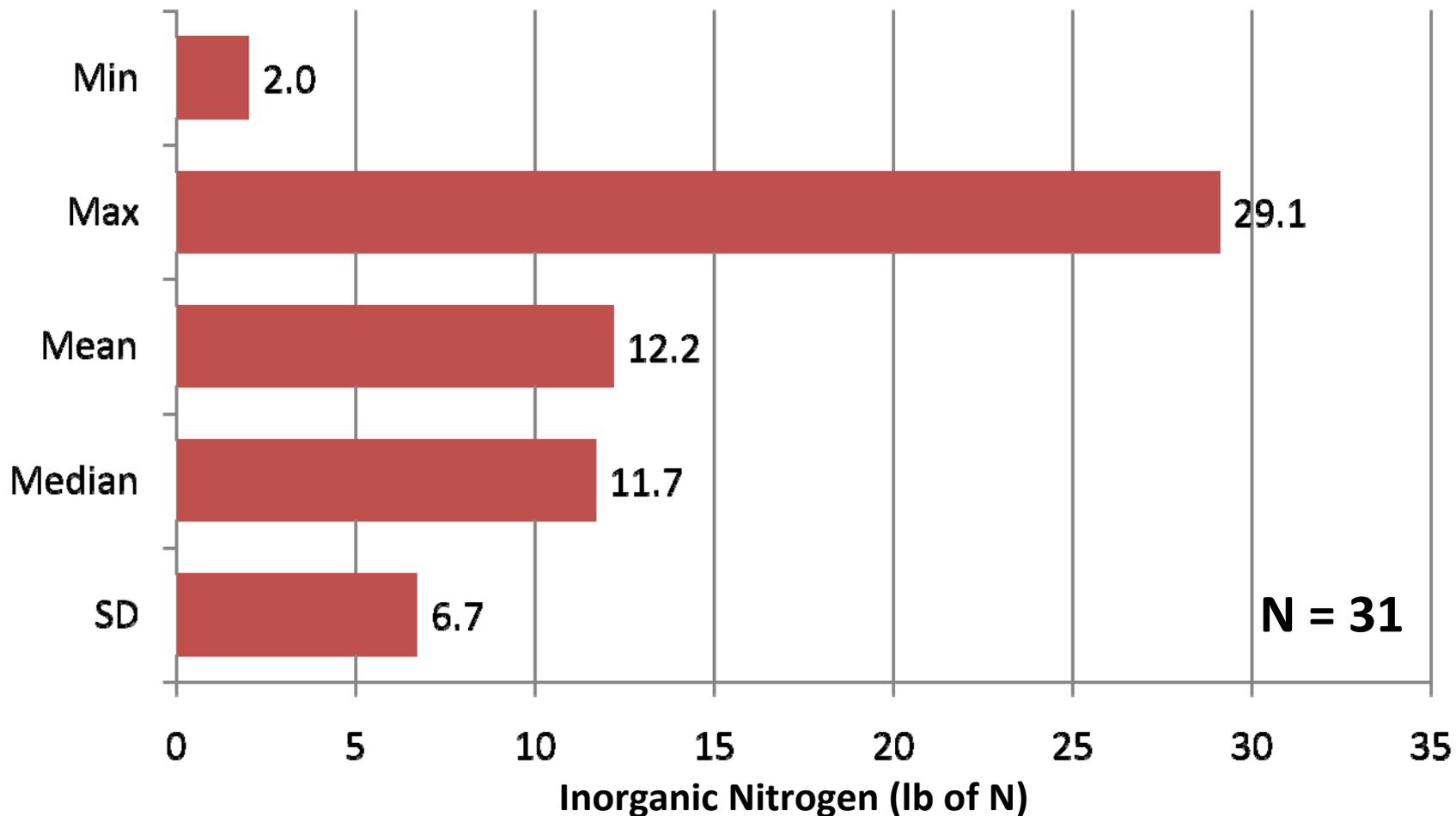


Piles in place for at least 120 days

3 Years/4 sites

Range in Values Across All Sites

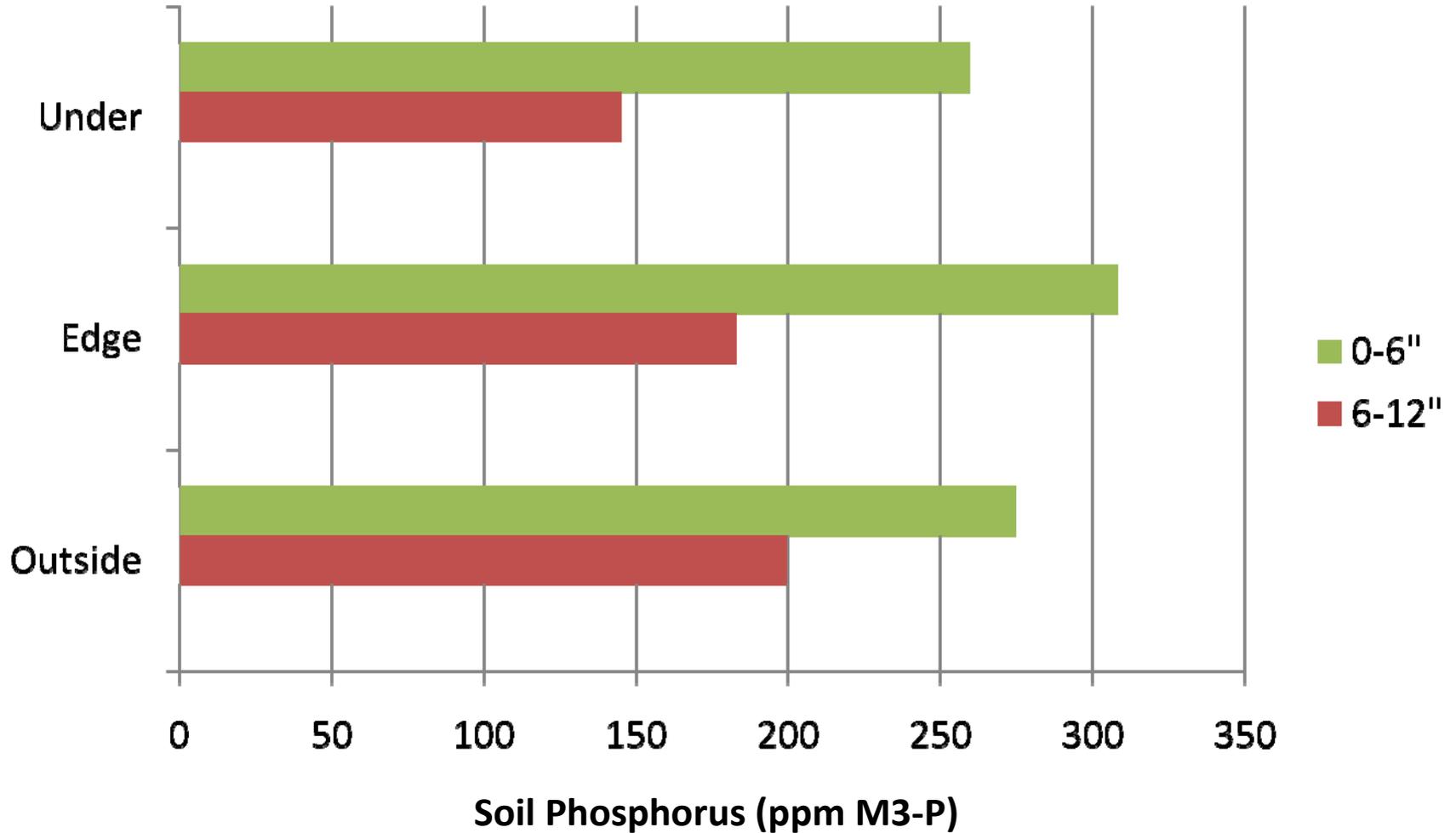
Assumed Pile Size: 100 ft X 18 ft



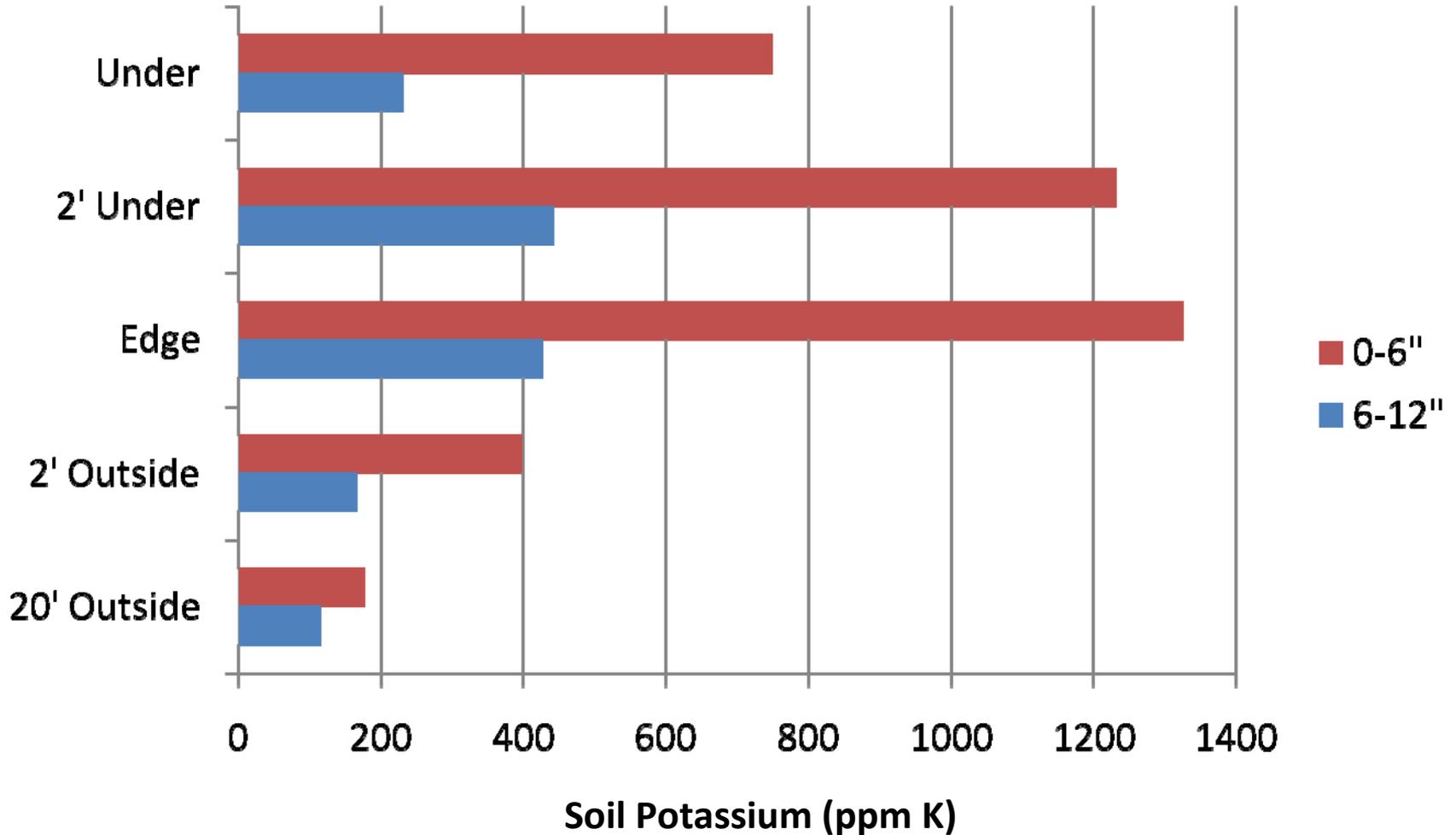
Piles in place for at least 90 days

Pile would contain about 100 tons

185-Day Treatment – 0 days

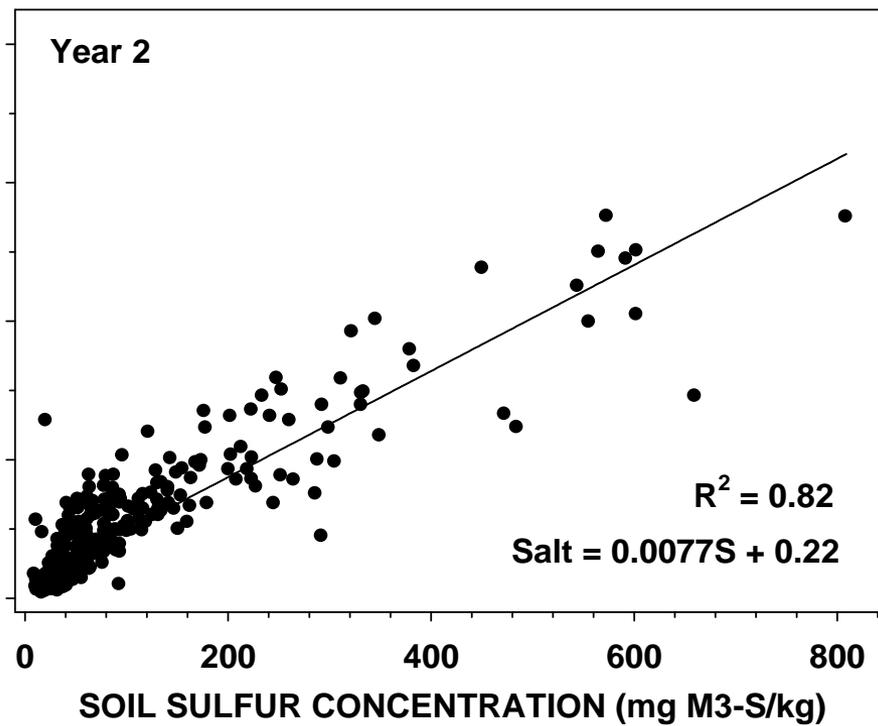
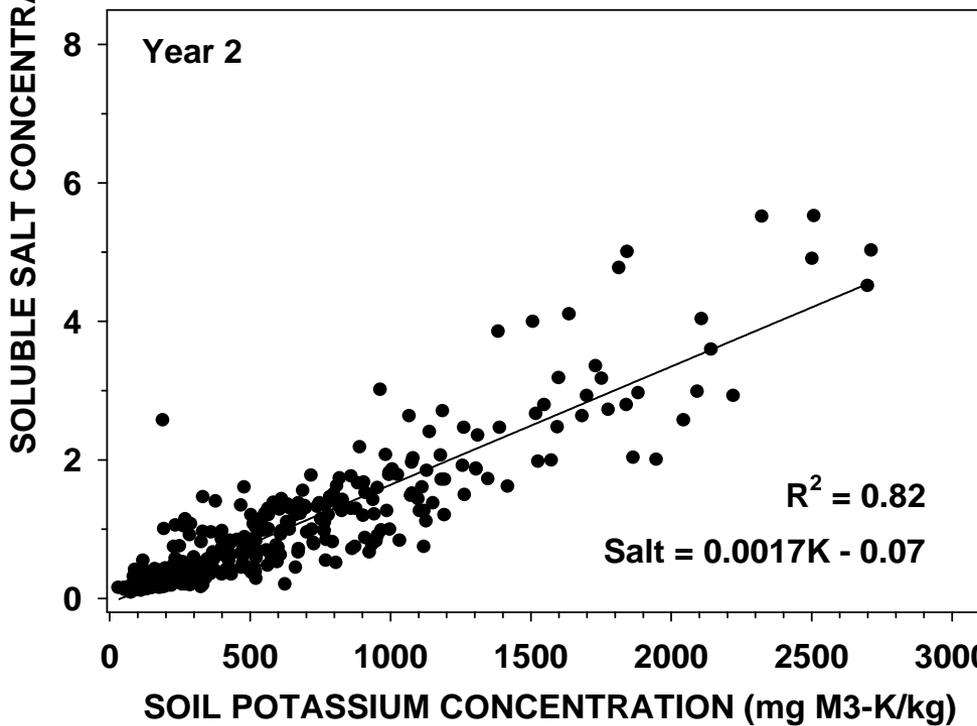
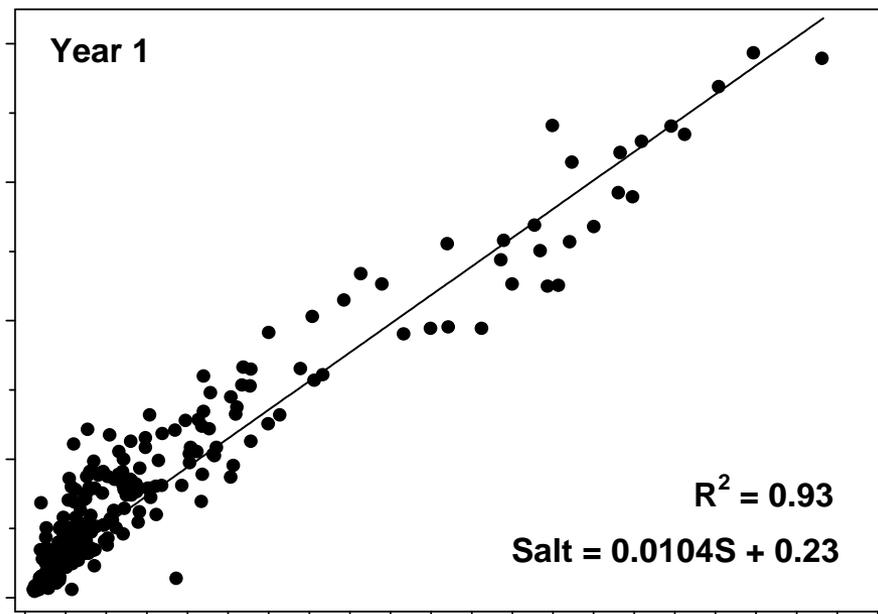
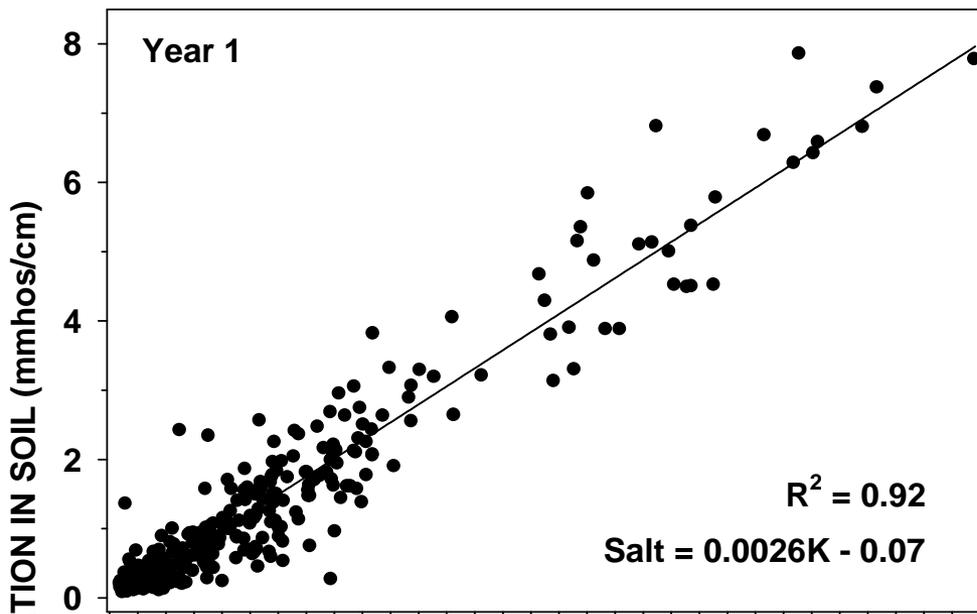


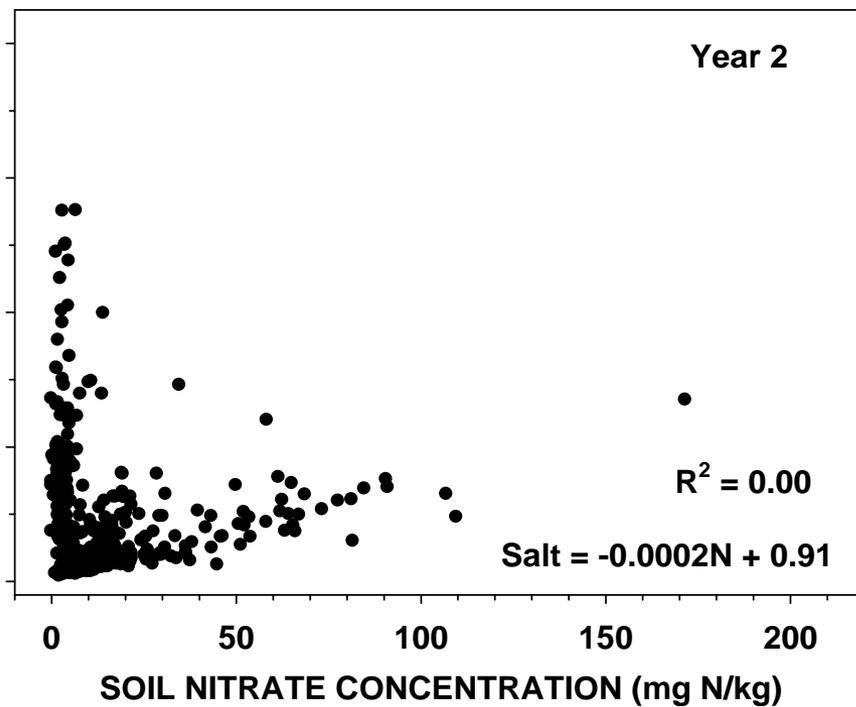
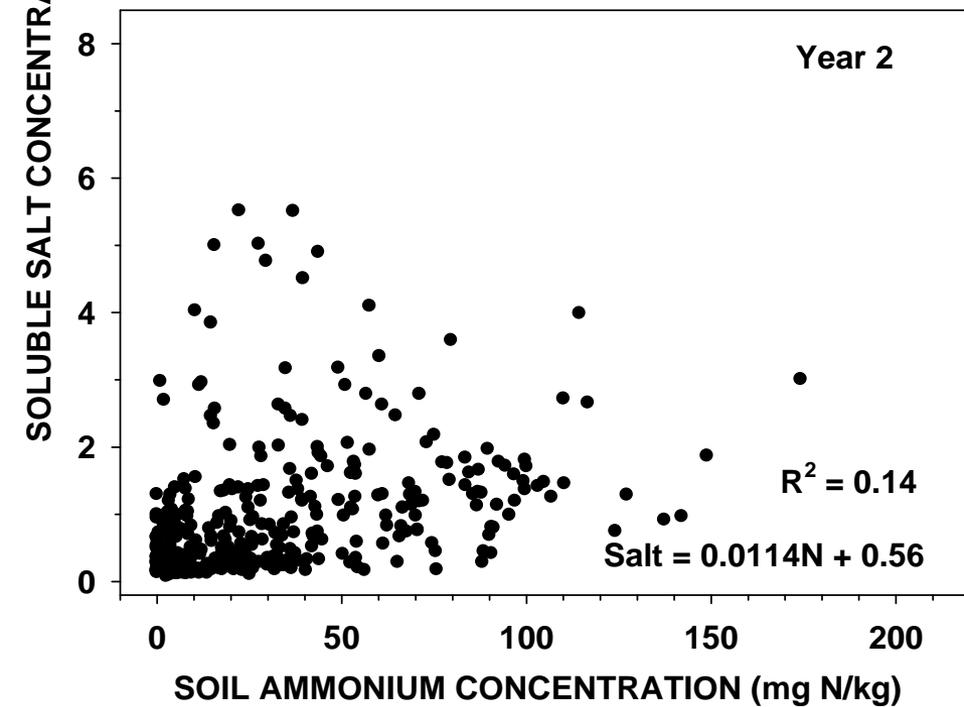
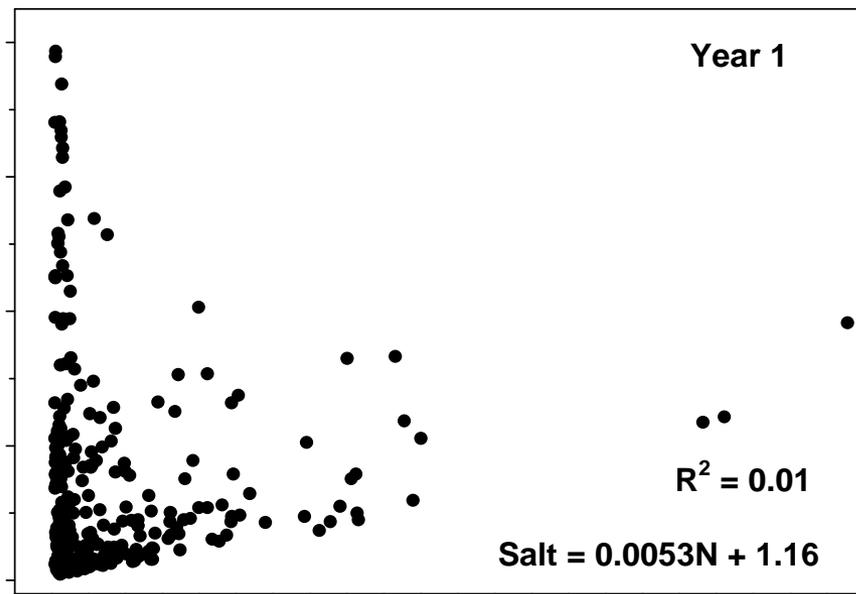
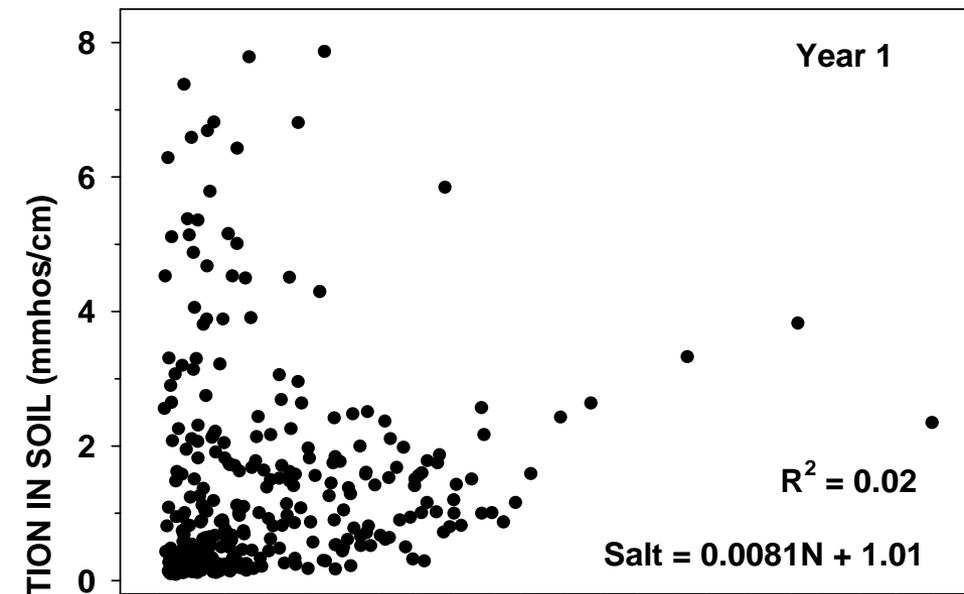
195-Day Treatment – Day 0



No Cover – Day 0









Summary and Conclusions

- All spray-on covers didn't provide a benefit and were sometimes worse
- Nutrients are being lost from poultry piles
- The nutrient being lost in the greatest amounts (about 8 times) is potassium
- Potassium concentrations are the main contributor to soluble salts concentrations
- Poly covers provided no benefit for N losses
- Nitrogen is lost from piles both as leachate (edges) and probably as ammonia gas

Summary and Conclusions

- Nitrogen is being lost from litter piles to the soil and because of limited to no plant growth is most likely being lost to the environment
- These amounts should be kept in perspective
- Piled litter has less potential for nutrient losses than litter spread at the “wrong time”
- Establishment of growing plants in these areas would reduce these potential losses
- Current regulations should be followed!!!

QUESTIONS???

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