

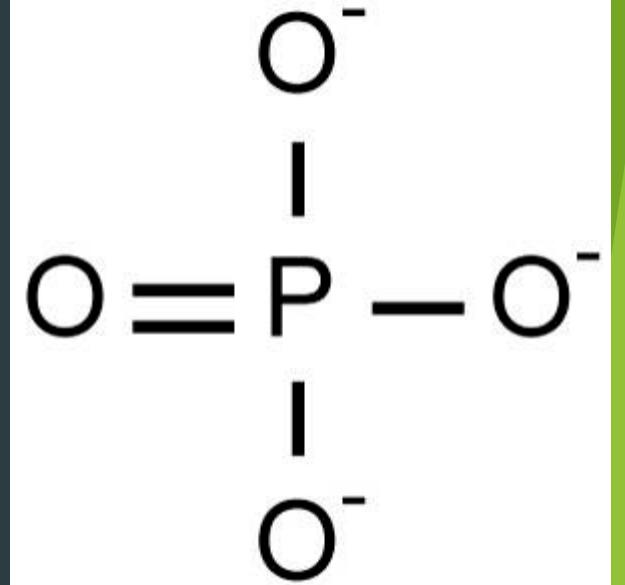
The Affect of Liming on Phosphorus Availability

Anna Green



Phosphorus

- ▶ Major nutrient in agriculture
- ▶ Limiting nutrient in aquatic ecosystems



Gulf of Mexico



Algae's lake effect reveals putrid, pea green disaster

Distribution centers offer free relief to community

By MARISSA MELANCON

DePaul's Adams Field... through the... building... in... of...



Officials won't give test results on 2nd day

By ROSE HENRY

The water... Lake Erie's... from... of the... green... water...



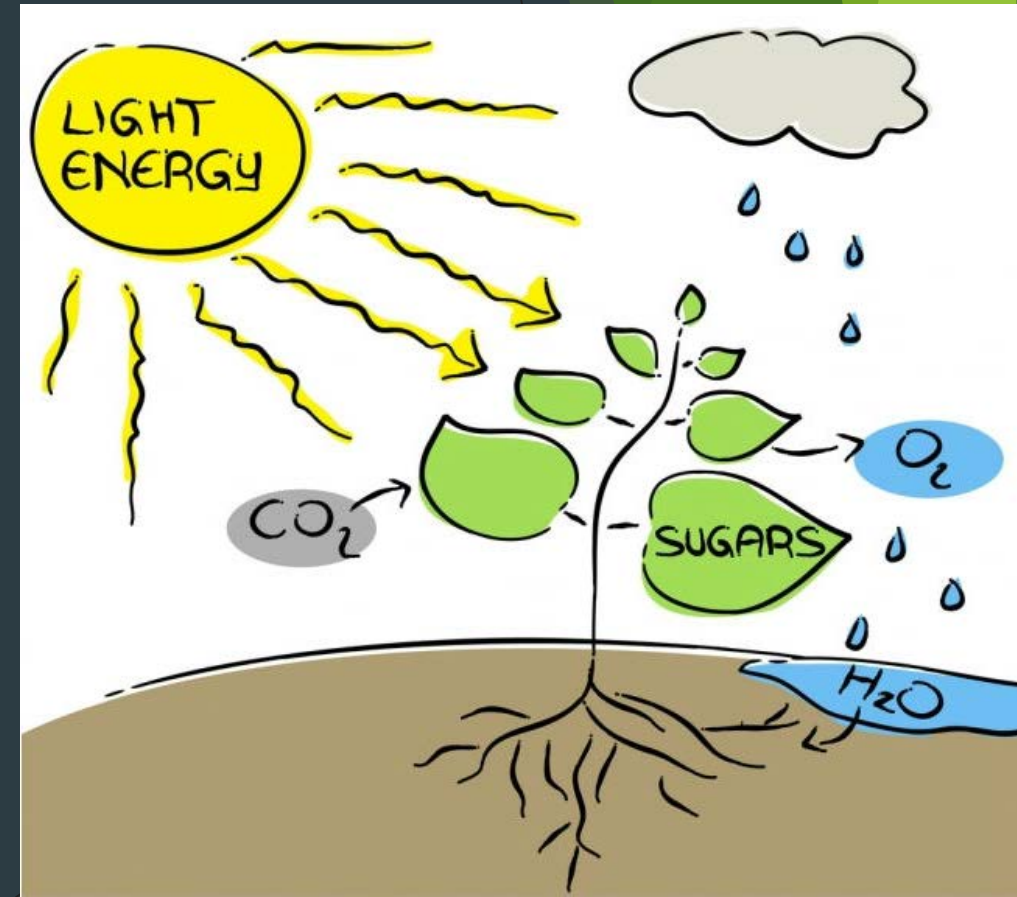
Boise Drainage Ditch



Lake Erie

CO2 Fertilization

- ▶ Greater CO2 concentration increases crop yield potential
- ▶ More fertilizer to achieve these



106152 - MOSCOW U OF ID

Annual Precipitation 1895 - 2014

Average: 23.85" Std. Deviation: ± 5.12 " Trend: 0.65" per decade

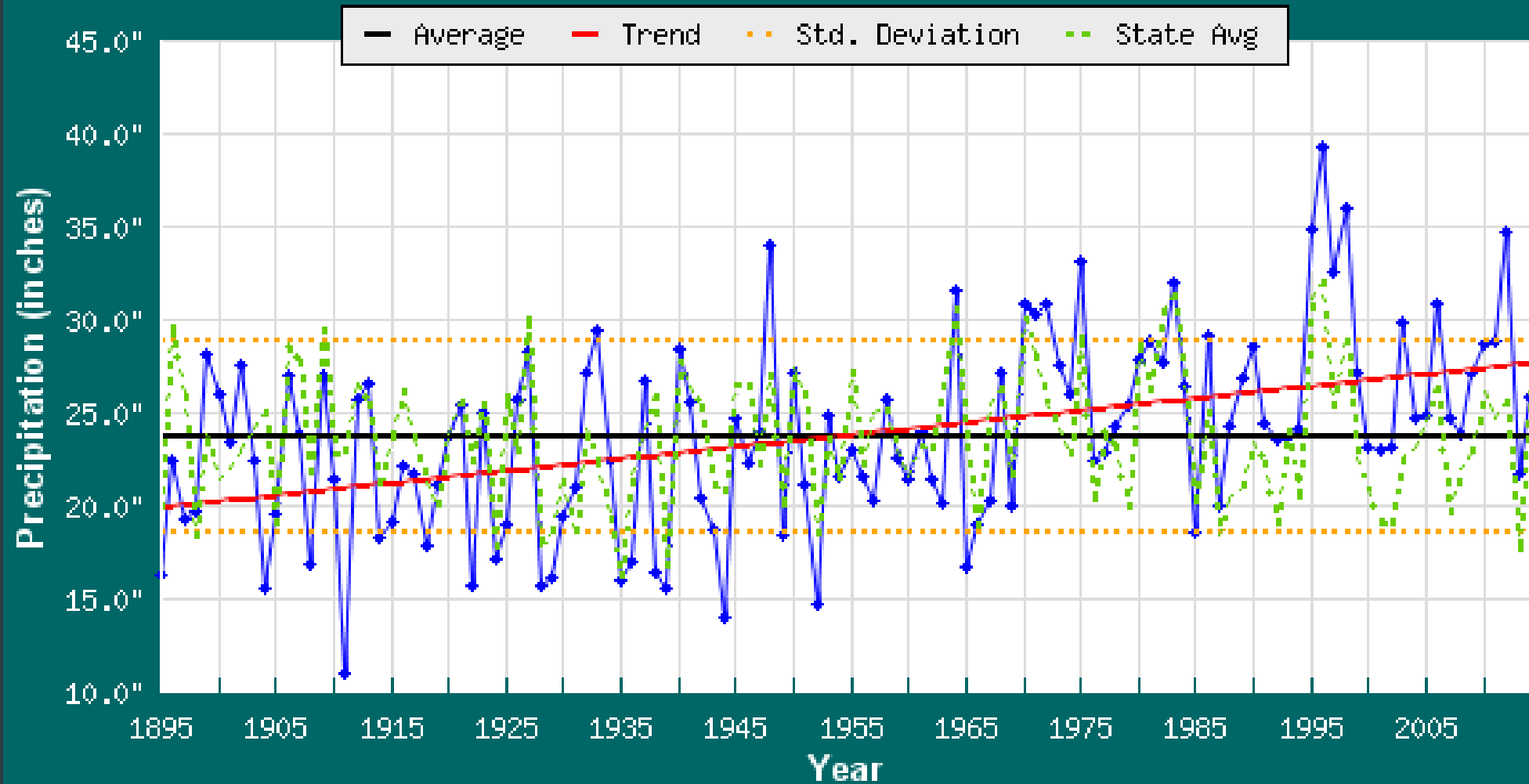


Fig. 7. The effect of soil pH on percentage maximum yield of spring barley grown in northern Idaho. Small and large dashed lines represent confidence limits for the lines and individual points, respectively.

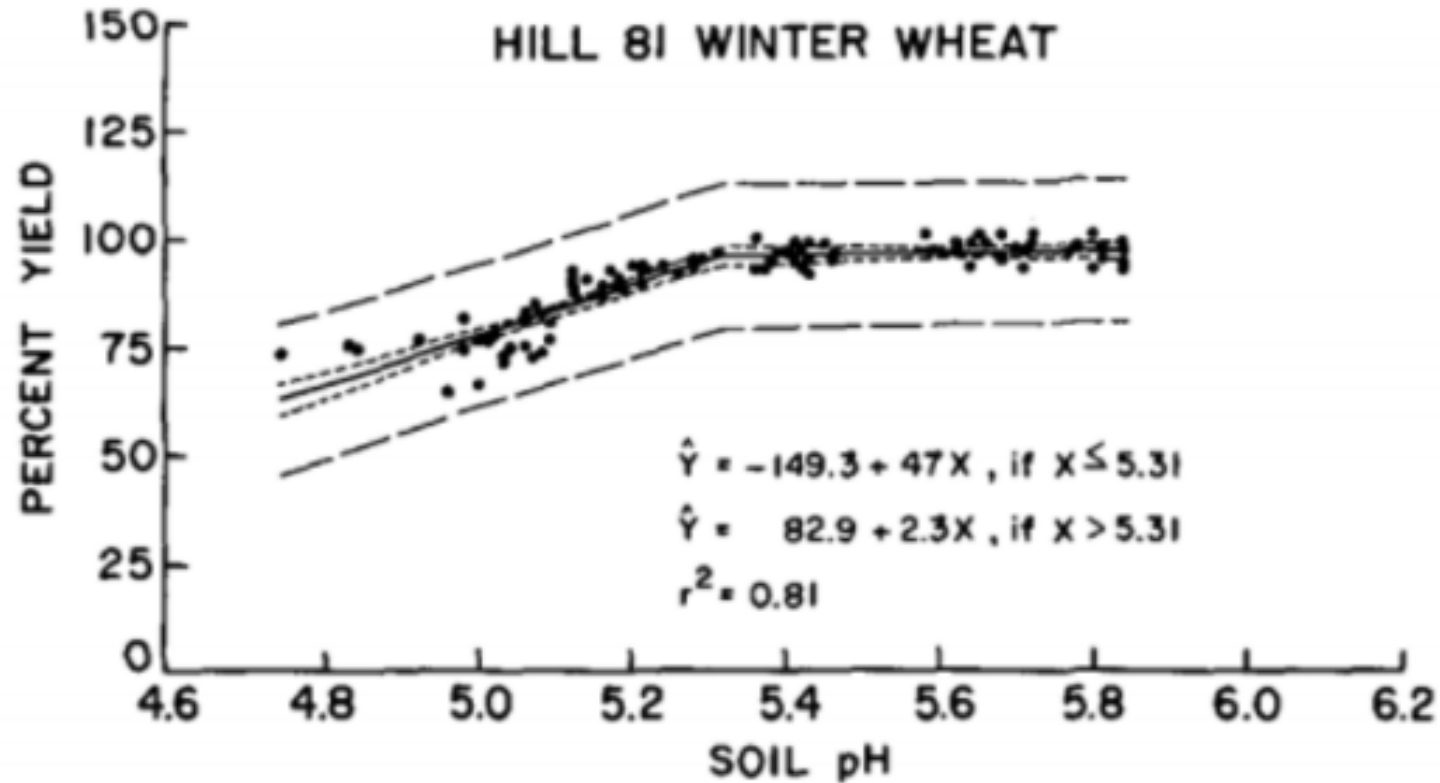
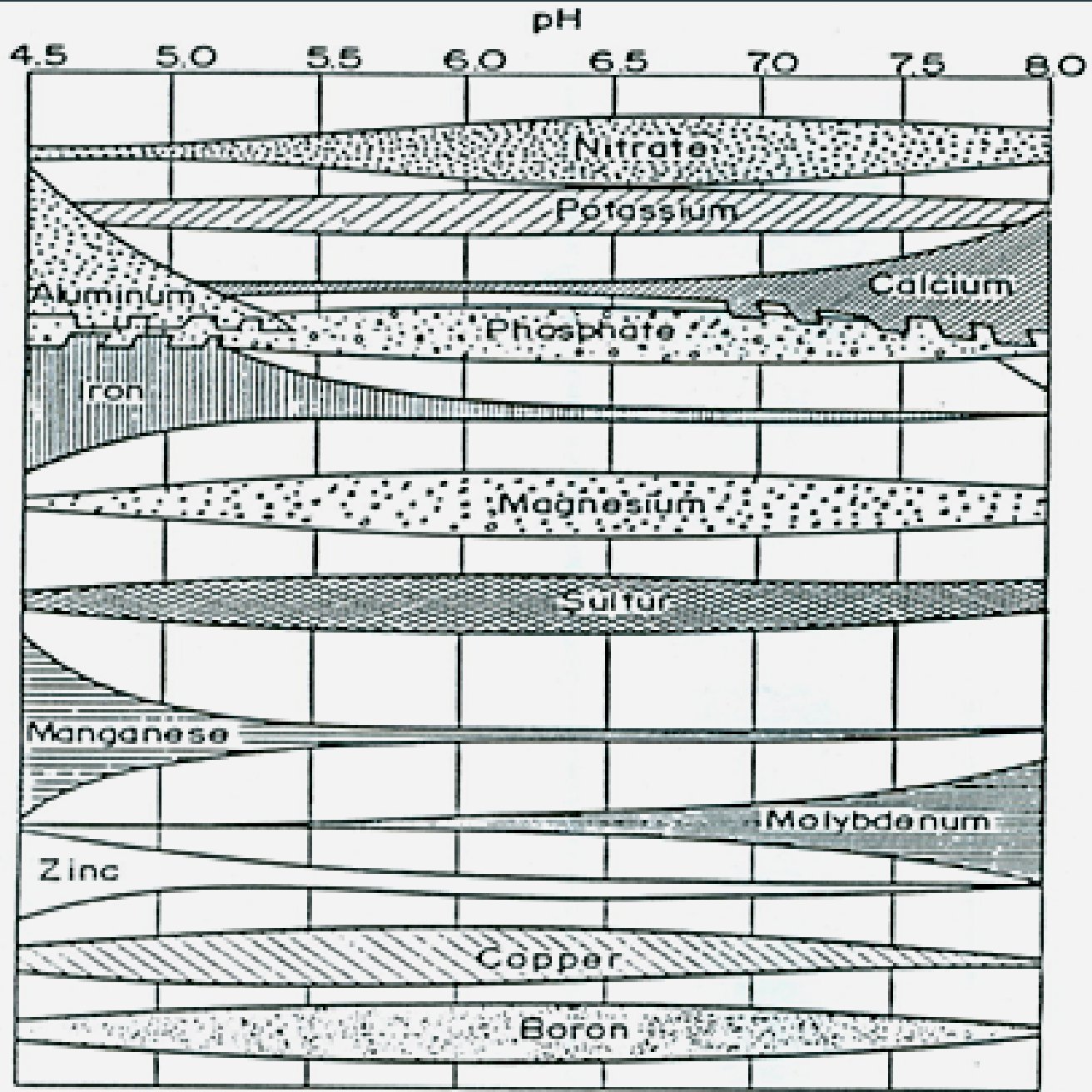


Fig. 5. The effect of soil pH on percentage maximum yield of Hill 81 winter wheat grown in northern Idaho. Small and large dashed lines represent confidence limits for the lines and individual points, respectively.



Objective 1:

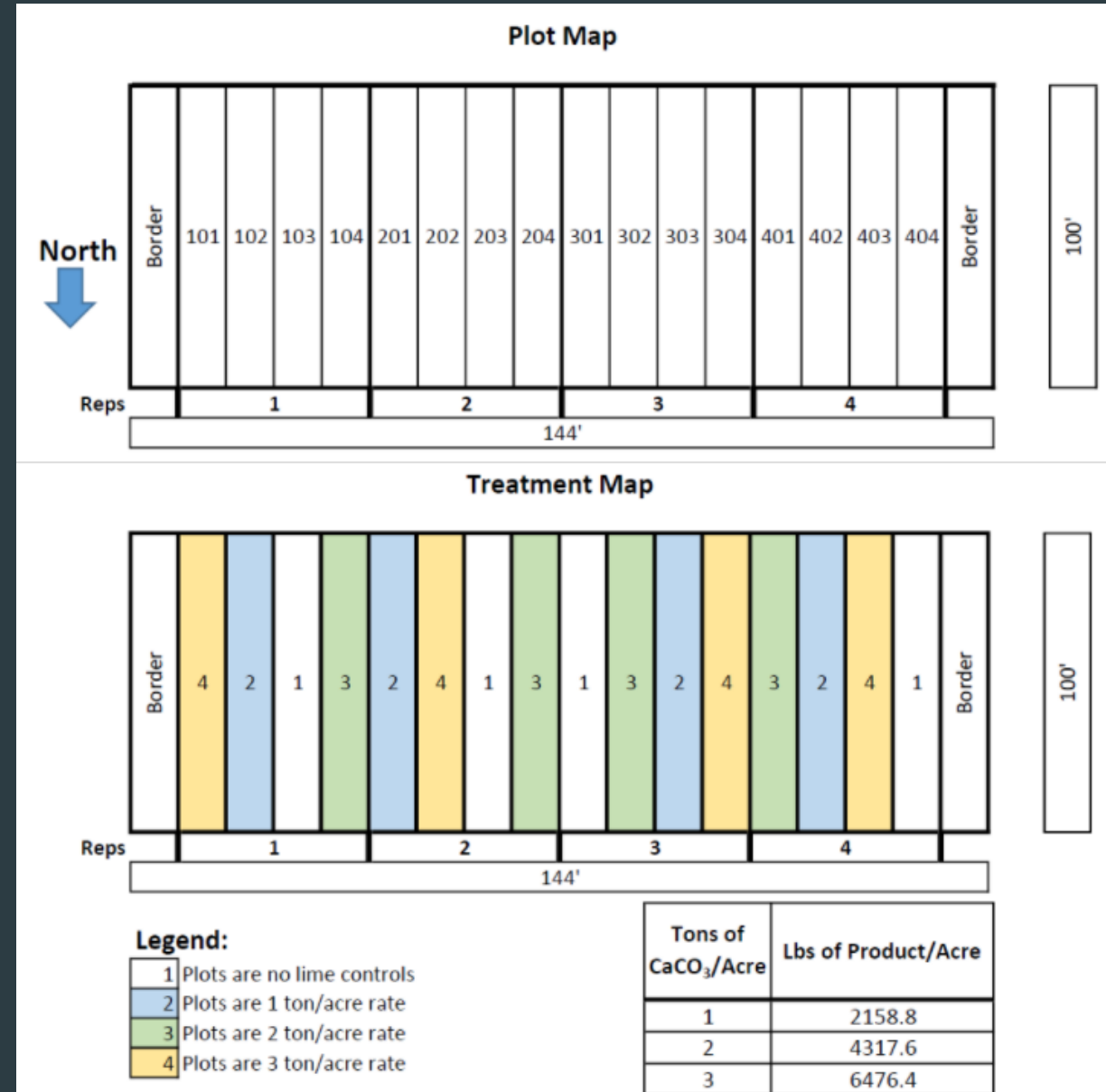
Determine the effect of lime on available soil phosphorus

Objective 2:

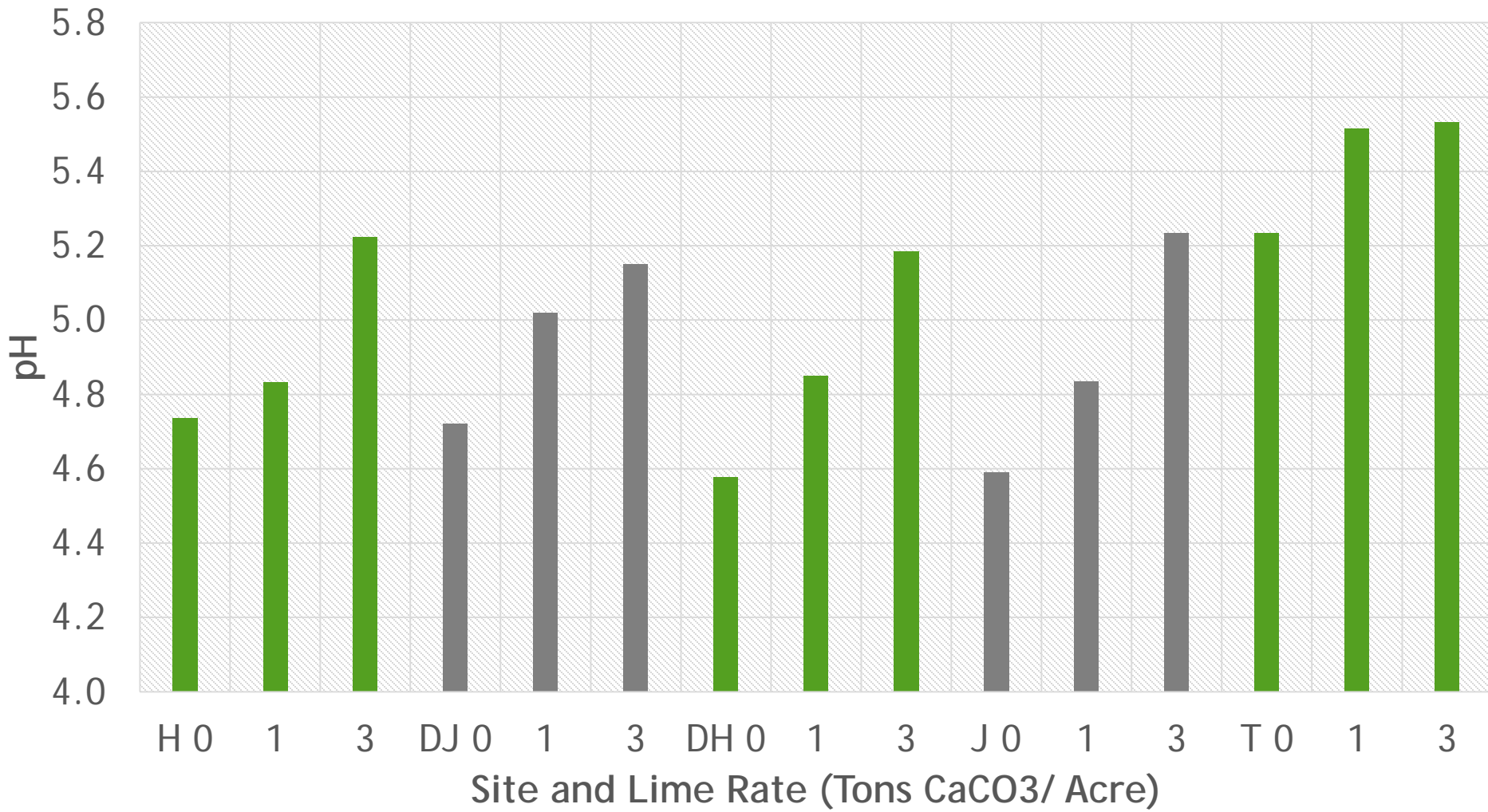
Determine the relationship between available phosphorus in the soil and phosphorus content in runoff

Methods

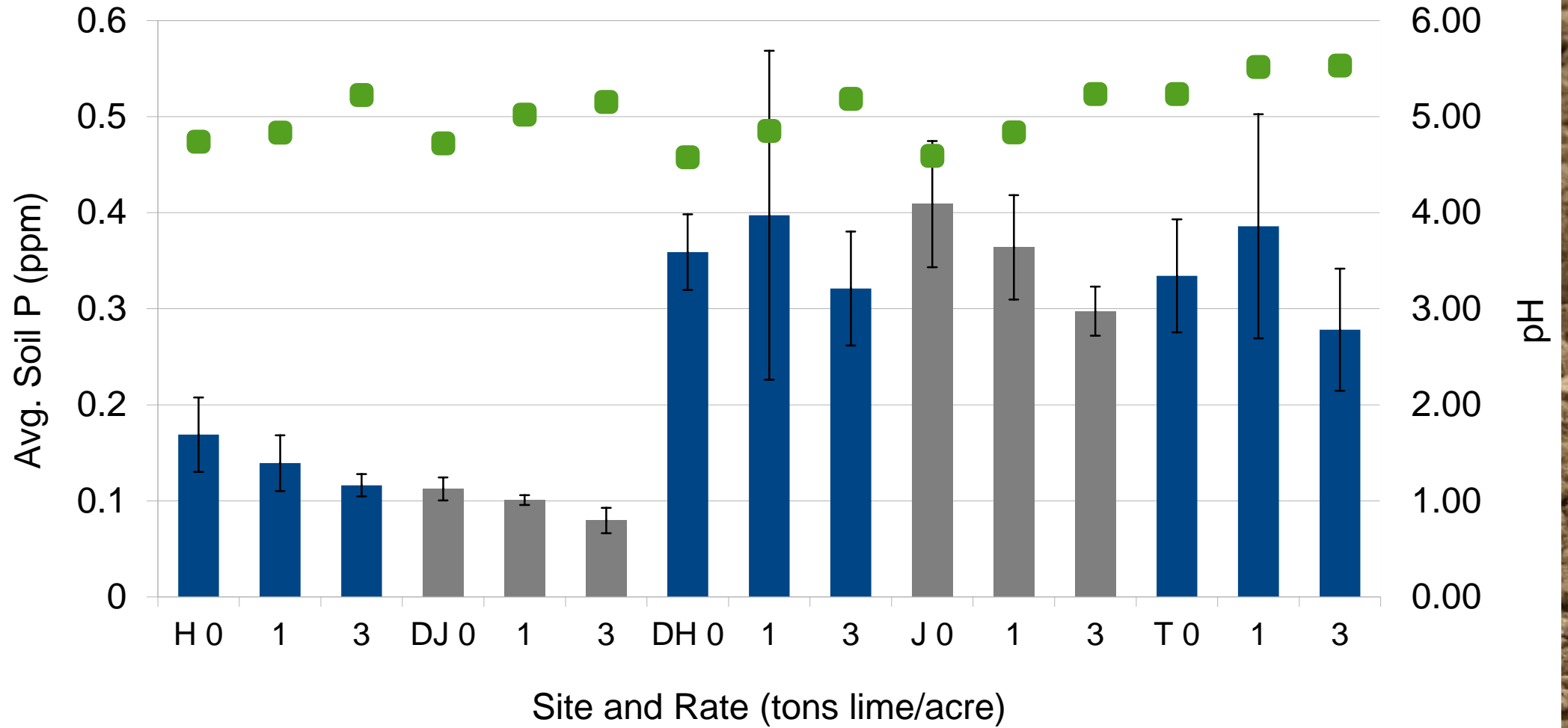
- ▶ 5 sites
- ▶ Samples from 0, 1, 3 tons lime/acre
- ▶ 0 - 6 in deep
- ▶ 3 replicates



pH



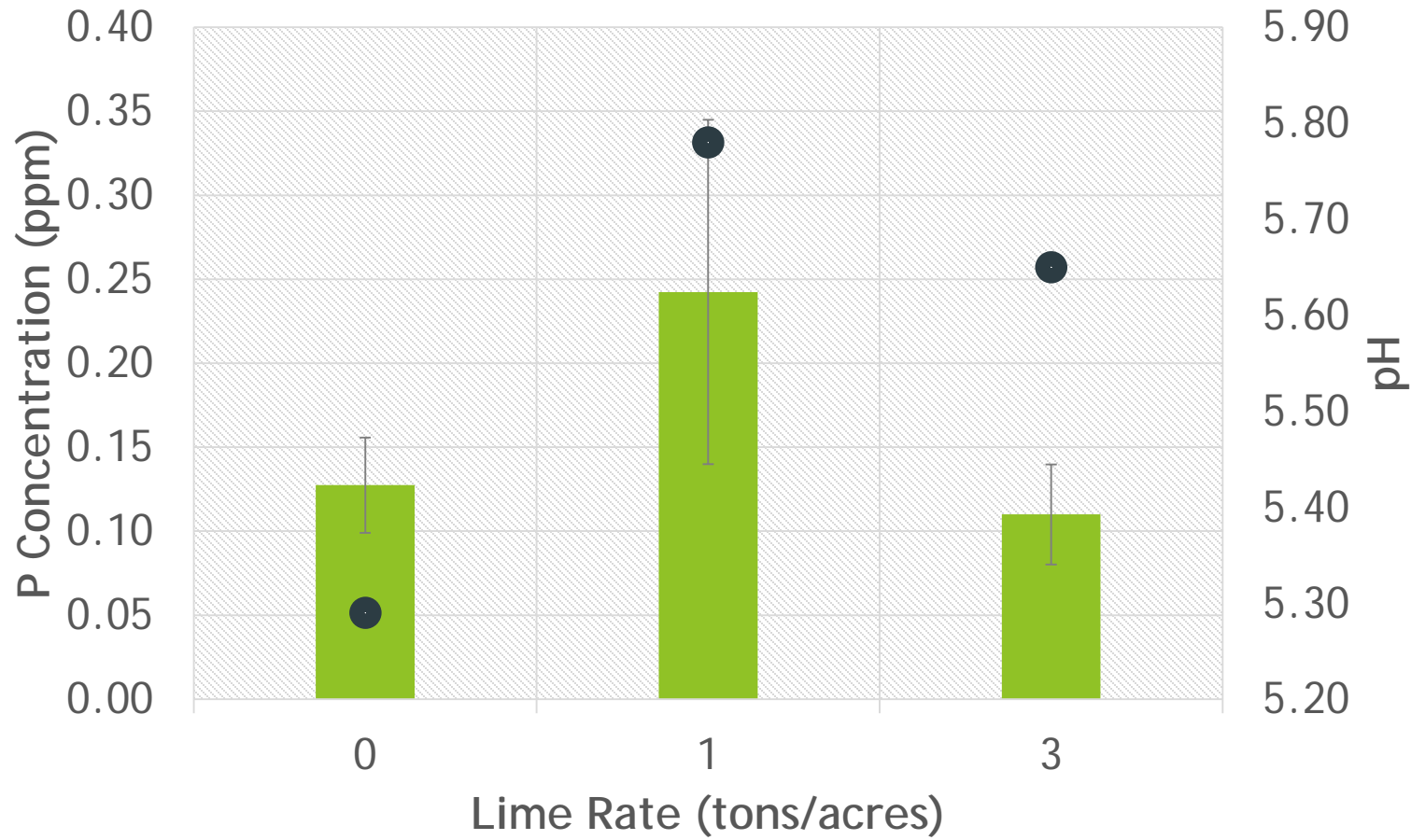
Soil P vs. Lime Application



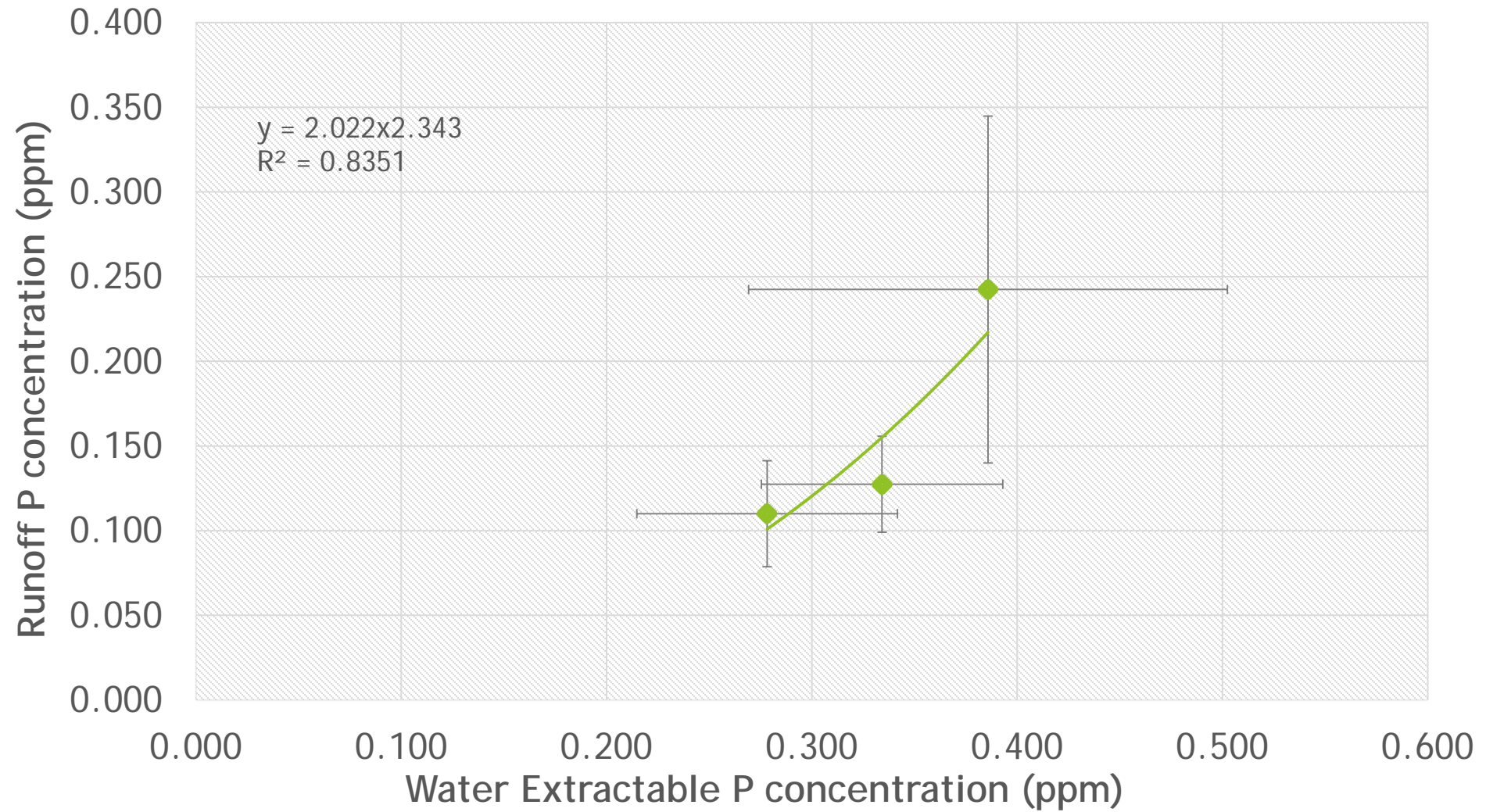
Methods



Average Runoff Phosphorus



Soil P vs. Runoff P



Conclusions

- ▶ pH increases with lime application
- ▶ Soil Phosphorus decreases with increasing pH and lime
- ▶ We need the whole picture

Extension

- ▶ What is happening in the soil
- ▶ What this means
- ▶ What to do about it

Works Cited

1. Scavia, Donald. "Nutrient pollution: Voluntary steps are failing to shrink algae blooms and dead zones." *The Conversation*. *The Conversation US, Inc.* 21 July 2017. Web. Accessed 3 August, 2017.
2. Ahmed, Mukhtar, et al. "Assessment of Climate Change and Atmospheric CO2 Impact on Winter Wheat in the Pacific Northwest Using a Multimodel Ensemble." *Frontiers in Ecology and Evolution*. *Urs Feller, University of Bern, Switzerland*. 29 May 2017.
3. "N.W. Temperature, Precipitation, & SWE Trend Analysis." Office of the Washington State Climatologist. N.p., 2014. Web. Accessed 25 June 2017. <<http://www.climate.washington.edu/trendanalysis/>>.
4. Mahler, R. L. and R. E. McDole. "Effect of Soil pH on Crop Yield in Northern Idaho." *Agronomy Journal*, Vol. 79. July - August 1987.



Questions?

