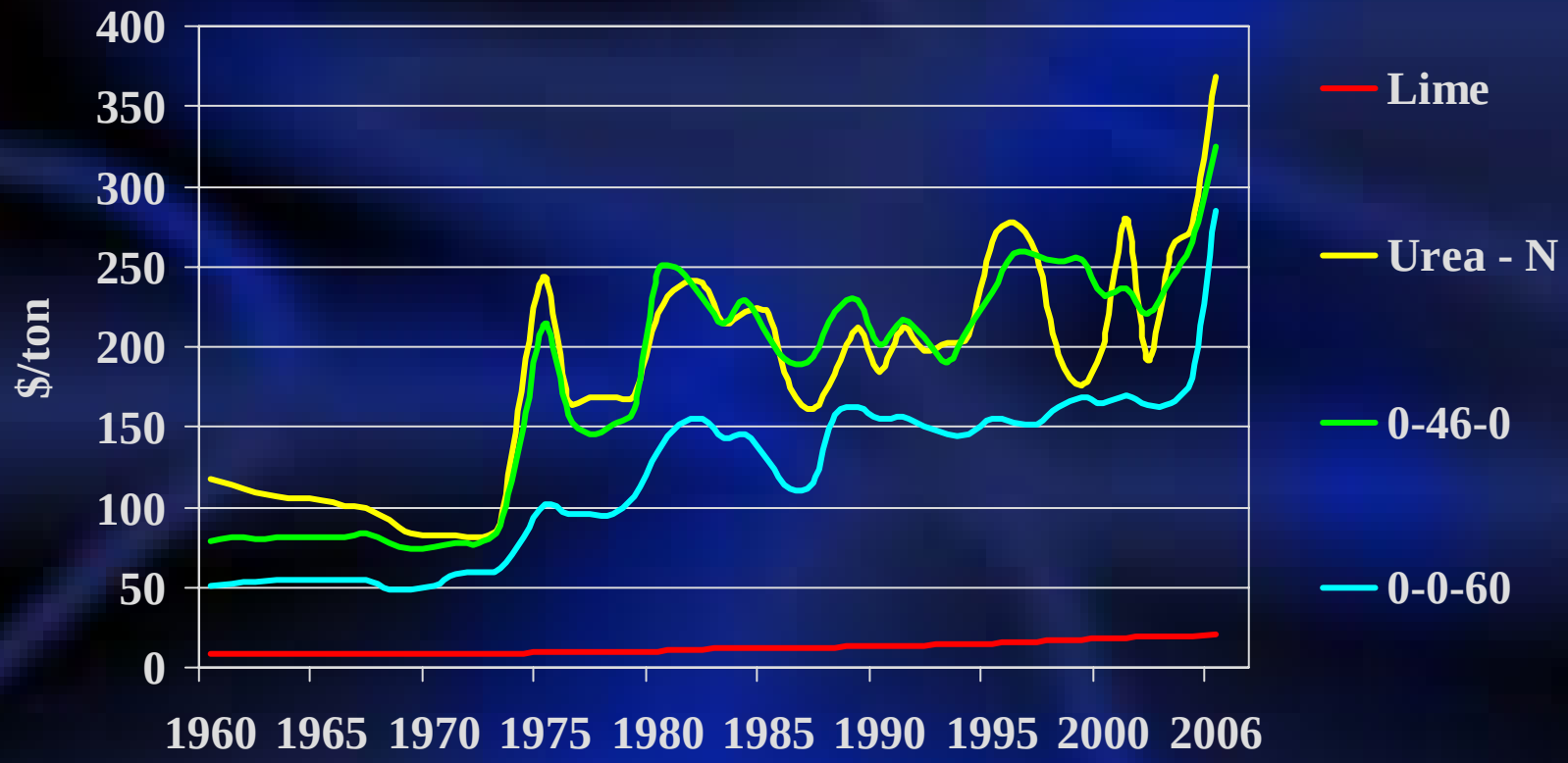
Allocating Scarce Resources for Lime

J.B. Peters and C.A.M. Laboski

Soil Science Department

University of Wisconsin - Madison

Long-term fertilizer price trends



Objectives

- The primary objective of these long-term studies is to evaluate the effect of soil pH on crop yield and quality and fertilizer use efficiency.

Plot Locations

Marshfield

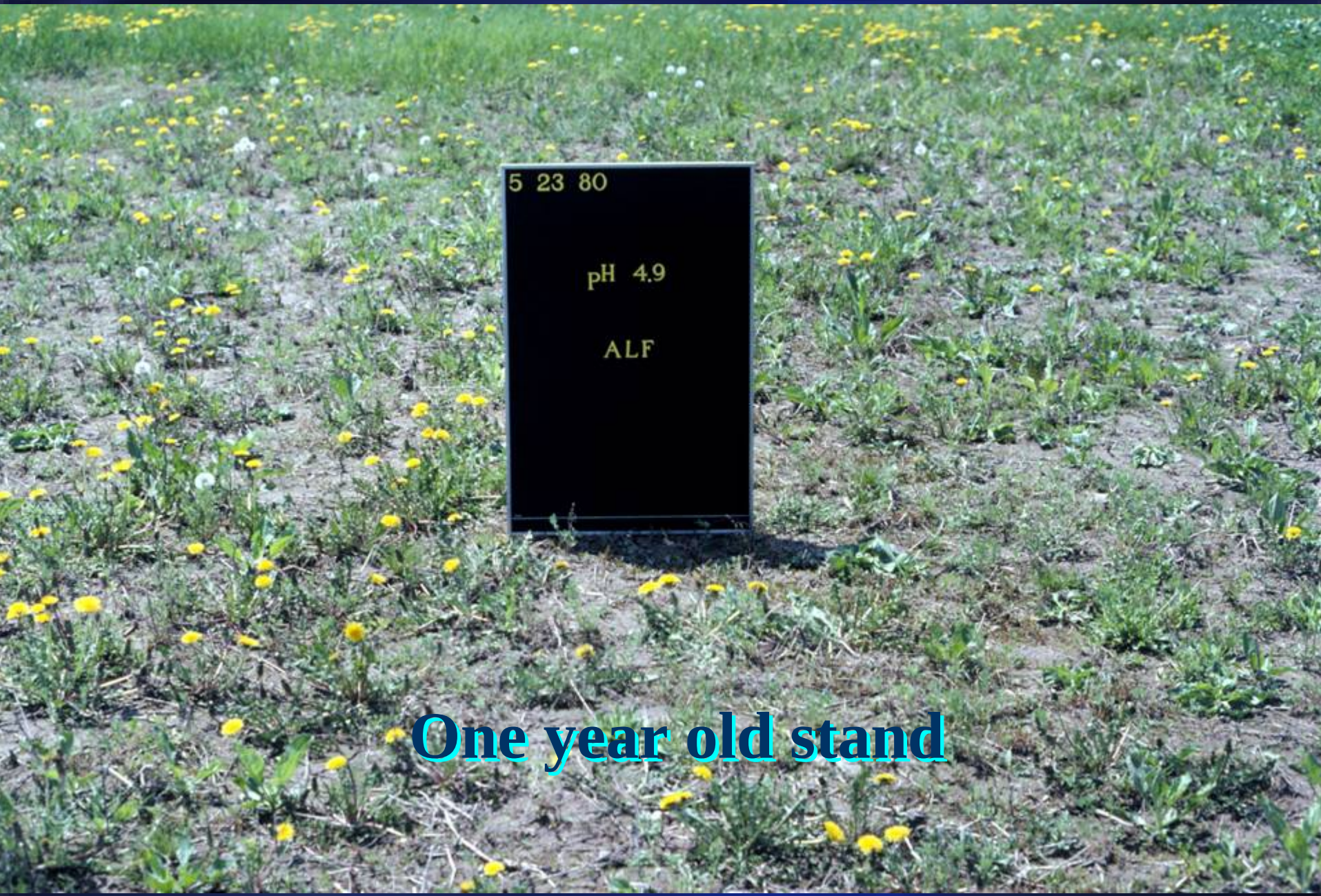
– alfalfa 1998-2000, corn 2001-02, 05, Soybeans 2003-04

Spooner

– alfalfa 1998-2001, corn 2002-03, 05, Soybeans 2004

Hancock

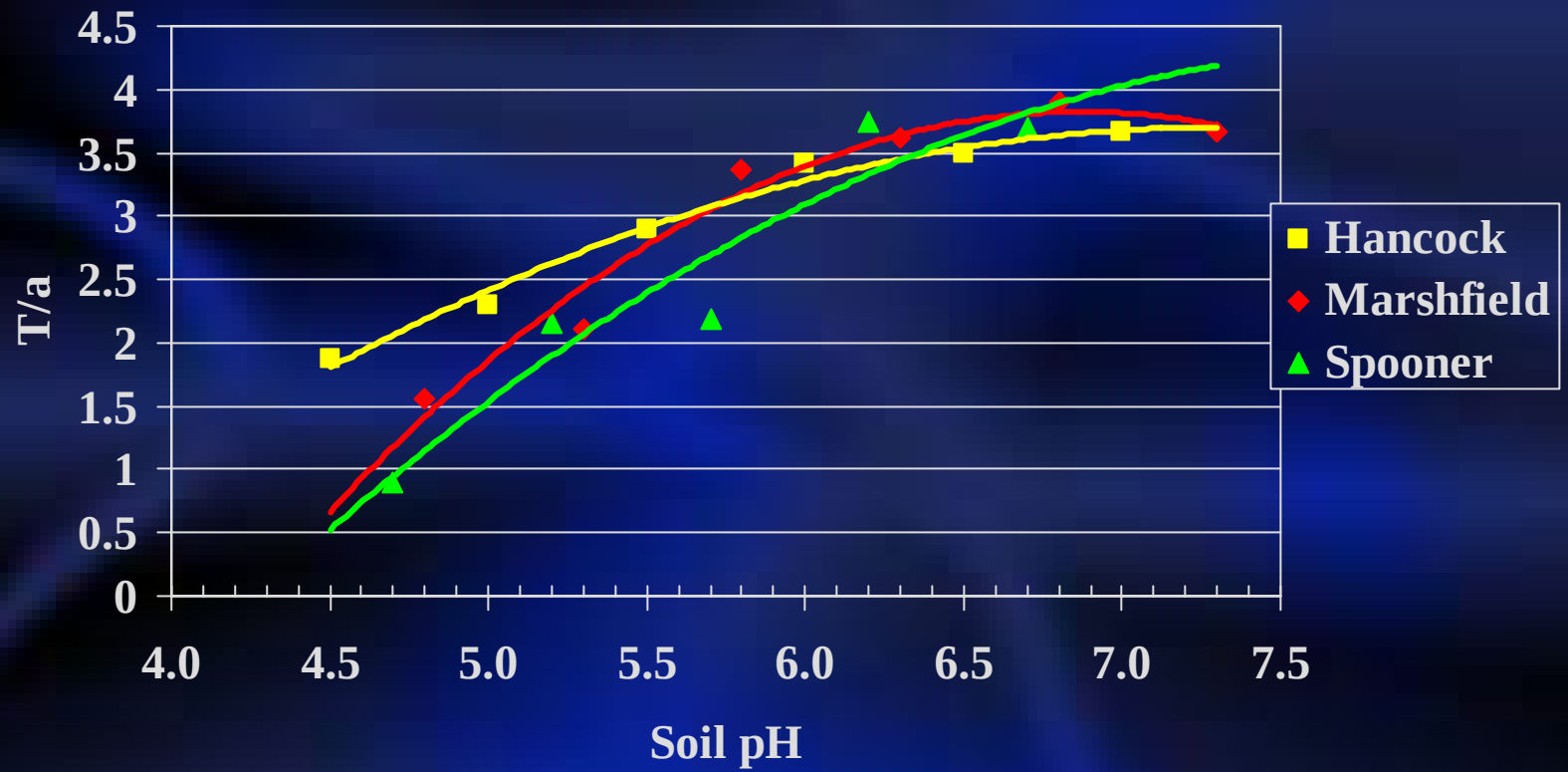
– alfalfa 1998-2001, corn 2002-03, 05, Soybeans 2004



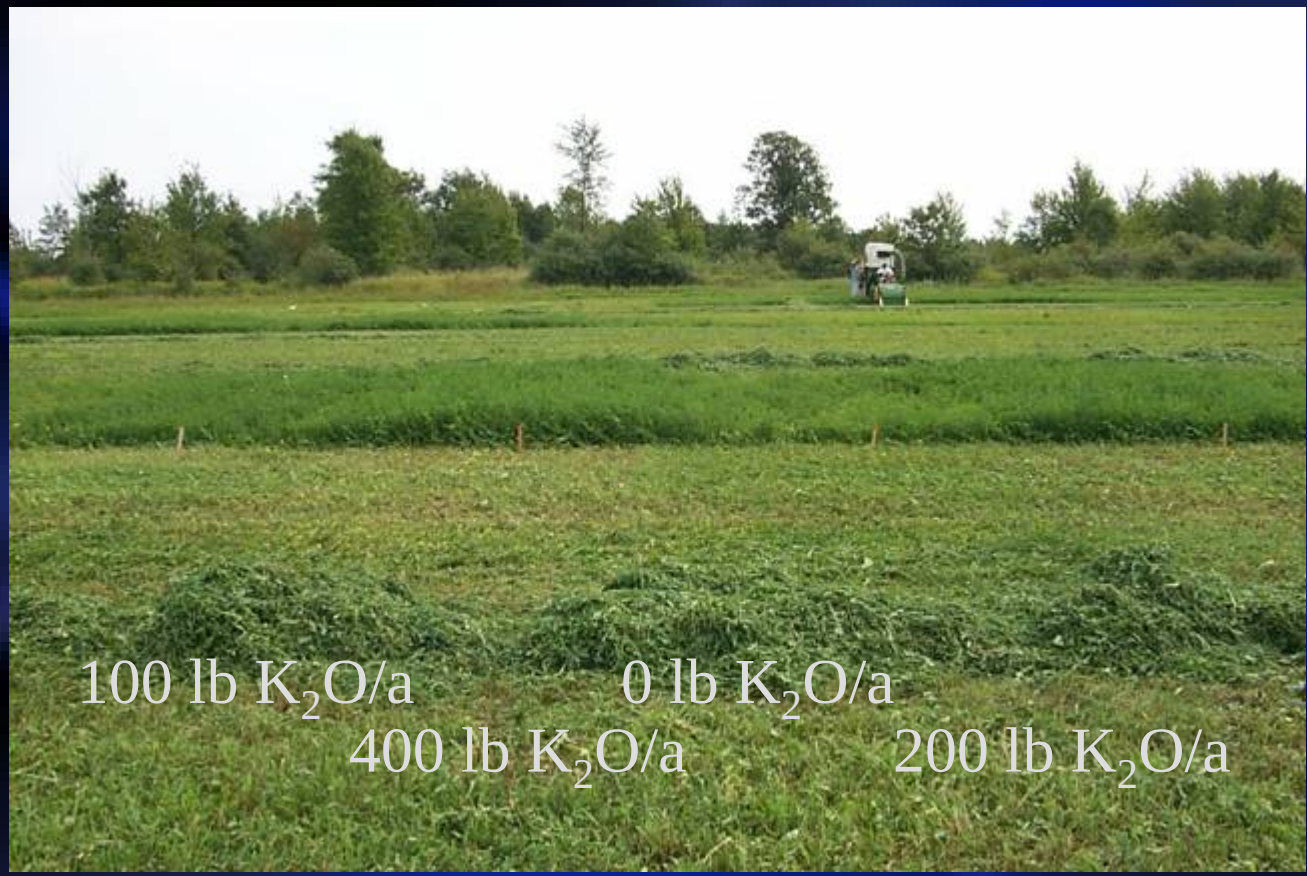
One year old stand

One year old stand

Average annual alfalfa dry matter yield by soil pH (1998-2001)

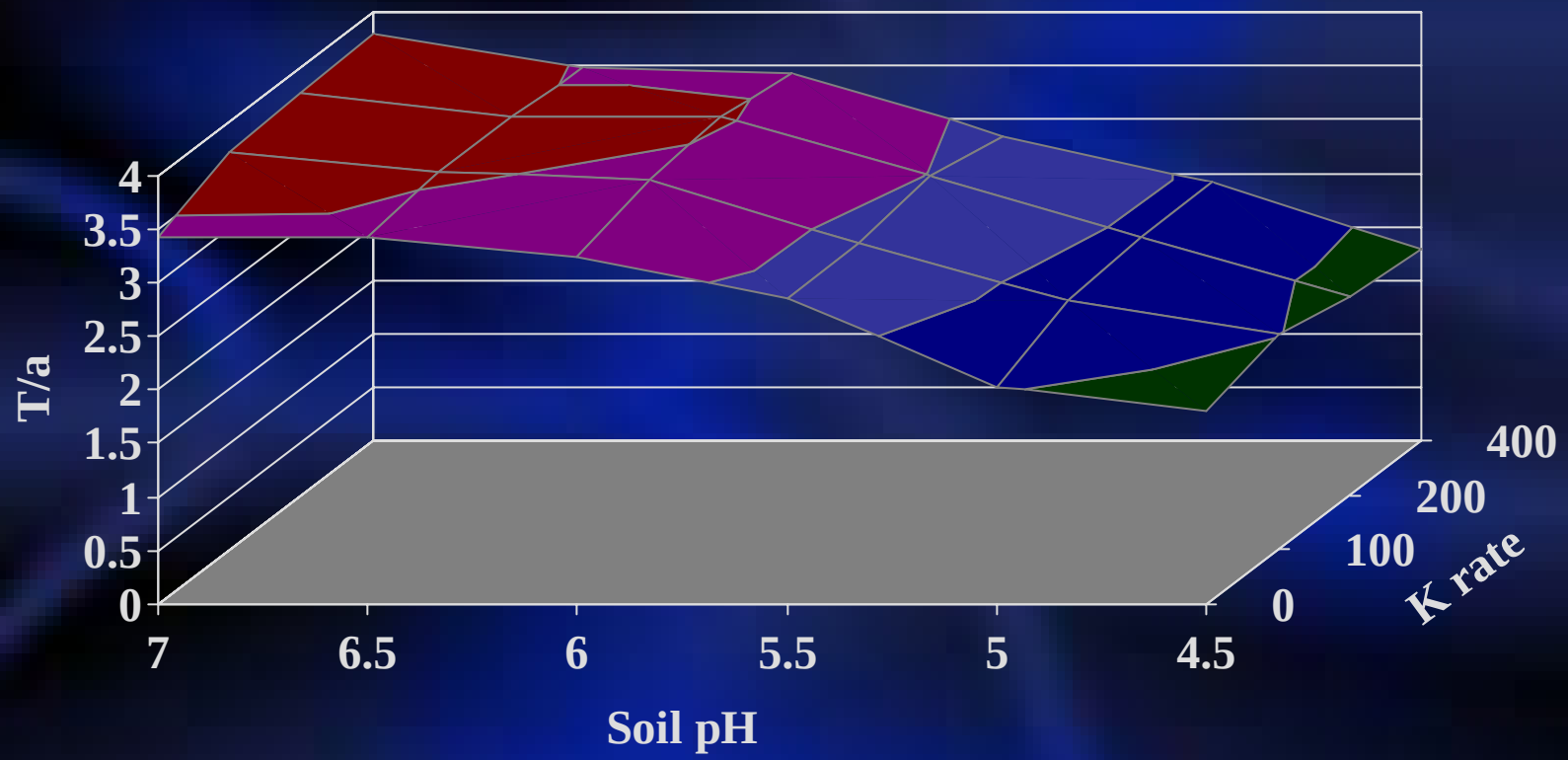


Alfalfa response to annual K applications at pH 7.0

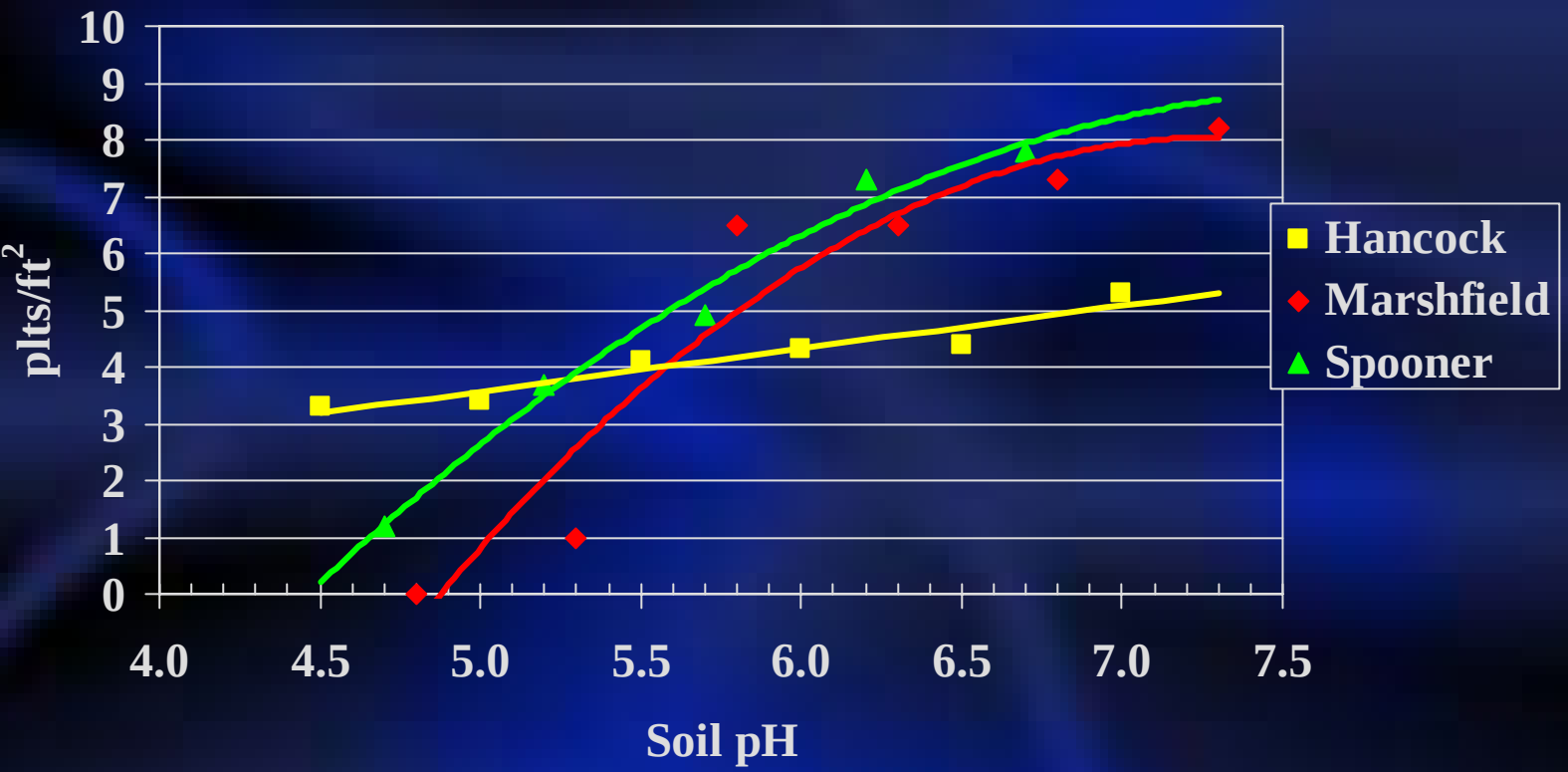


3rd cut Marshfield, 2000

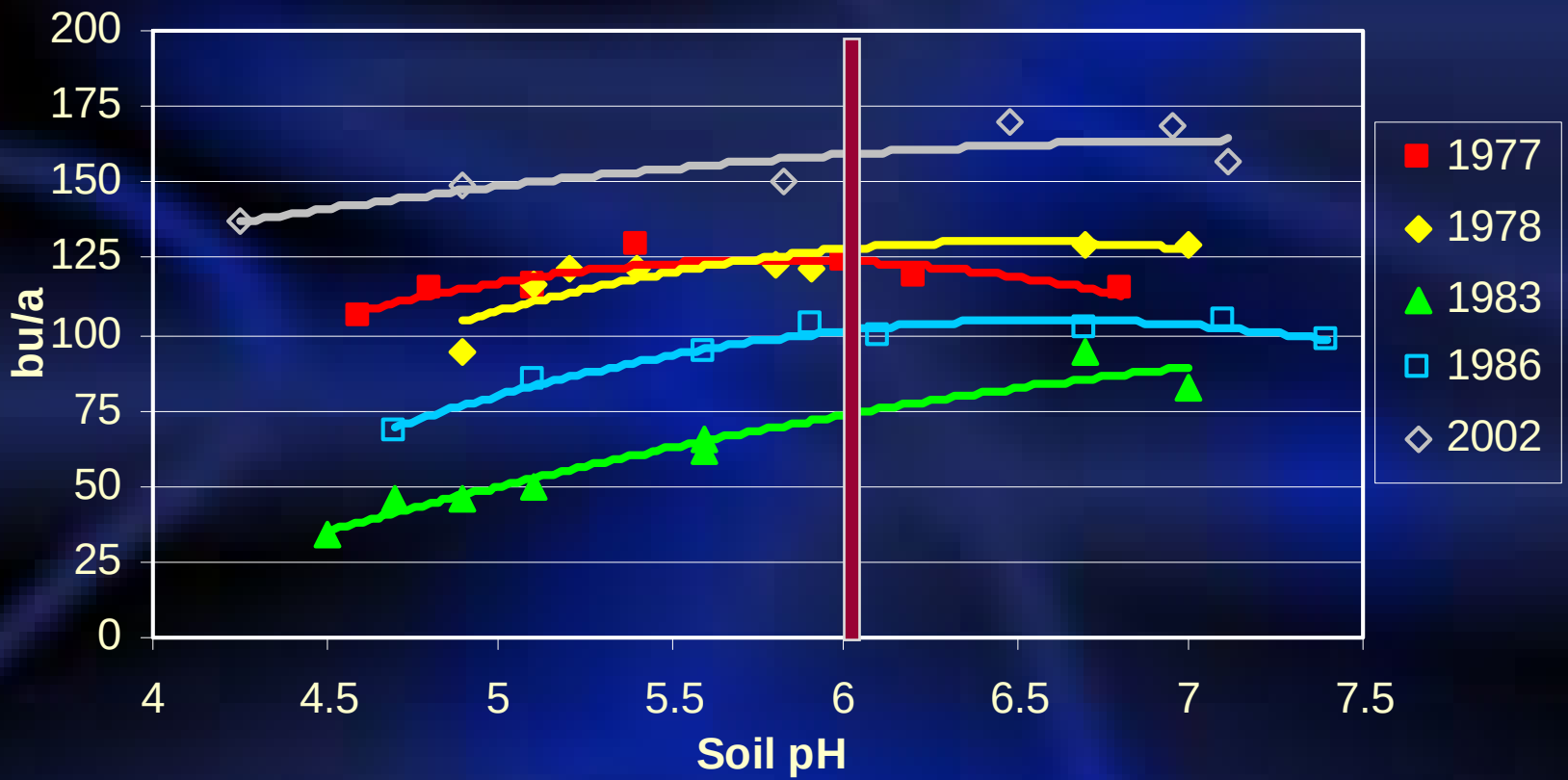
Effects of pH and K on alfalfa dry matter yield (Hancock, 1998-2001)



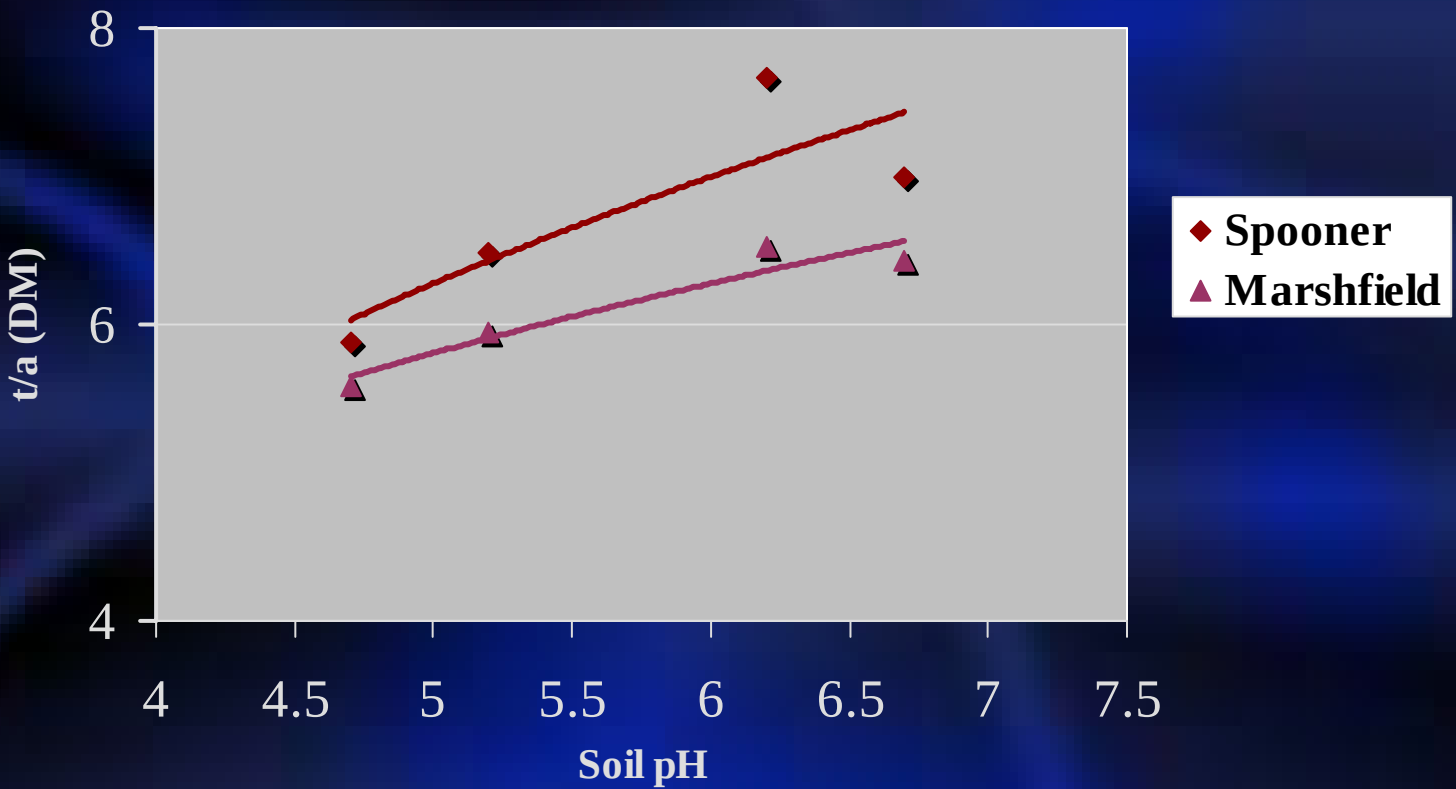
Final stand quality by soil pH (1998-2001)



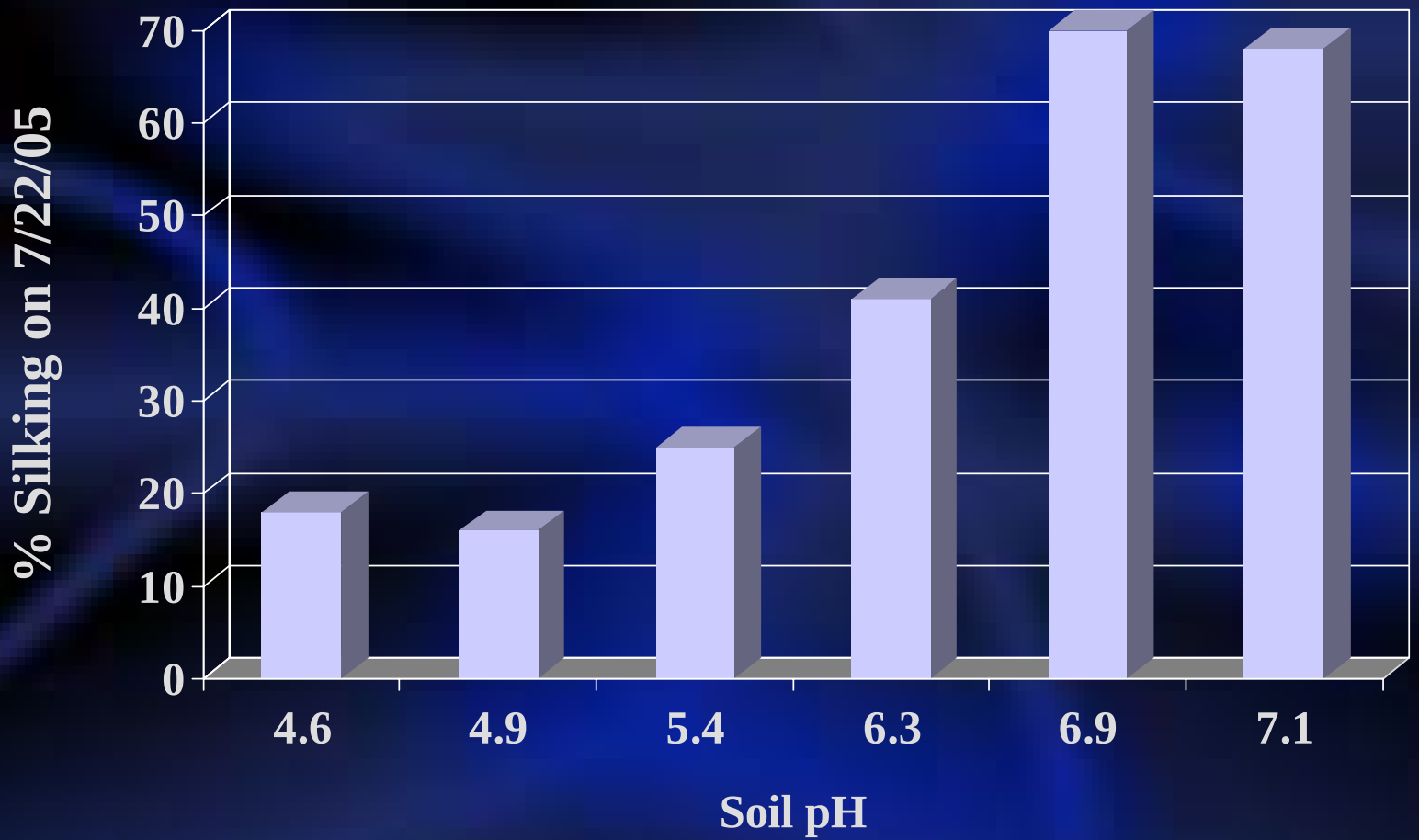
Marshfield Grain



Effect of soil pH on corn silage yield, 2005

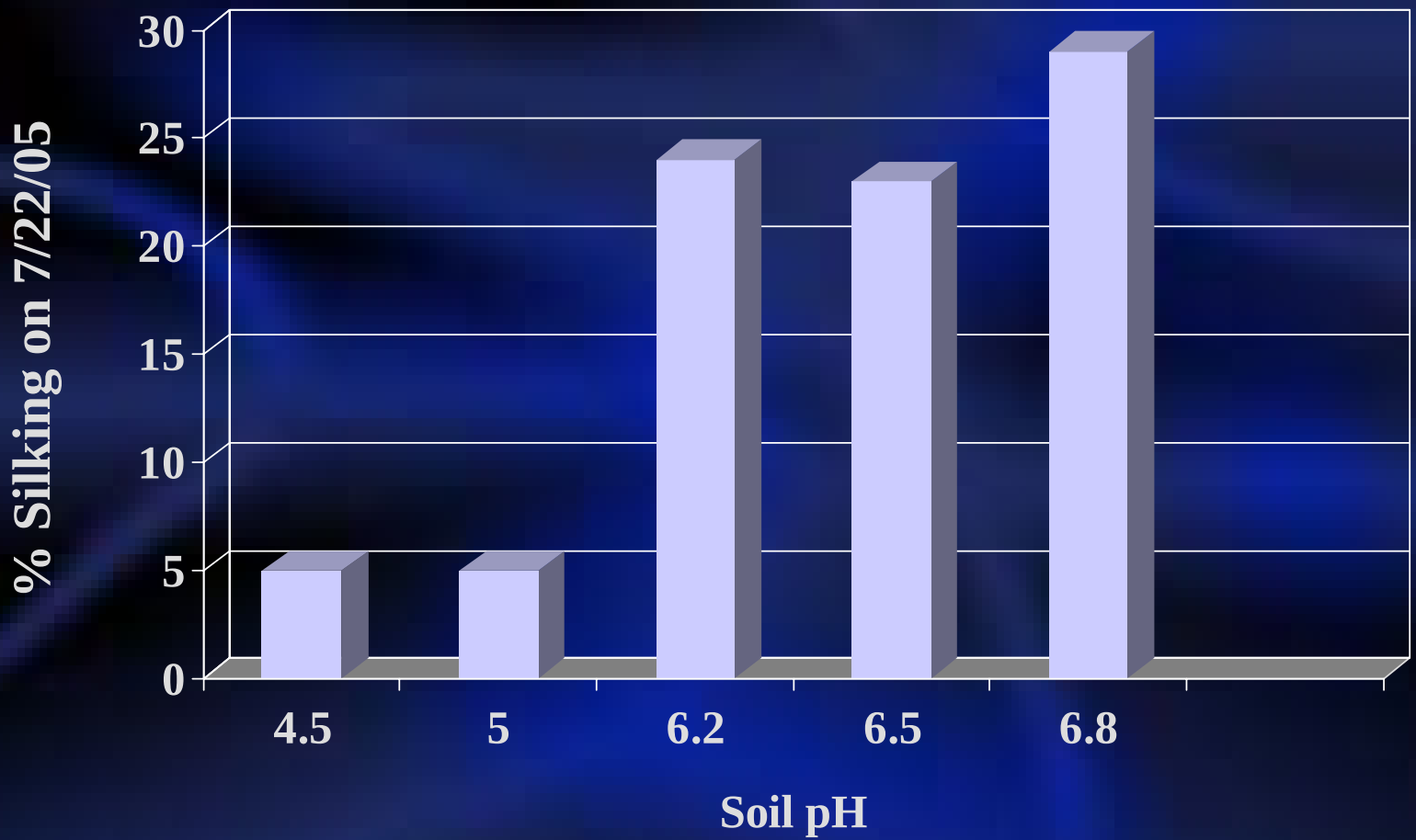


% Silking as affected by pH



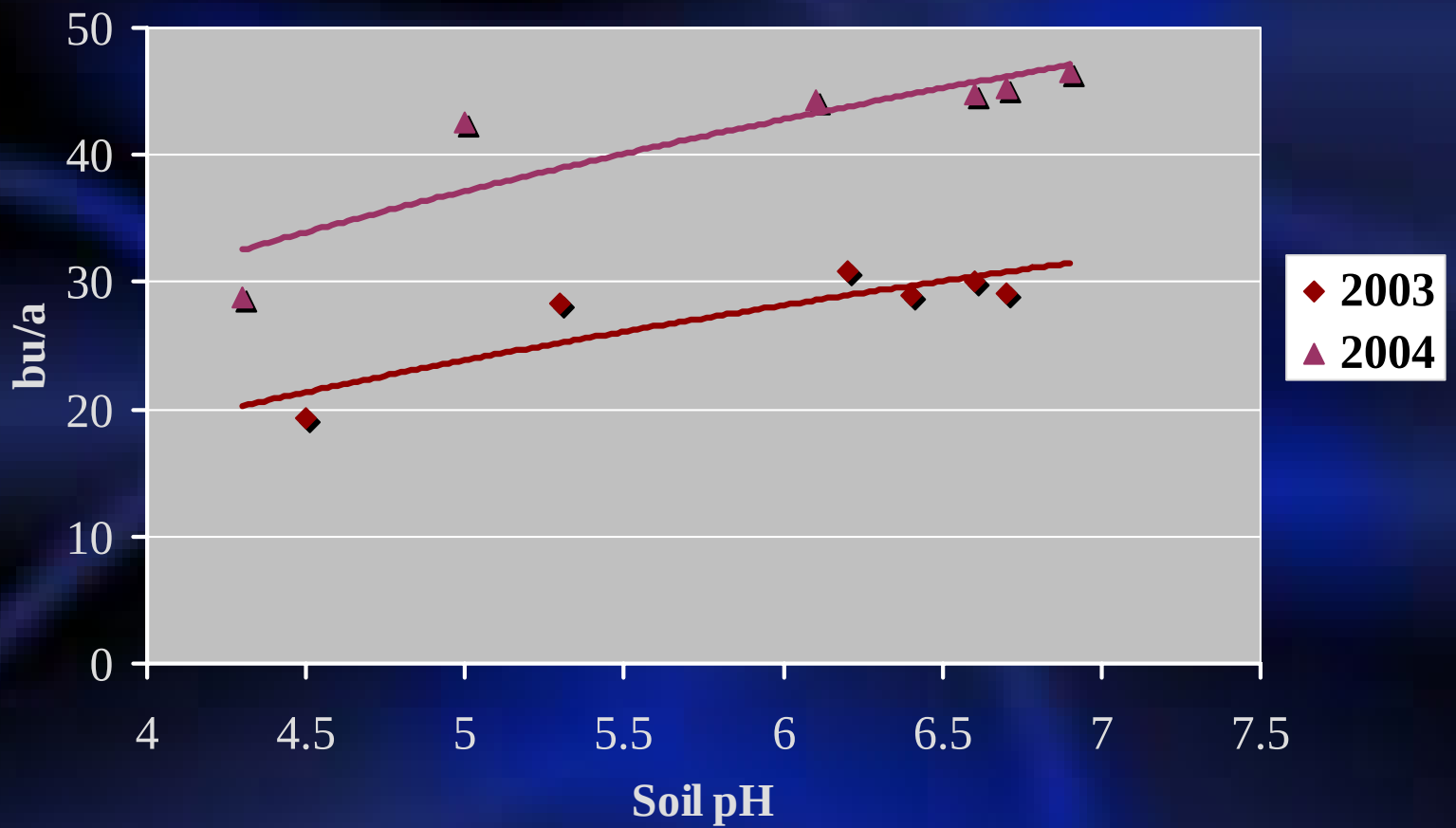
Marshfield Ag Research Station

% Silking as affected by pH

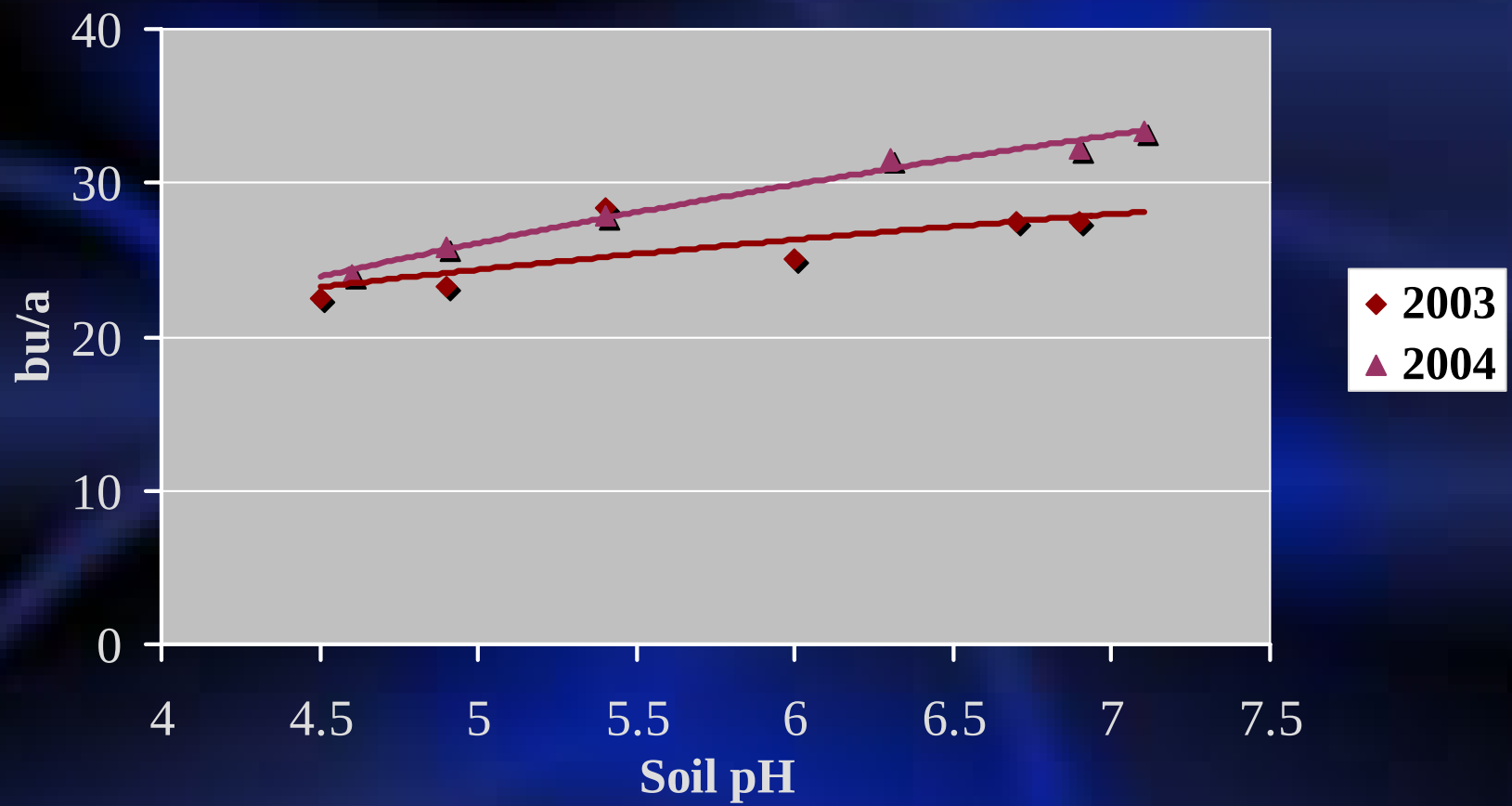


Marshfield Airport

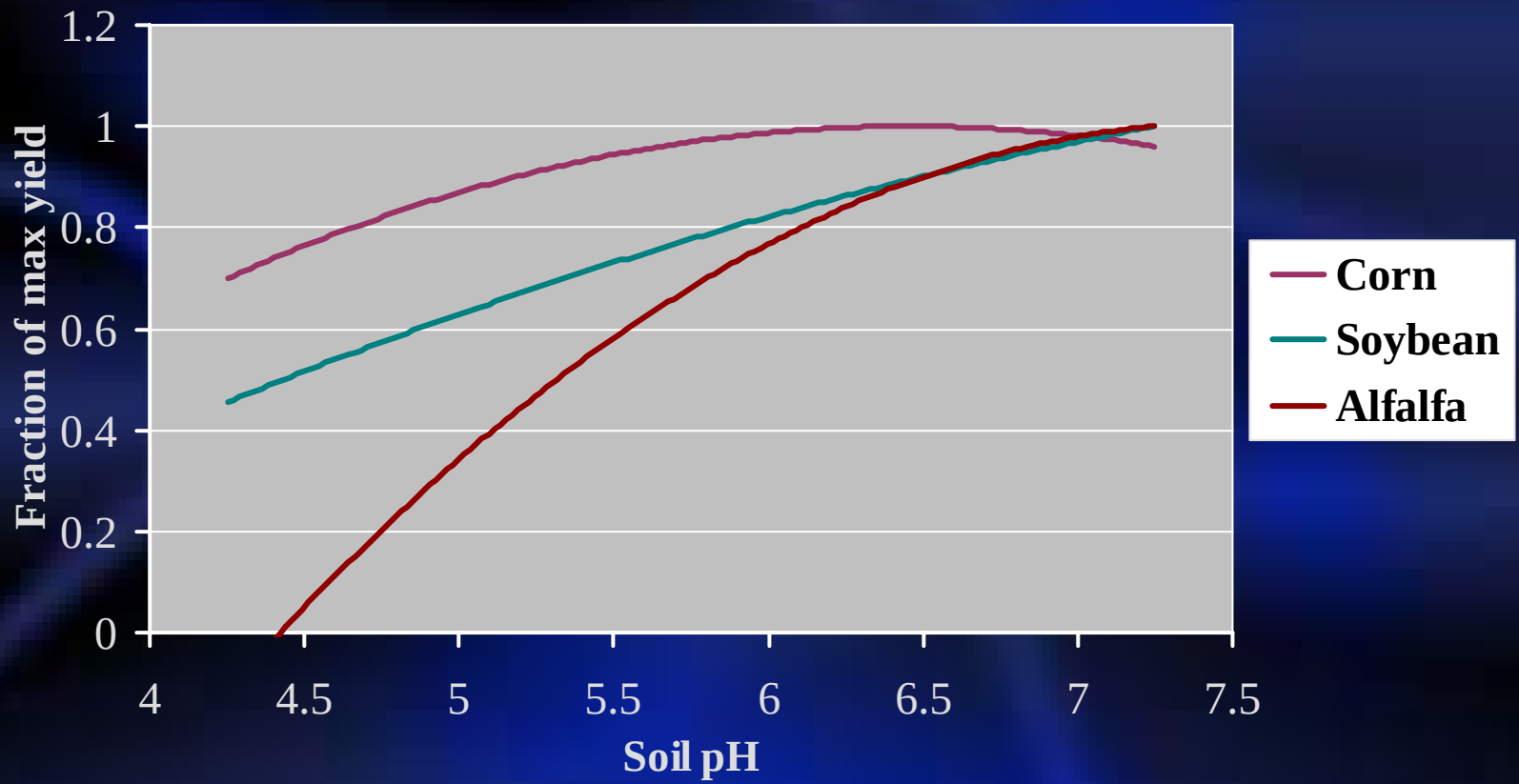
Effect of soil pH on soybean yield, Marshfield airport site



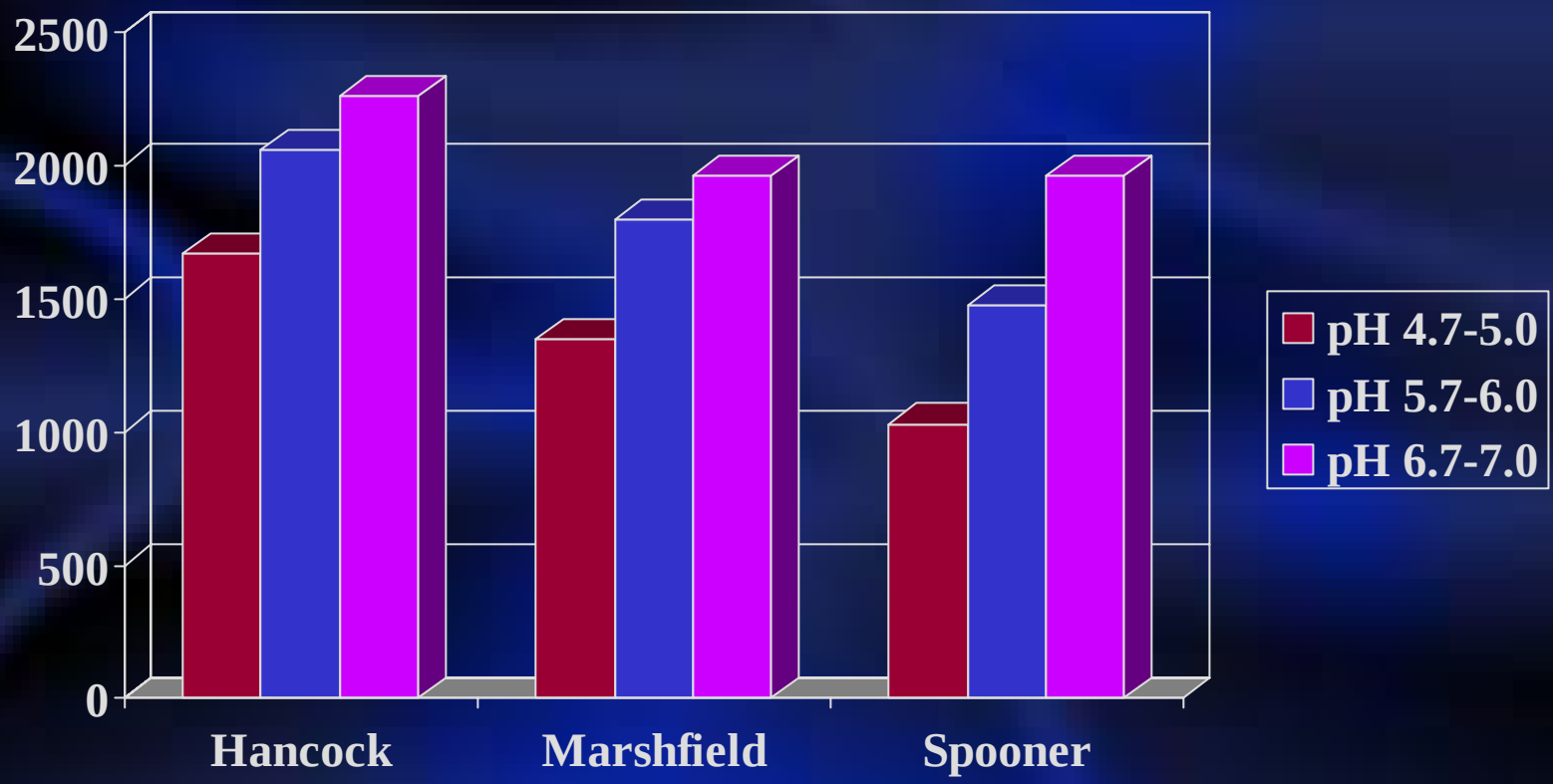
Effect of soil pH on soybean yield, Marshfield station site



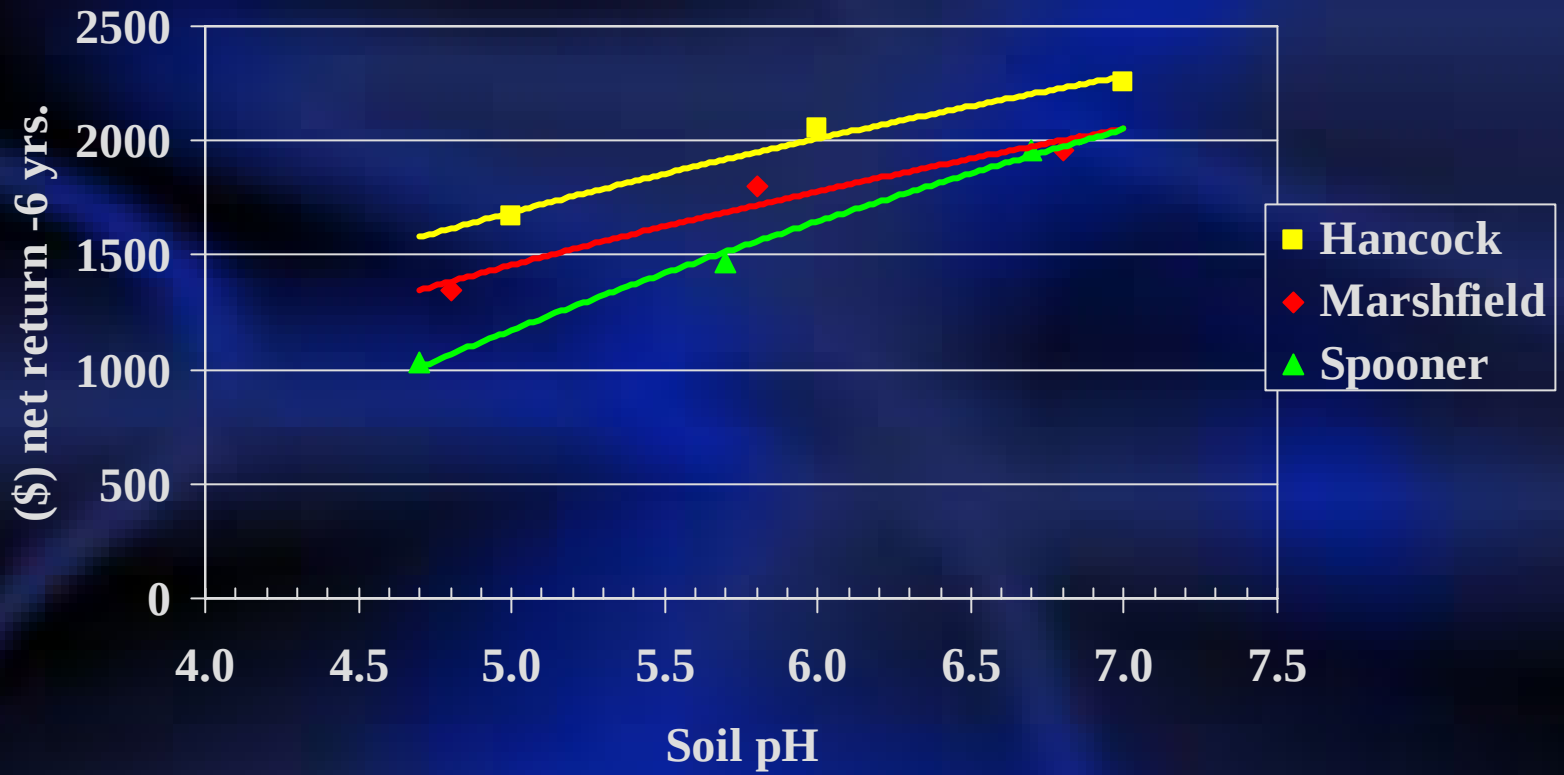
Effect of soil pH on crop yield response



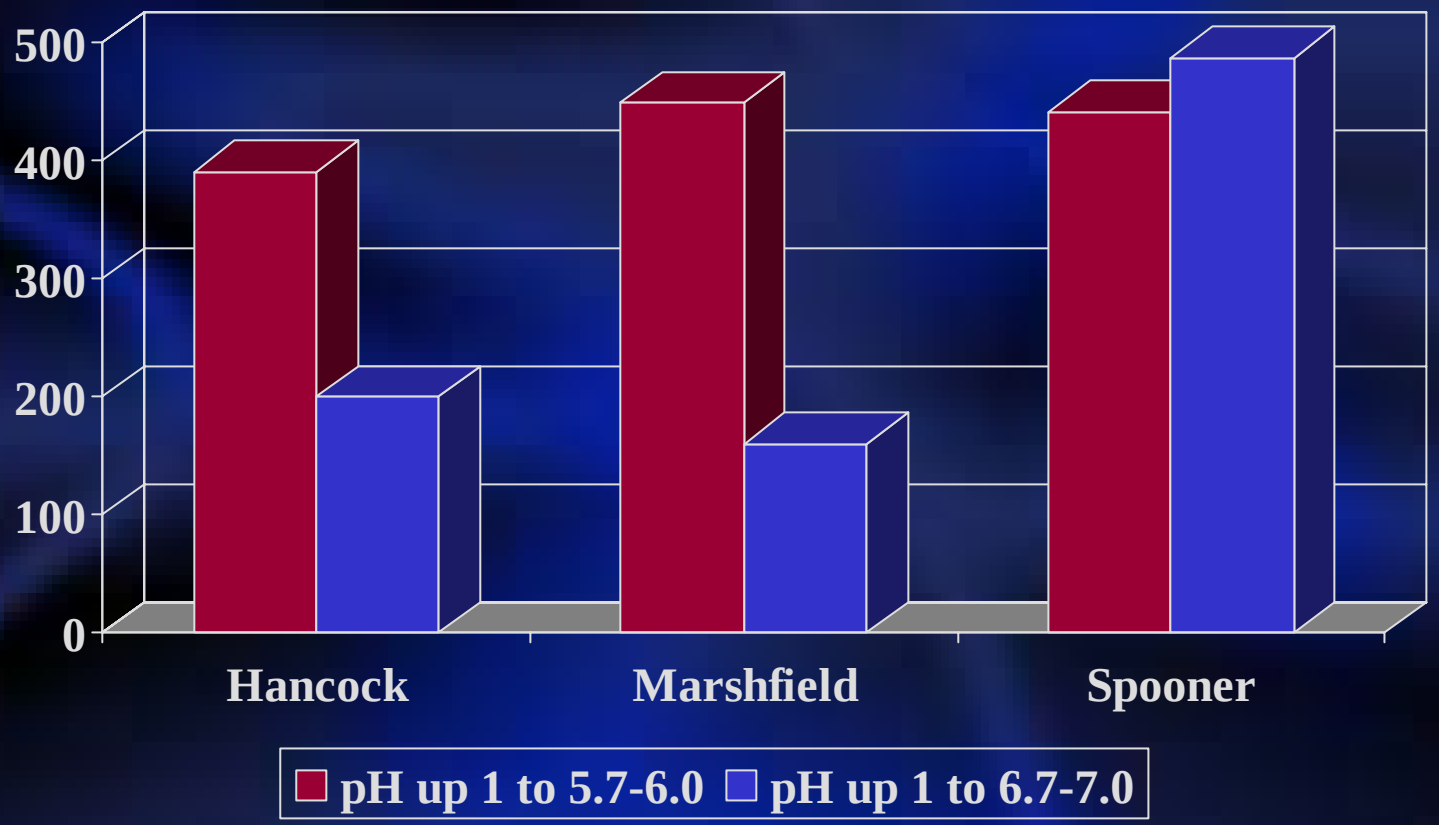
Net return from liming
6 yr. rotation (1998-2005)



Net return from liming (6 year rotation)



Net profit from each increment of lime applied



Summary

- Each increment of lime resulted in a significant net return for a typical six year rotation. This included three years of alfalfa, two years of corn and one year of soybeans. The greatest return is typically seen with the first increment of lime, but favorable returns on the investment in lime continue up to the optimum pH for the rotation.

Summary

- Achieving and maintaining the appropriate pH for a specific crop rotation results in the most efficient use of fertilizer inputs and enhances fertilizer efficiency and profitability. This is even more critical during this time of rapidly rising fertilizer prices.

Any questions?