Soybean Grain Composition as Affected by Soil pH

Dr. Roger Borges - UWEX Soybean Specialist

ESTABLISHED KNOWLEDGE

- Protein and oil content are the most important grain components of soybean prices
- The protein content of US soybeans is below international averages
- Variety selection can make a difference
- The protein and oil content of a single variety changes from field to field

OPEN QUESTIONS

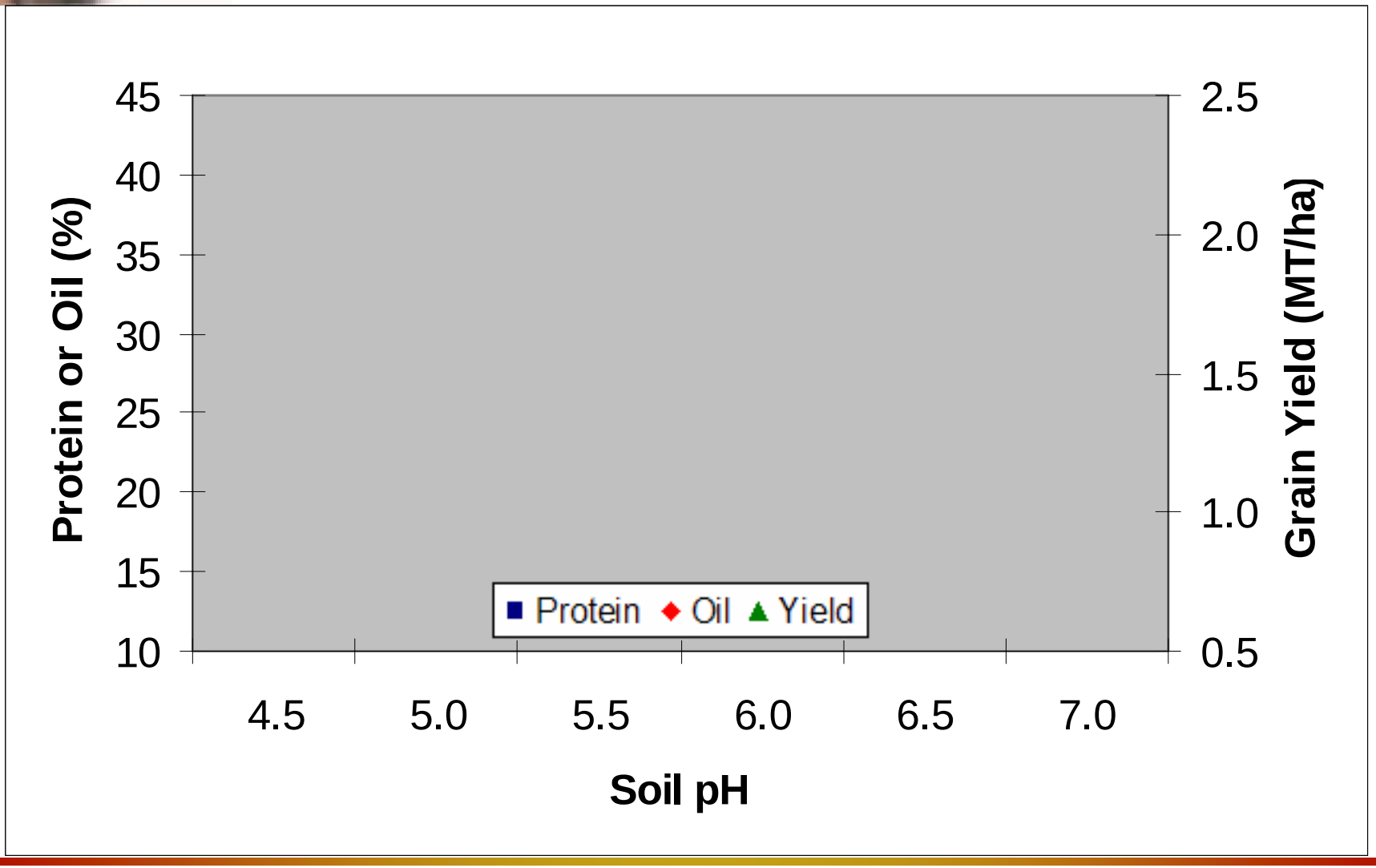
- Can soil pH management impact the protein and or oil content of a chosen soybean variety?

- Is there a need to re-evaluate soil pH recommendations and incorporate grain composition considerations?

METHODS

- Six randomized complete block pH trials with four replications were evaluated between 2003 and 2004.
- Soil pH treatments ranged from 4.5 to 7.0.
- Soybean varieties varied with year and location.
- Grain yield was determined for each plot and grain samples were collected for composition analysis.
- Grain protein, oil, and fiber content were determined for each plot using near infrared transmittance technology.

2003 MARSHFIELD-1



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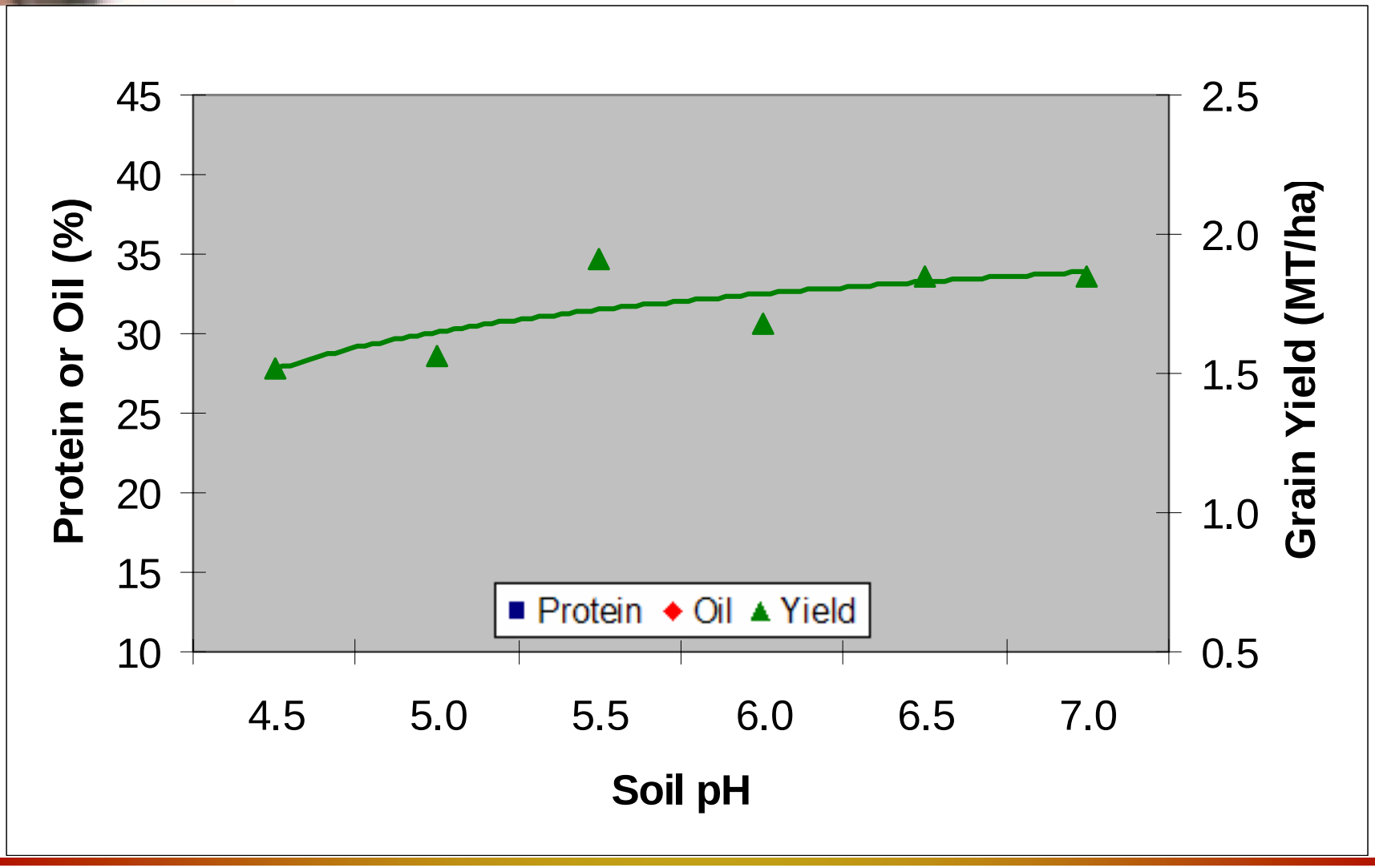

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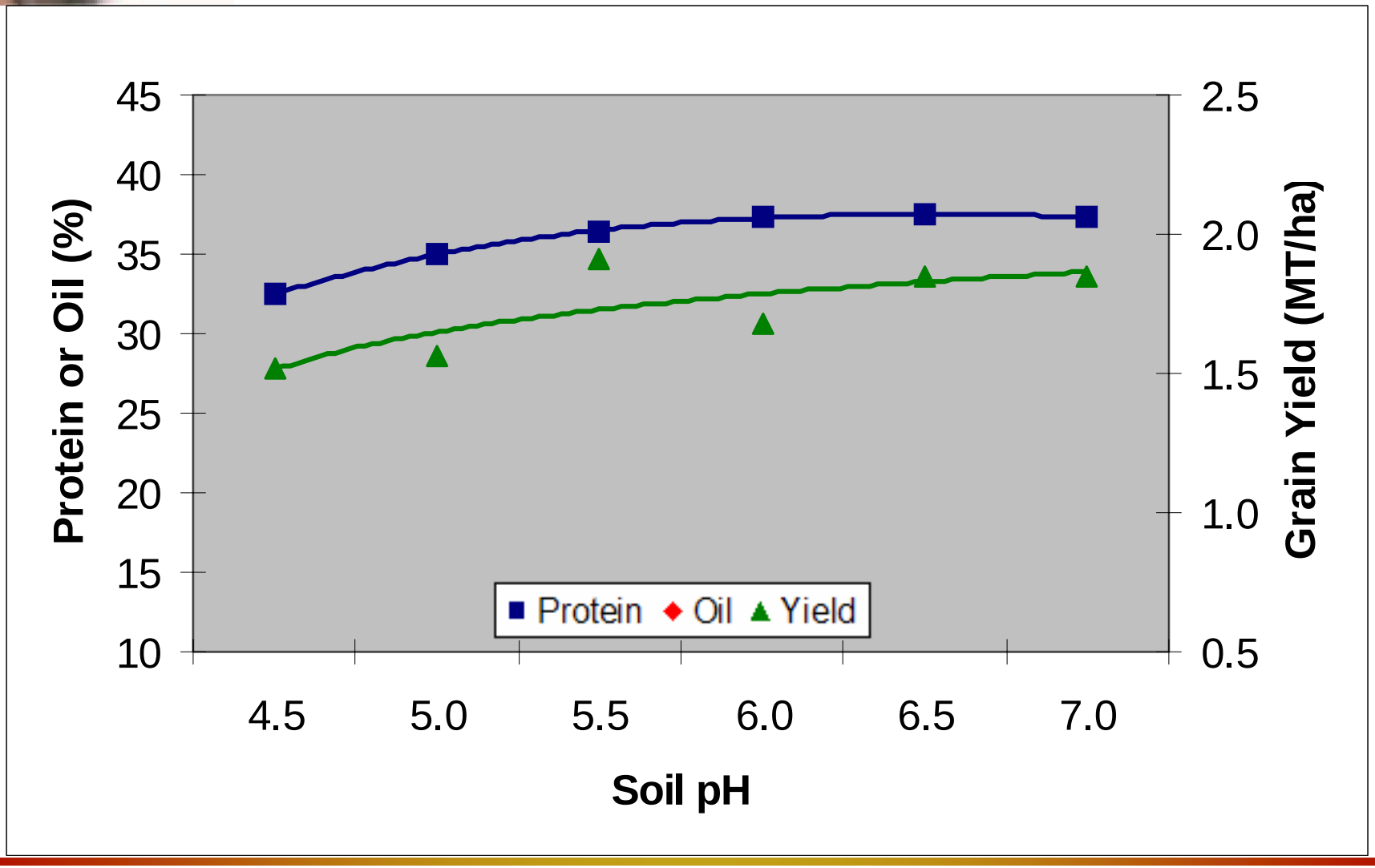

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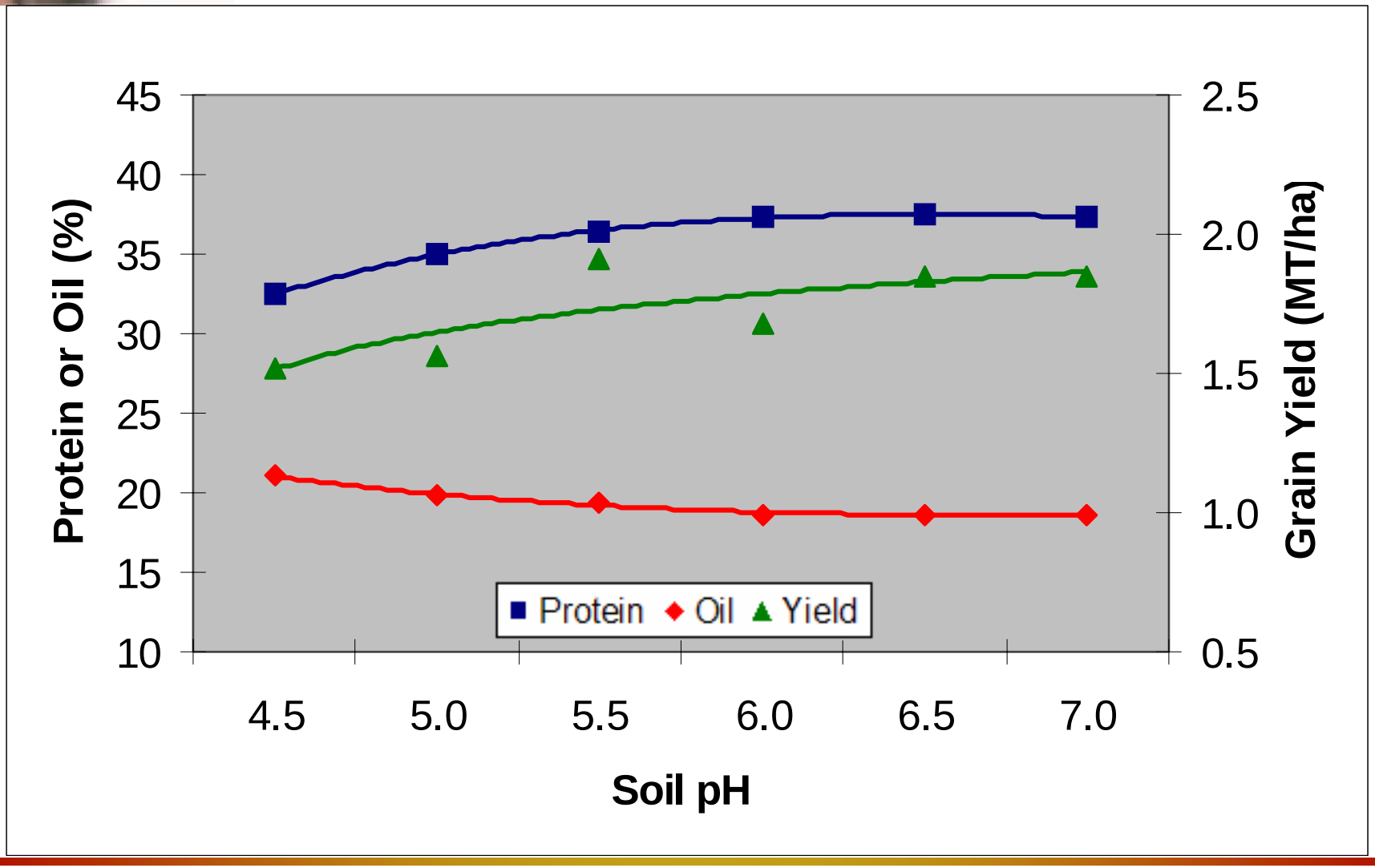

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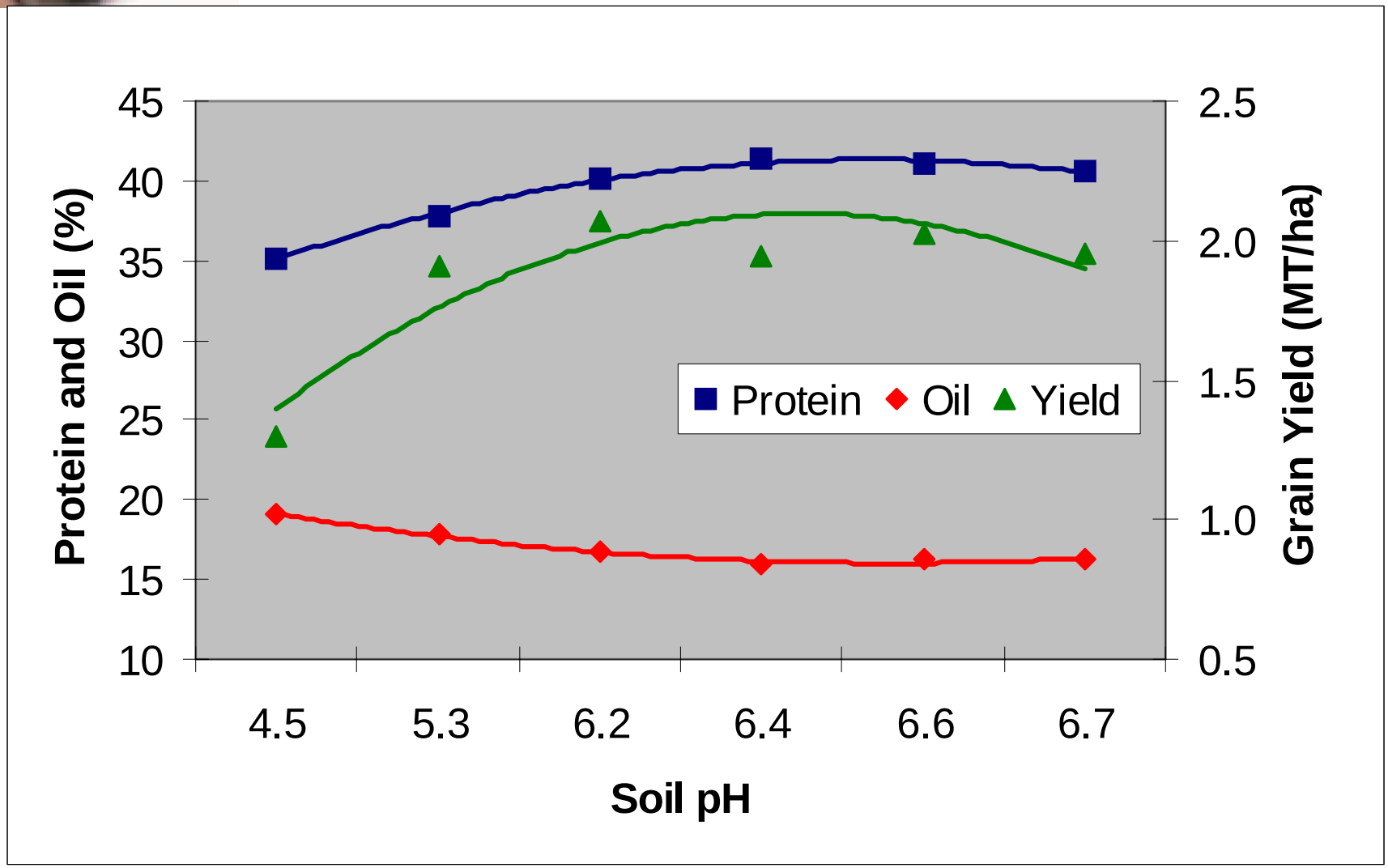
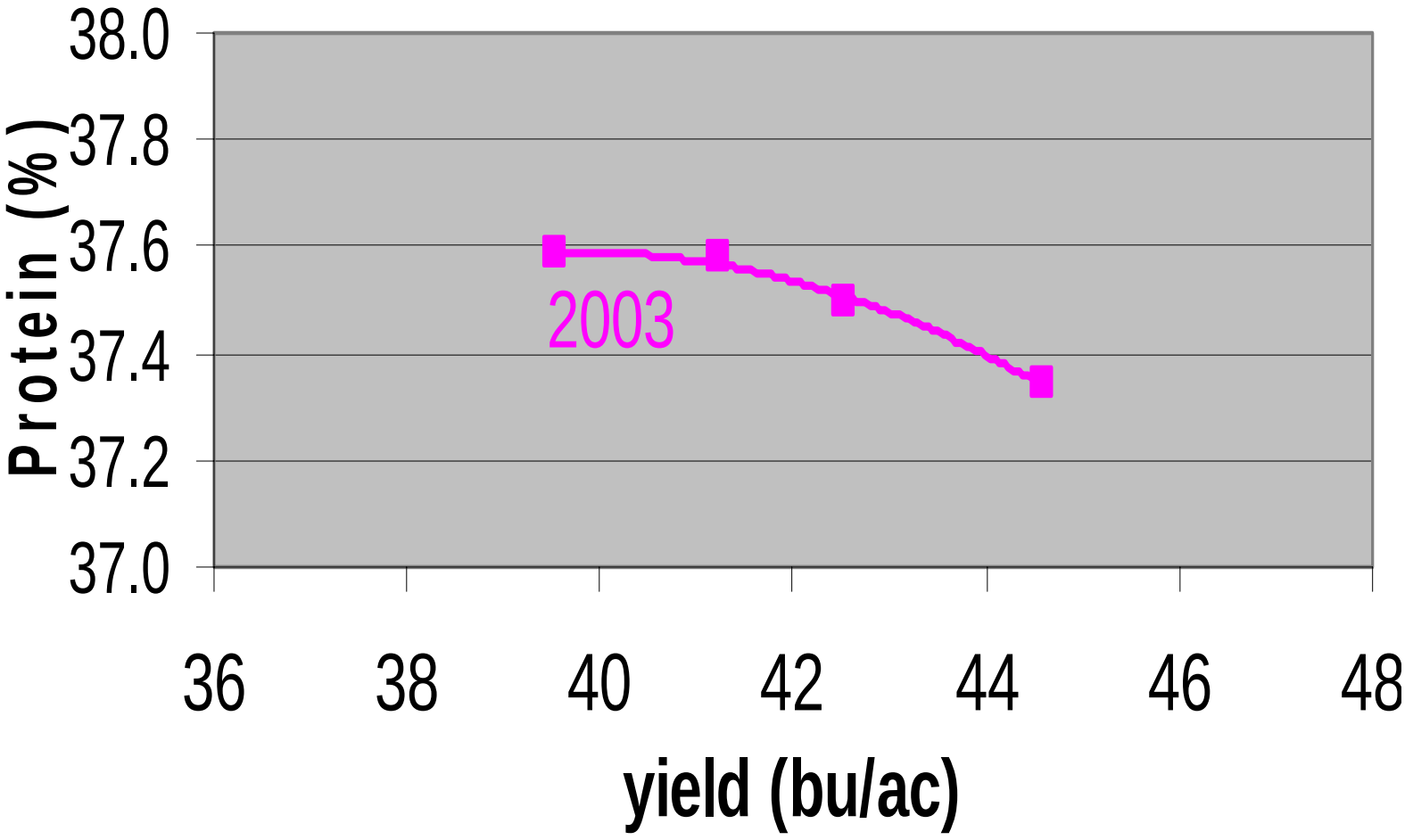
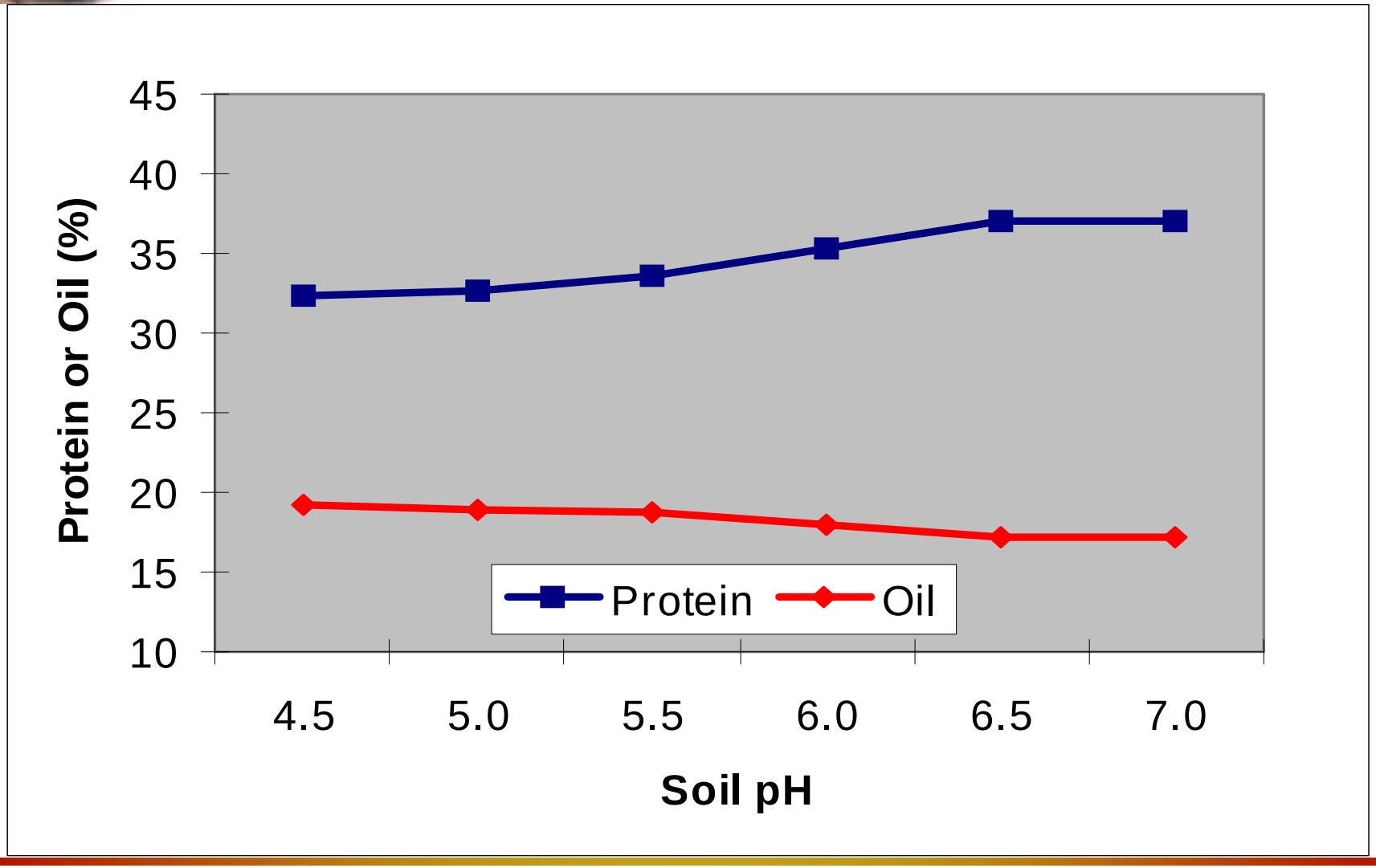


AVERAGE YIELD AND PROTEIN CONTENT BY BLOCK OVER ALL VARIETY TRIAL LOCATIONS – WI 2003



2004 MARSHFIELD-1



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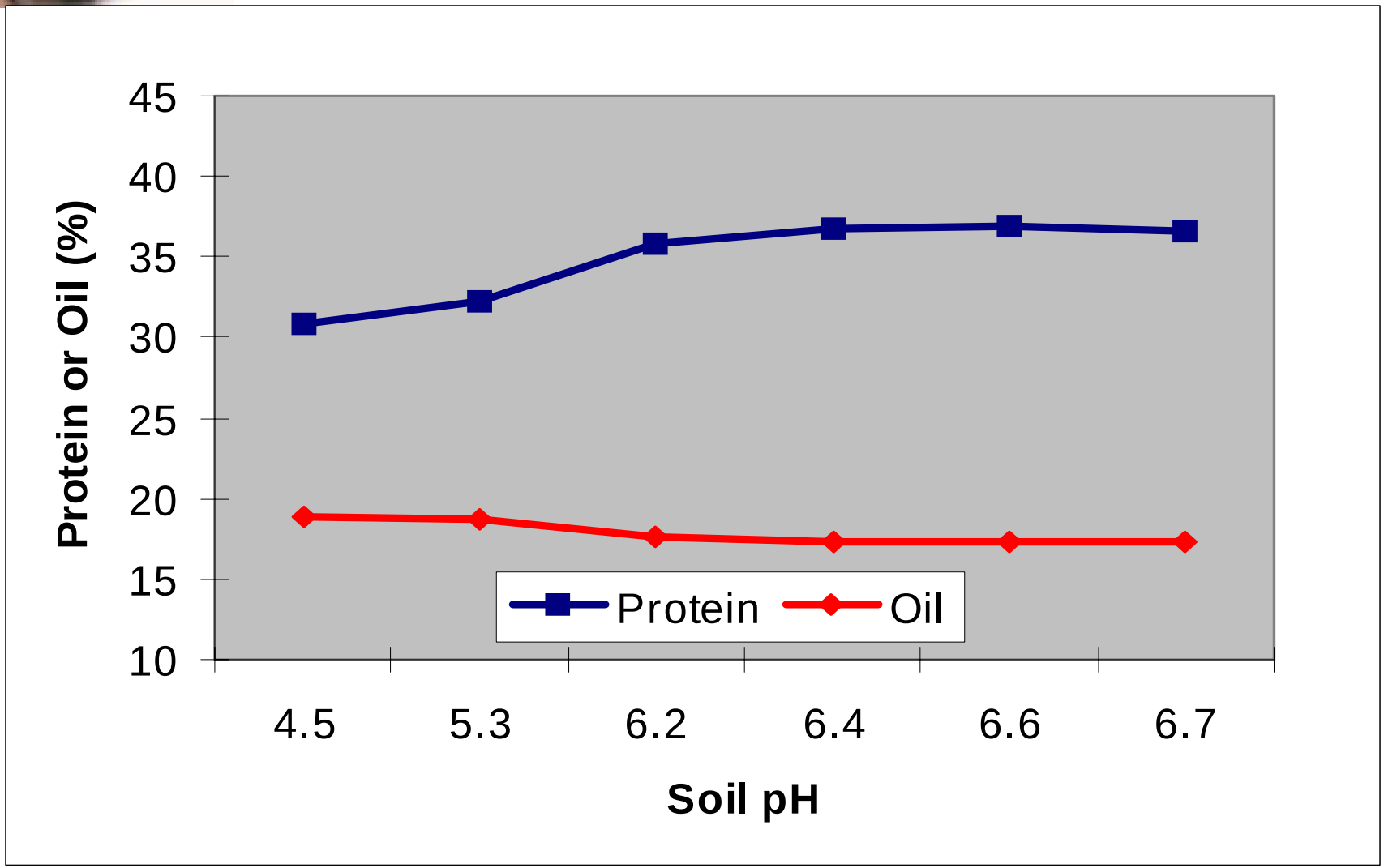
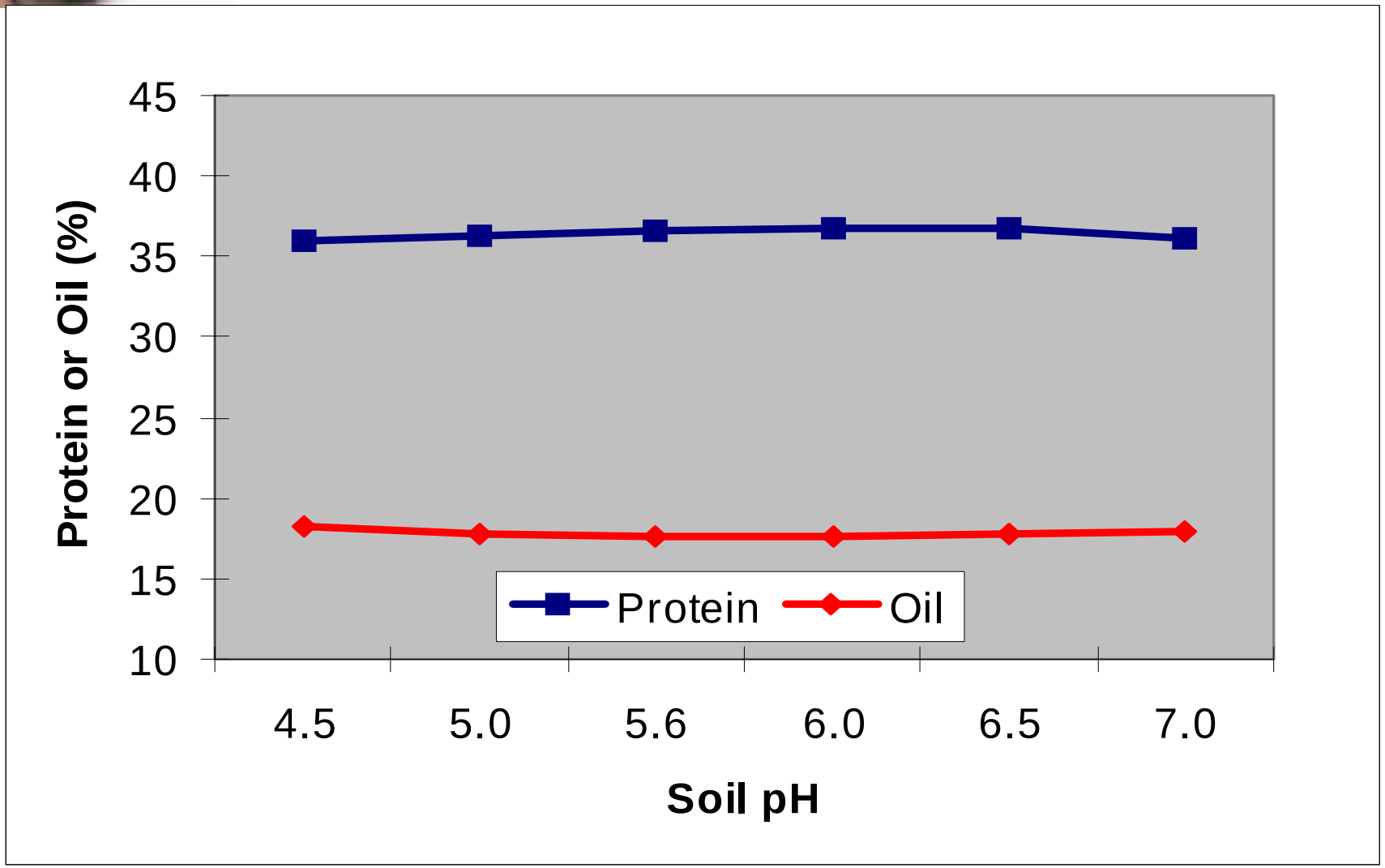
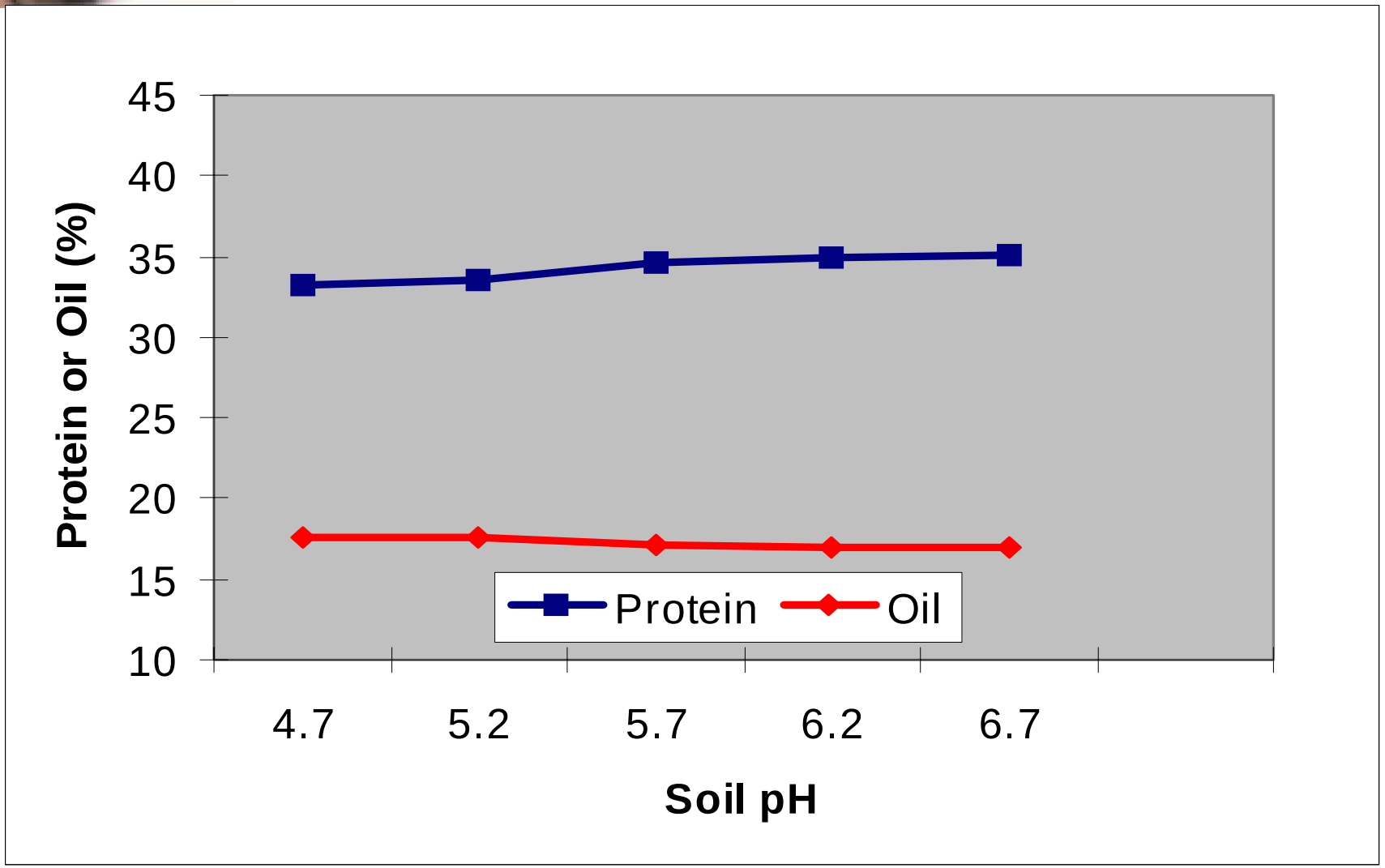


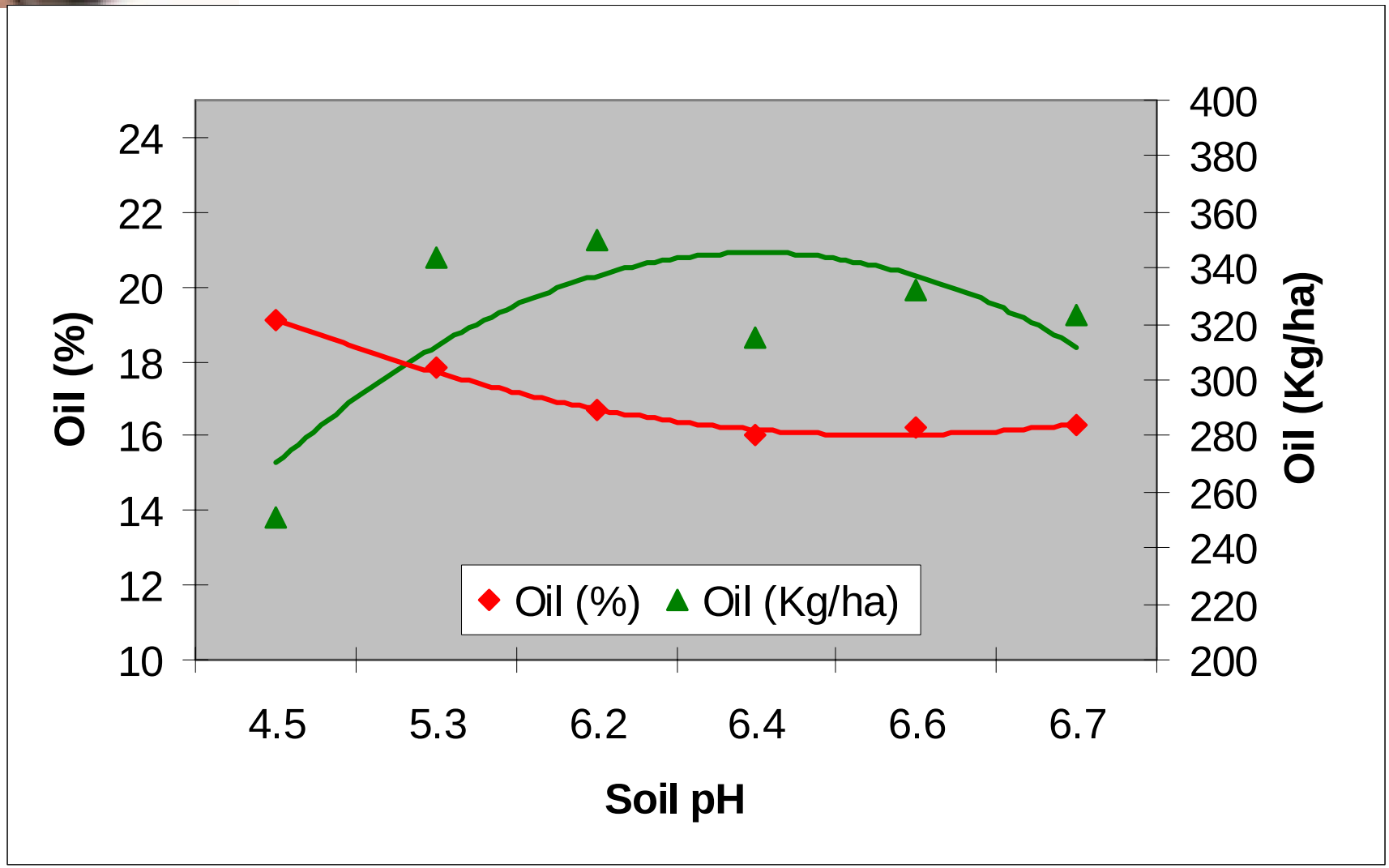
2004 HANCOCK



2004 SPOONER



Soybean Oil and Soil pH



SUMMARY

Previous literature and near nine thousand samples from 72 trials of our own data indicate a trend of decreased protein content when grain yield is increased.

Consequently, the positive correlation between yield and protein content in this study is surprising and encouraging.

It suggests that management factors such as liming can potentially be used to enhance grain composition without compromising grain yield.


THANK YOU!
Question?
Comments?
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