

Organic wheat farming improves grain zinc concentration in central India

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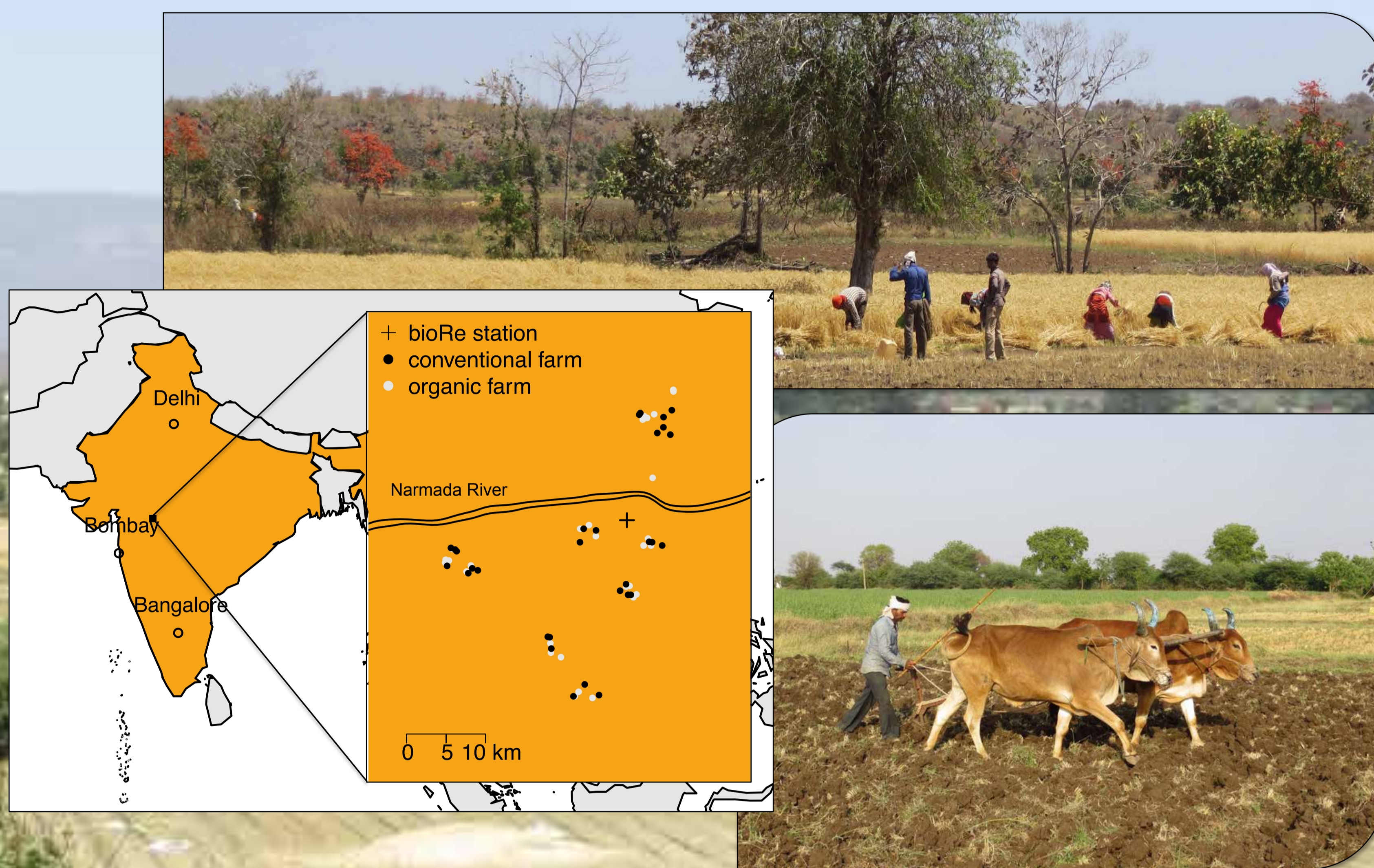
Zinc for human nutrition

- Zinc (Zn) is an essential trace element
- Important for functioning of many enzymes
- Zn deficiency causes diverse health problems
- Cereals contain little available Zn

➤ Zn deficiency is a widespread public health problem in India

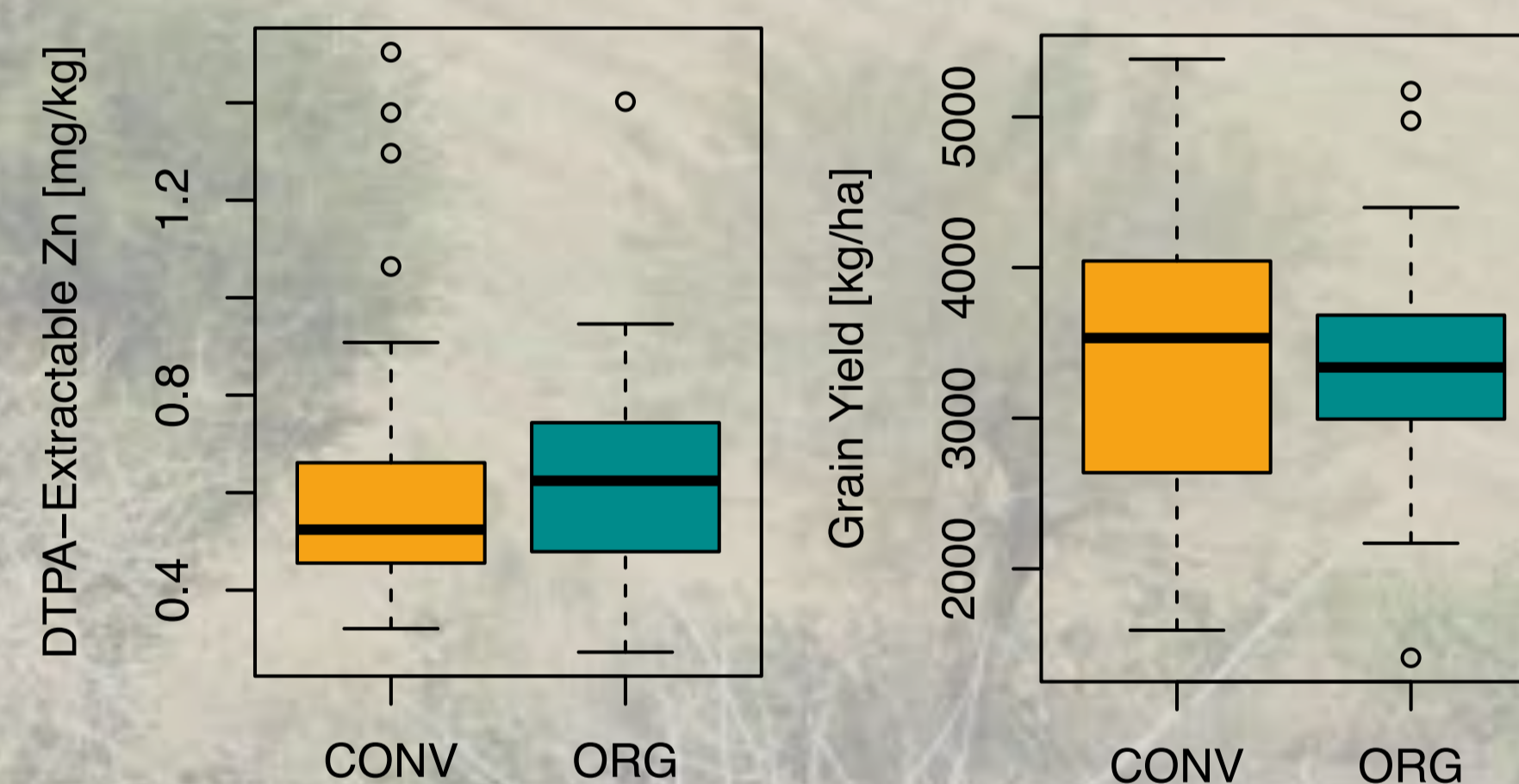
1) Does organically grown wheat contain higher grain Zn concentration?

2) What are the determinants of wheat grain Zn concentration?

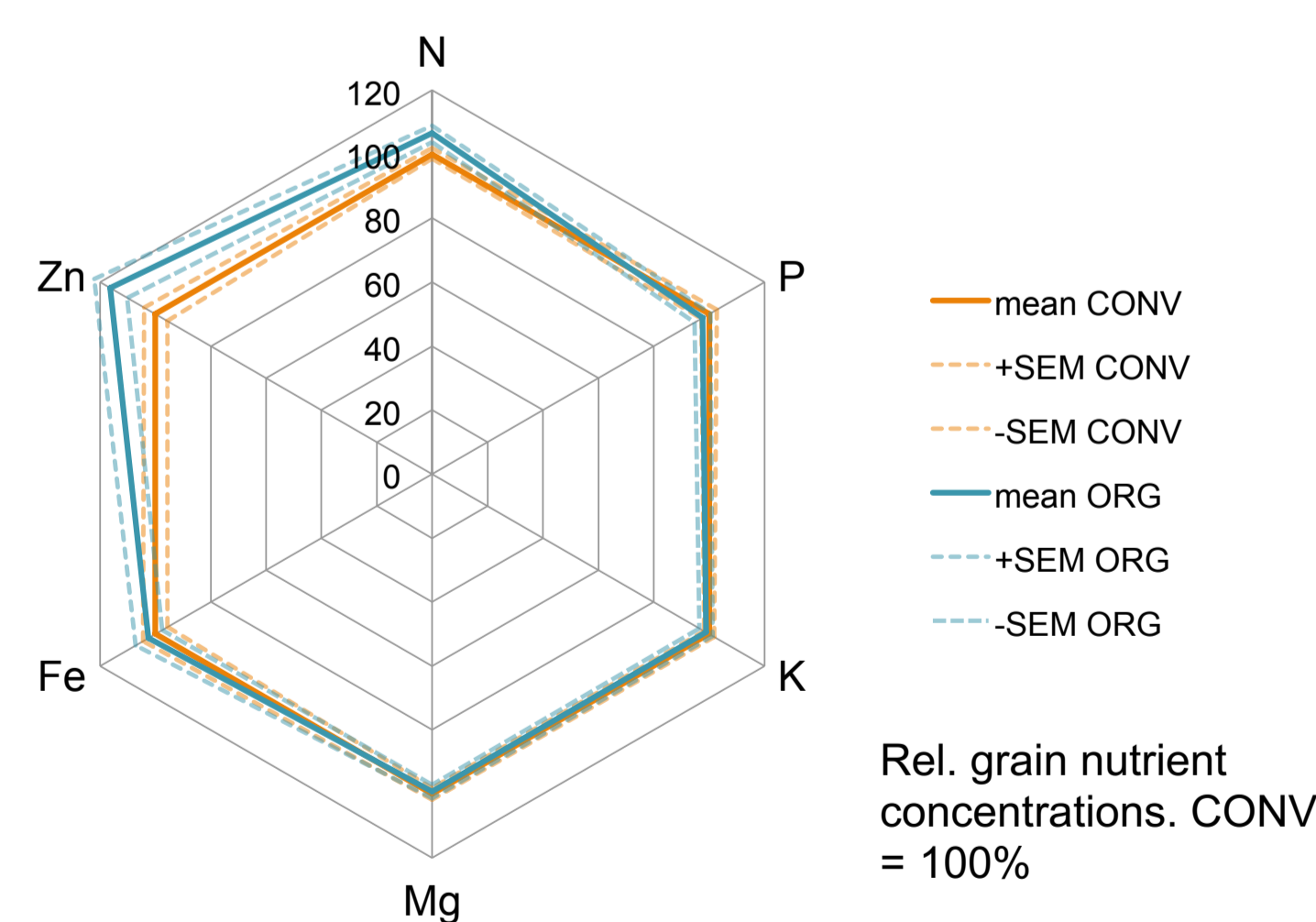


Study design

- 30 organic and 30 conventional farms
- Analysis of wheat grain, yield, and soil samples
- Farmer interviews
- Multiple regression to determine relationships between soil, plant and management variables



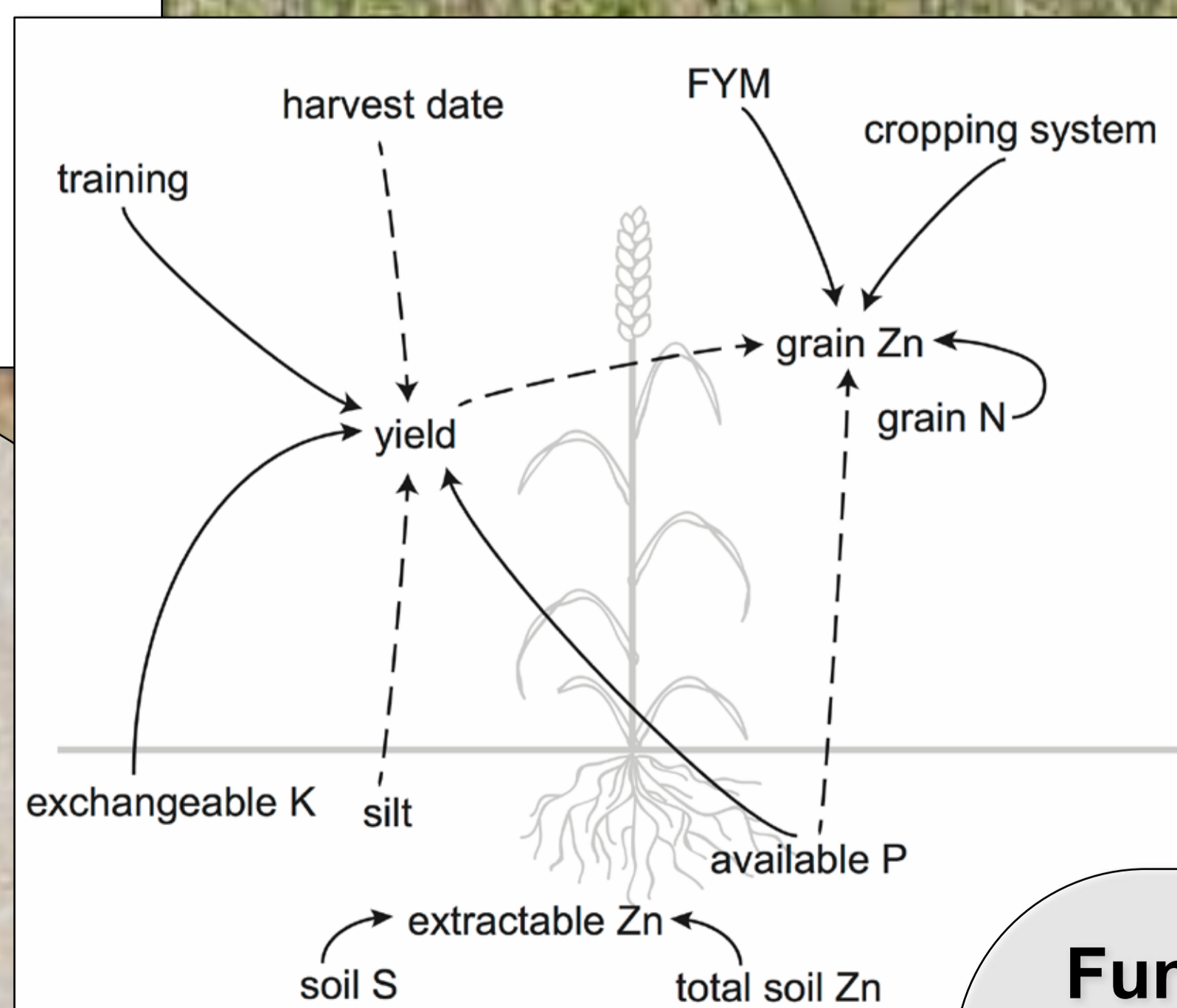
➤ No significant difference in DTPA (plant available) soil Zn concentration or wheat grain yield



➤ organic wheat grains had significantly higher grain Zn concentration

Results of multiple regression

- Total soil Zn and sulfur concentrations best predictors of DTPA-extractable Zn
- Available soil phosphate, exchangeable potassium, harvest date, training of farmers in nutrient management, and soil silt content best predictors of yield
- Yield, available soil phosphate, grain nitrogen, farmyard manure availability, and cropping system best predictors of grain Zn concentration



➤ Organic farmers had improved grain Zn conc. because they tended to have lower levels of available P in the soil but higher grain protein conc.

➤ Organic farmers were able to maintain yield levels of conventional farmers by compensating for the lack of chemical fertilizers with improved nutrient management training.

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