

# New Crop Potassium Recommendations

## Public Value Statement

The addition of clay chemistry into potassium fertilizer recommendations is a unique break-through.

## The Situation

In the past, the North Dakota wheat cropping system removed little potassium from the soil. The present and ongoing movement into corn and soybean cropping systems removes far more potassium from the soil and has recently resulted in potassium deficiency symptoms in dry summer seasons to corn on soils that were diagnosed pre-season as 'potassium sufficient'.

## Extension Response

A multi-year study in farm fields showed that the present soil testing methods were best compared to alternatives; however, the methods still only predicted corn potassium response correctly. An investigation into the clay chemistry of the sites increased the predictability of the soil test. Each county in North Dakota was sampled by its major soil groups, resulting in clay chemistry maps that help farmers estimate the clay chemistry useful in defining where their field potassium soil test should be to avoid deficiency.

## Impacts

The new recommendations will result in 20-30 bushels per acre greater corn yield in about half of the corn acres grown annually in the state. Sugar beet, soybean and wheat growers will also benefit in areas of the state having clays with more dry-season potassium retention power.

## Feedback

'Now I understand why my corn looked potassium deficient in dry summers even though the soil test told me it was OK.'

## Primary Contact

David Franzen  
Extension Soil Specialist  
NDSU, Dept. 7180, Box 6050  
701-799-2565  
[david.franzen@ndsu.edu](mailto:david.franzen@ndsu.edu)

## Non-Extension Collaborators

John Breker, Manbir Rakkar, Amitava Chatterjee, Thomas DeSutter