

Using remote sensing to determine corn grain moisture

Background:

Harvesting wet corn costs money. Many growers harvest grain from the end rows first, check the moisture content and make a decision to proceed or move to a different field. Grain harvested from the end rows often has a moisture content that is different from the rest of the field. Space or aerial platform based remote sensing can be used to check crop maturity levels and identify the driest areas of the field.

Use of Data:

IKONOS and LANDSAT imagery and yield monitor data was collected for a number of fields in South Dakota between 2000 and 2003. The imagery was used to develop false color images and reflectance maps from individual bands. The example used here was IKONOS imagery from August 24th, 2001. False color images were prepared using IKONOS bands 4 (near infrared), 2 (red) and 1 (blue) for 3 corn fields (Figure 1A-C). Corn moisture maps were prepared from yield monitor data of these same fields (Figure 2A-C).

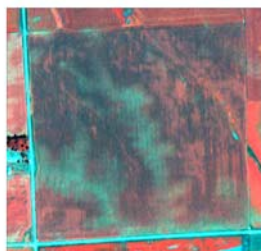


Figure 1A.

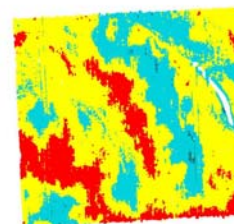


Figure 2A.

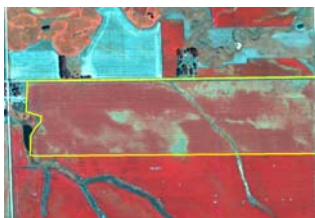


Figure 1B.

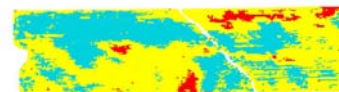


Figure 2B.

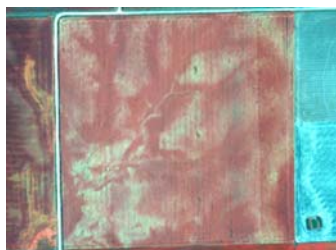


Figure 1C.

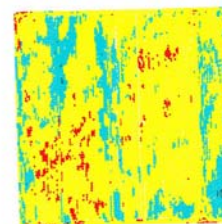


Figure 2C.

Economic and Environmental Benefits:

Corn located in toeslope areas typically has higher moisture content and yields than corn located in summit / shoulder area. Remote sensing data collected by both LANDSAT and IKONOS satellites can be used to identify areas with different moisture contents. However, due to resolution differences, IKONOS images look sharper than LANDSAT images.

Figure 1A-C. IKONOS satellite imagery collected on August 24th, 2001 for 3 fields in eastern South Dakota.

Figure 2A-C. Yield monitor corn moisture maps collected from the fields shown in Fig. 1A-C in October 2001.

Figure 3. Scale for grain moisture maps shown in Figure 2A-C.

