

Using remote sensing to determine hail damage

Background:

Hailstorms destroy about 3% of crops grown in the prairies each year. These devastating storms can sweep across a field at 20 mph destroying all crops and vegetation in its wake (Fig. 1A vs B). In response to the prospect of hail, many farmers carry hail insurance. Hail insurance coverage varies. However, in the advent of a severe hailstorm, hail insurance can be a lifesaver because the producer will recover some economic loss even though the crop may be completely destroyed. A severe hail storm struck near Britton, SD on 07/03/03. Damage to the soybean crop is shown in Fig. 1B.

Use of Data:

Remote sensing imagery was obtained on 06/29/03 and 07/05/03 from Sky Hawk Consulting, Vermillion SD. The fields are shown in Fig. 2 and 3; entire field area is 320 acres (A). Soybean field is located on north 160 A and wheat field on south 160 A.

Vegetative indexes of the fields were created as shown in Fig. 2 and 3. On this scale, more green equals better vegetation. In Fig. 2, the soybean field appears as to pink to dark red and the wheat field appears bright green. After the hailstorm, in Fig. 3, notice the reflectance of the soybean field has moved down the scale to brown and tan and the wheat field has changed to pink and red.

Economic and Environmental Benefits:

Remote sensing imagery may assist farmers in adjusting hail insurance claims by:

- Documenting that crops were growing well before the storm.
- Determine number of acres hail damaged.
- Documenting damage after the storm.

Documenting damage is important when determining a financial solution as in the case of hail settlements.

To document after storm damage, the 'after picture' should be collected as soon as possible after the storm. This may be important because depending on storm extent and number of claims, plant re-growth may occur before the hail adjuster arrives.



Figure 1A, healthy soybeans and Figure 1B, soybeans destroyed by hail, Britton, SD, 07/04/03.

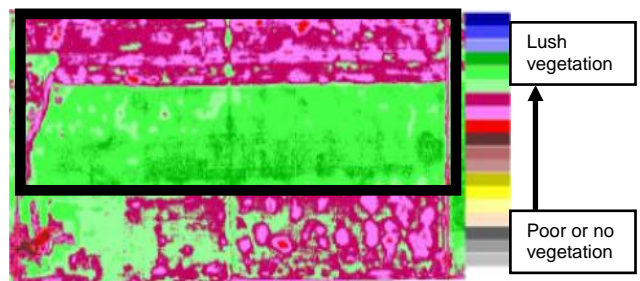


Figure 2. Imagery collected 06/29/03, Field area outlined in black. Scale to right of imagery is a vegetative index. More green the image indicates better vegetation.

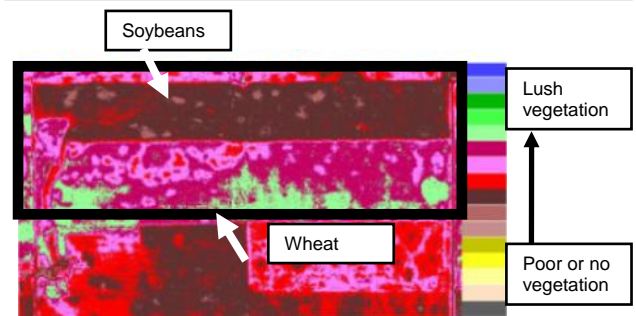


Figure 3. Imagery collected 07/05/03, Field area outlined in black. Vegetation scale to right.