Verifying Benefits of Variable Rate Technology

Background:
Precision farmers use variable rate application technology. More of them are beginning to use high resolution satellite imagery for zoning which forms the basis for variable rate applications. But they are often confronted with the question of whether the recommended levels of nitrogen applications, estimated from imagery-based zoning, are accurate and whether they are applying the correct quantities required. Carson farms, North Dakota tried answering these questions by conducting test trials while applying fertilizers and looking at the high-resolution IKONOS image.

Use of Imagery:
The nitrogen on the sugarbeet field was variable rate applied in the fall of 1999. At the time of the application, the grower had some reservations as to whether a 30-pound rate of nitrogen, estimated for the management zone, would be enough. In order to confirm this, a check was done. While applying nitrogen, the applicator was turned off creating a 30’ wide check strip. The IKONOS imagery taken in August 21 2000 showed the strip clearly as being nitrogen deficient.

Economic and Environmental Benefits:
Such experiments and the ability to monitor the results using high-resolution imagery gives the farmer tremendous confidence in his precision farming efforts. The precise recommendations as confirmed by such experiments, can result in optimal use of fertilizer inputs for increased yields and lesser quantities of nitrogen into the environment.