

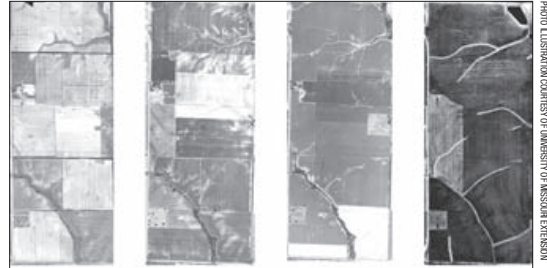
CROPS

# Old photos useful precision ag tool

By ROBERT THOMAS

**W**HEN applying lime, producers can save money by first taking a history lesson of land use, according to a University of Missouri agronomy researcher.

"Farmers should go to their county Farm Service Agency office and request aerial photographs of how the land was managed back as early as the 1940s to find causes for field variability," says Harlan Palm. Information about prior land use helps in taking soil samples to



1939 1962 1968 1995

PHOTO ILLUSTRATION COURTESY OF UNIVERSITY OF MISSOURI EXTENSION

**LAND USE EVOLUTION:** Historical aerial photos show how a 147-acre farm near Farber in Audrain County changed from 1939 to 1995.



determine proper rate of lime applications.

Many farmers today are farming land that is not part of the family farm or homeplace where they were raised. They may not know where things were on the land, such as buildings, disturbances where a pond was dug out and filled in, or fencerows that were bulldozed. These areas are atypical from the rest of the field, and their pH levels should be sampled separately, Palm notes.

**Relevant example**

Palm studied historical aerial photos showing a 147-acre farm near Farber in Audrain County from 1939 to 1995 (see above photos). The photos indicate locations of buildings, the farmyard and two ponds prior to 1995. Current owners consolidated smaller fields, typically 40 acres, into larger fields for greater efficiency and use of larger equipment. The impact on the soil of these disturbed areas is real, whether it is soil pH or nutrients, he says.

Palm took soil samples on a varying grid density based on a 1962 photo. Fields uniformly farmed for 75 years were sampled every 2.5 acres. Around pond areas, researchers conducted one sample per acre. Where buildings once stood, samples were taken in a denser 0.5-per-acre grid.

"You would expect spatial variability where the farmyard and buildings once stood," Palm says.

Soil pH indicated on a prescription map showed great variability. About 40% of the land needed no additional lime at all. A truck equipped with a GPS guidance system used the map to apply various rates of lime.

**Significant savings**

As a result, total lime application decreased from a range of between 294 and 441 tons to 95 tons, a savings of \$2,000 to \$3,500 per acre. Some areas required 5 tons per acre where pH was low, he says. Other areas needed no lime.

"The premise of precision agriculture is recognizing variability within a field and the causes of variability," Palm explains. "Soil pH is one of the principle inputs that can vary across a field. Even if all other inputs are at ideal level, if the soil pH is not adjusted properly, there will be variability in crop production."

*Thomas is an information specialist at MU Cooperative Media Group.*

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