4th-Generation Farm Relies on Nutrient Stewardship Principles

A business doesn't make it to the fourth generation unless it is operated with sound management principles and its owners stay one step ahead of major trends. This approach allows Grant Strom and his father Doug to continue to improve their operation of 5,600 acres of corn, soybeans, wheat and enough pasture for a 20-head Angus cow/calf operation.

> "As we learn more about the environmental impacts of nutrient use in agriculture, it is increasingly important to manage our nutrients in ways that benefit farmers, consumers and the environment," – Strom

The Stroms have practiced 4R principles since they first planted a field. Today, Adam Dexter, crop specialist with West Central FS helps the Stroms develop their 4R nutrient management plans. Nutrient formulations incorporate crop removal, yield and soil tests. Some farms receive maintenance levels of fertilizer, some on which they are still building up the soil, and others on which they don't add any fertilizer at all. This is all part of the 4R strategy.

As yield monitoring equipment has gotten better, they've started applying fertilizer based on yield maps, which lets them optimize what they apply and only apply it when it's needed.

Strom and Dexter stress that understanding soil fertility is a key foundation for crop success. With an approach to "build and maintain," they sample fields on a 2.5 grid in the spring. Based on test results, combined with yield and crop removal, they can then focus on fields where nutrients are needed and not spend time or money applying fertilizer in fields with optimal fertility values.

Technological advances help their 4R strategy work even better. Planters and combines are equipped with GPS, yield monitors, and VRT. Integrating the data that the equipment generates with soil maps ensures that nutrients are applied solely upon crop needs.

Conservation practices including dry dams, buffer strips and grassed waterways are implemented across the farm to mitigate erosion and keep nutrients in the field

Variable rate technology has led to a 40 percent improvement in nutrient use efficiency and a savings of $10 to $20 per acre. Strom and Dexter credit the use of 4R strategies to a 16 percent increase in corn yield in 2016 compared to 2004.

BEST PRACTICE MANAGEMENT

> Soil sample fields on a 2.5 acre grid in the spring

> All N is spring applied and stabilized with N-Serve, Agrotain or Limus. Up to 70% of N is side dressed in season at V10 to provide N when plants are actively taking up nutrients.

> "Nutrient stewardship goes hand in hand with economics," – Dexter

> Phosphorous in the form of MicroEssentials® S10Z™ or diammonium phosphate (DAP) and Potassium in the form of potash are applied via VRT as dry fertilizer in the fall or spring, depending on field conditions.

> All equipment is outfitted with GPS, yield monitors and VRT that allows the data generated by the equipment to be integrated with soil maps to ensure that nutrients are applied at the right rate and place where they are needed by the crop

> Utilize auto-shutoff on all equipment to prevent overlaps and overapplication

> VRT has led to a 40% improvement in NUE and a savings of $15 t0 $20 per acre

> 4R strategies have led to a 16% increase in corn yield in 2016 compared to 2004

> 80% of all farm acreage is no-till, 20% of the farm has some heavier soils which are vertically tilled to minimize soil and nutrient losses as runoff

> Conservation practices including dry dams, buffer strips and grassed waterways are implemented across the farm to mitigate erosion and keep nutrients in the field

> Conducts MiField research trials based on the results of on-farm discovery research trials to test new products prior to implementation

> "Following the 4R practices lets us spend less money on applying fertilizer and more on technology to improve our fertilizer use and put it where it needs to be," – Strom