

4Rs on the Farm

HOW CAN FERTILIZER PRACTICE CHANGE WORK FOR YOU?

4R Nutrient Stewardship provides a framework to achieve in-field goals, such as increased production and profitability, enhanced environmental protection, and improved sustainability. The 4R concept incorporates practices that use the right fertilizer source at the right rate, at the right time, and in the right place.

Cost is a major factor to consider when deciding whether to implement new practices in a field. And 4R fertilizer management practices are no exception. Rather than have you take our word for it, The Fertilizer Institute gathered data from six farmers who have seen the 4Rs work for them. We invite you to take a peek!





STRIP-TILL CORN / OHIO

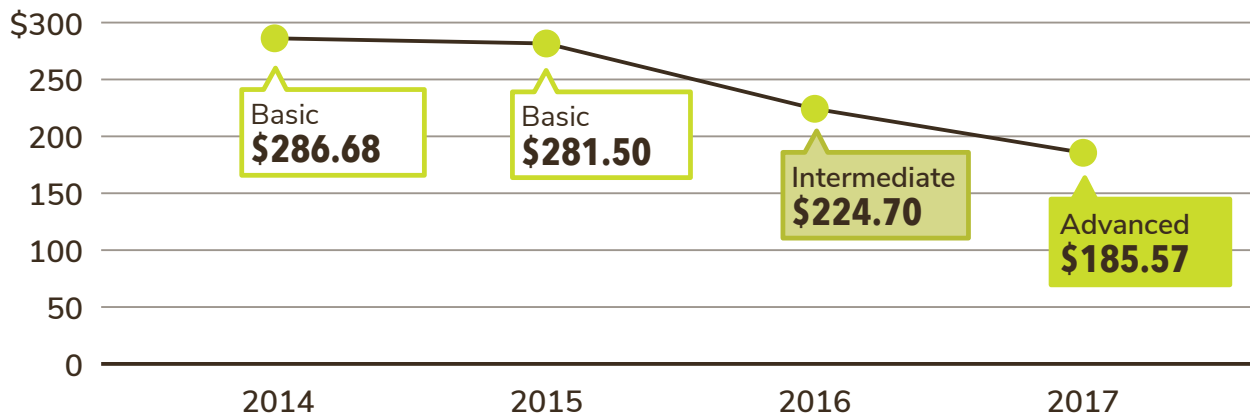
Located in the Western Lake Erie Basin, this family farm has used strip-till since 2010. While adopting some practices quickly the farm has taken the opportunity to try more complex practices like variable rate N, P, and K applications through NRCS programs.

Cost per acre for fertilizer practices decreased as basic to advanced 4R practices were implemented. A portion of the decrease in cost can be attributed to a decrease in fertilizer cost and the remainder to the difference in fertilizer application cost within the removal of nitrogen from fall applications.

Practices Changed from Basic to Advanced

- Removed ammonia sulfate from fall strip-till application
- Variable rate seeding and starter fertilizer application
- Sidedress nitrogen applied at a variable rate and knifed-in
- Phosphorus and potassium applications with strip-till and variable rate

Cost of 4R Practice Implementation for Ohio Strip-Till Corn Yield Range 189 to 214 bu/ac



What costs were included in the calculation?

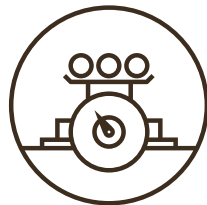
The cost calculation for implementation of a 4R level (Basic, Intermediate, or Advanced) practice includes fertilizer cost (obtained from the farmer's fertilizer dealer), time (hours/ac) for field operations that directly influence 4R practice implementation, cost for custom services, and purchase and operating costs for equipment directly involved in fertilizer application. Equipment prices are based on agricultural engineering databases. Due to the impact of weather on yield variability, implementation costs were calculated on a per acre basis.

What data was collected?

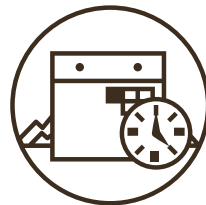
For each case study, the costs were collected in addition to crop yields, fertilizer nutrient source, placement practices, application timing and rate for each nutrient source, equipment used for each application, and time associated with the application. For one crop on each farm, the data was collected over multiple years of production ranging from 2014 to 2018, and if available data was collected across four fields within one cropping year.



RIGHT SOURCE



RIGHT RATE



RIGHT TIME



RIGHT PLACE