

Variable Rate Fertilizer

Getting started with precision application technology.



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LIVESTOCK AGENTS GROUP

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Variable rate technology allows for the application of specific quantities of farming inputs to be applied in specific zones on an operation. Broadcast, or uniform application, of fertilizers can easily waste nutrients by overapplying in some areas and underapplying in others, over time increasing the cost to your operation, not only in monetary cost of the product but also in affected yields.

Soil Mapping

The first step to any fertilizer management plan should be to conduct soil testing. Soil tests help us determine the current state of nutrient levels and pH in the soil, which later dictates what additional nutrients need to be applied. General operational soil testing may only include a few samples but testing to prepare for a change to variable rate application requires a significant number of samples. The more samples submitted, the easier it is to define proper management zones. It is recommended to have at least one soil sample per 2 to 2.5 acres, with specific attention to known problematic or superior areas. This testing method will create a 'grid' to which will be utilized by the computer technology, grids may be combined into overall management zones.

Management Zones

Management zones will be the areas of your operation which have specific treatment requirements. Each zone has a set of similar characteristics, separating it from the zones around it. Management areas can be defined using the grid soil sampling, topography, soil maps, aerial imagery, and most importantly, historical knowledge of the field. The farmers knowledge of the fields performance, flooding zones, and previous cropping methods can influence which areas will be defined together as a management zone. In the initial years of implementation, it may be useful to have fewer management zones to improve adaption of the precision agriculture strategy.

Equipment

Equipment needs will vary based on what the operation currently has. Overall, a farmer needs a tractor capable of utilizing an in-cab computer with a field zone application map, fertilizing equipment capable of changing rates during operation, and a global positioning system receiver. Some equipment may be available with limited options that require less advanced equipment. Costs of this equipment can vary significantly depending on each operation and their needs.



Benefits & Considerations

Variable rate technology has the ability to advance your operations efficiency and profitability. Improving nutrient efficiency across a field can improve yields while also potentially reducing overall fertilizer needs. Less input cost provides opportunity for higher profit margins. Once variable rate equipment has been established it can be utilized for fertilizer, seeding, and spraying. However, the initial set up can be expensive, including soil testing costs, therefore a careful economic analysis should be completed to determine potential return on investment.