

Managing Manure As Value-added Service

Livestock producers will need to acquire planning expertise to assure application rates comply with governmental regulations.

Animal production techniques and trends have changed dramatically in the last 20 years. Today's production operations are increasing in size in order to achieve economies of scale. The total number of animal operations is declining while

Clustering goes on in confined geographical locations and operations grow larger in an attempt to spread fixed costs over a larger base. This trend may represent an opportunity for people with foresight. Increasingly smaller pockets of high-density production result in concentrated supplies of manure, often in amounts greater than can be used in surrounding agricultural fields. This problem requires technological, logistical and distribution solutions.

Value-added Service

Because manure is so plentiful, it is often offered free of charge by animal operations. In areas where the density of animal producers is extremely high, producers may even be willing to pay to have manure removed from their operations. Thus, manure management can represent a value-added service by professional applicators, which can command fees from growers receiving the product as well as for professional application services.

In addition to the sale and application of manure products, revenue opportunities for manure nutrient management services can include soil, lagoon, pit and spring nitrate testing.

Nutrient management planning, which incorporates as-applied data from both manure and commercial fertilization application into an overall nutrient program, represents another growing revenue opportunity for the service provider. It's no secret that growers, particularly livestock producers, will require agronomic and planning expertise to select and document appropriate manure application rates to comply with environmental regulations by the USDA and EPA Unified National Strategy for Animal Feeding Operations.

Using nutrient balancing tools contained in spatial data management software products is critical. An on-board mapbased application controller allows local agronomists to work with growers to ensure that proper amounts of nutrient have been applied to the field to meet the grower's business objectives, plus practice environmental stewardship.

Efficiency crucial

Like all inputs, manure comes at a cost that needs to be justified by an increase in crop revenue. Studies have shown that when manure is applied at crop removal rates, it nets a higher yield per gallon than when applied at higher rates. In other words, the over-application of manure does not increase yields but it does add to the per acre cost of production.

University of Northern Iowa research has found that over-application of manure by growers can be in excess

of 300 percent of recommended rates. One county in Iowa had 10,000 hogs in confinement per square mile of cropland producing waste available for manure application, compared to the 1,600 recommended by state guidelines. Inaccurate application methods and equipment that apply manure in areas where it's not needed and in amounts that cannot be used are bad for crops, the grower, and the environment. Map-based application can assure accurate placement as well as document where and when those applications took place.

Avoiding compaction

The slow pace of farm equipment often forces growers to apply manure in conditions that are less than optimal, producing unnecessary compaction. Spring soils are more susceptible to leaching, runoff and compaction. Waiting for more ideal conditions simply delays planting. Furthermore, growers typically apply manure on the surface and cross a field a second time to incorporate it into the soil, producing more compaction, requiring more time, and increasing fuel costs.

The answer? Employ high-flotation custom applicators that reduce soil compaction while high-rate injection toolbars incorporate nutrients into the soil in one field pass, cutting grower time in the field.

Four-step process

Achieving accurate and effective manure application to meet specific crop needs requires a four-step process.

1. Compile data that will form the basis of planning and decision-making, such as soil grid tests, yield monitor data, soil surveys, and yield goals. This information is critical to establish the baseline for the nutrients that should be applied on each field in order to achieve agronomic and environmental objectives.

2. Use appropriate data management software to analyze the compiled data. Include recommendations from local agronomists, incorporate lagoon and pit testing results, and budget in nutrients required to achieve yield goals. Software should be programmed to generate an application map for use with the on-board controller, which will indicate the precise amount of manure to be applied across the field as part of the nutrient management plan for that specific field.

3. Apply manure accurately and efficiently to the field. Select toolbars and injectors that accurately address cropping area needs—from deep to minimum disturbance injection, and from heavy-duty to minimum residual disturbance incorporation. Because some regions require injection or incorporation while others need only surface application, each toolbar and injector should be designed for quick, easy attachment. If needed, the nutrient management system should be able to quickly and efficiently place manure into the subsoil to minimize nitrogen volatilization and odor, plus reduce the risk of runoff and eliminate the need of second-pass incorporation. The on-board controller should be adaptable with all these components and enable the application of manure at variable or pre-selected rates with a coefficient of variation of less than 5 percent, regardless of vehicle speed. It should be capable of accurately controlling up to 200 different product rates, which means the amount of manure applied equals the crop requirement or maximum nutrients allowed for each part of the field.

4. Generate an electronic record of what, when, and where the manure was applied. This “as-applied” report is a historical record of what was actually applied rather than what was intended. It is automatically regenerated by the on-board controller and used within the software to create a permanent record of the application as well as reanalyze, if necessary, the rates of supplemental commercial fertilizers that will be needed to achieve yield goals.

Attend to stewardship

The public has a growing awareness about the connection between animal waste disposal as it may relate to crop production and contamination of water resources. In response, state and federal agencies, most notably the EPA, have become more aggressive in regulating nutrients applied in cropping regions. The clear trend is that there will be an ever-increasing demand for technologies and processes that are earth-friendly. The good news is that accomplishing earth-friendly manure nutrient management can be cost-effective, efficient, and easy.

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