

## Improving Manure Management: A Springtime Checklist

Livestock producers are asking, "What should I be doing to improve manure management on my farm?". The answer is, it all depends on where you're currently at and how far you want to go.

The Michigan Agriculture Environmental Assurance Program (MAEAP) has a system in place to help producers voluntarily move from compliance with right to farm, to developing a formal CNMP to on-farm verification. No matter how far you want to progress, the beginning steps are all the same and very basic.

The basics include:

- Keeping soil tests current
- Establishing a base line of nutrients generated by manure sampling
- Calculating the rate per acre of manure applications
- Calculate the N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O per acre
- Keep records of manure applications

From this data, producers can gain a great deal of information and peace of mind in following best management practices.

Soil tests provide nutrient levels and fertilizer recommendations based on crop rotations and yield goals. Soil testing is recommended every three years. Check your soil tests; three years goes by quickly. Plan to bring the whole farm up-to-date this spring.

Soil tests and crop rotations should be used to direct manure applications. Lower testing fields should be prioritized for manure applications. This way nutrients, especially phosphorus, do not build up in the soil. Over time, purchased fertilizers can often be reduced.

Soil testing is readily available either by hiring consultants or taking samples yourself. The Michigan State University soil testing lab runs tests for under \$10 per sample and local farm supply stores also provide the service at reasonable rates.

Several hundred dollars spent on soil testing will often return ten-fold on the saving in fertilizer or improvement in crop performance. Soil testing is also a must for

proper manure management.

If there are several manure systems on a farm, manure sampling will identify which manure has more concentrated nutrients. This manure is more worthwhile to haul longer distances where soil tests are often lowest.

Calculating the rate per acre that manure is applied is critical. This determines the rate per acre of nutrients.

There are several ways to calibrate rate per acre. None are perfect, but any system would improve crop management.

If nitrogen from the manure is being utilized for a significant portion of the crop's needs, it is important to be as accurate with manure application rates as one would be with fertilizer.

Estimating the rate of manure per acre can be done by several methods. It should be done for each manure storage system, type of manure and manure spreader.

1. A spreader load can be weighed empty and full and the weight of manure recorded. Weigh a gallon jug of the manure and estimate the total gallons in a typical tank. Sand bedding and other factors can effect the weight per gallon. Then measure the length and width that one tanker covers in a field. Divide the square feet covered per load by 43,560 sq. ft. in an acre to determine gallons per acre. If it is solid manure, use tons per acre.
2. Indoor pits with slats can be measured by dipping a stick in the pit before hauling and then after hauling. Knowing the length and width of the pit in feet, multiply this by how many feet of manure was removed. Then multiply the total cubic feet that was removed 7.48 cu. ft. in a gallon to estimate total gallons hauled. Then divide by the total acres that were covered. This will provide the gallons per acre applied.
3. Manure can be broadcast over a tarp, recollected and weighed. Calculate how much of an acre the tarp represents and what volume or weight of manure was applied. Relate this to pounds per acre.

Once you have done one of these calibrations, keep records of the values and occasionally recalculate to be sure you are still on target.

**M**anure sampling and testing is also important. While calibrating the spreader, also take current manure samples. Manure sampling is not an exact science either, but here are some suggestions to improve the accuracy.

Sample all different manure storage systems. Don't miss the opportunity to do this while the systems are agitated and being hauled. Get sample bottles ahead of time. Never use glass contains, only plastic. Freeze samples after sampling and send them to a laboratory while still frozen.

1. If agitation is possible, sample after agitation.
2. Take several sub samples and combine them for one representative sample.
3. If the consistency of manure varies, sample from the different types (example, with sand bedding, sample the skim part, the intermediate and the sand solids separately).
4. Sampling out of the manure tanker is representative of what is going to the fields and it has also incurred some mixing.

Mixing and loading provides a good opportunity to take fairly representative samples. Sampling while hauling does not allow for knowing the nutrients the day you are applying the manure but a good sample for next time is better than a bad sample for this time.

The least accurate way to sample manure is to randomly dip off the top of a pit on any given day. Some nutrients settle to the bottom and this provides a very inaccurate estimate of total nutrients.

If you select fields to apply manure with lower testing phosphorus then the manure tests should be back in time to adjust nitrogen rates at planting or sidedress time.

Manure sampling over time will help build a base line of manure nutrients.

Be sure to request an Ammonium N test (NH<sub>4</sub>H) in addition to the regular manure

tests.

There is a list of commercial manure testing laboratories available at [www.MAEAP.org](http://www.MAEAP.org) or contact your Extension office.

**R**ecord keeping is more important than ever. It is important to document your actions in case of a neighborhood complaint. It is even more important for on-farm nutrient management.

When the rate per acre of manure applications and the content of the manure is known, the actual nutrients per acre can be calculated. I

It is important to know the nutrients per acre so that additional fertilizer can be calibrated and applied prudently.

Applying fertilizer that is not needed is expensive and not environmentally sound. Under applying nutrients reduces yields.

Soil and manure testing along with calibrating manure's rate per acre will fine tune any cropping program efficiently and cost effectively. Record keeping is vital to the whole process and also maintains compliance with the Right to Farm Guidelines.

**P**re-sidedress nitrate soil tests are an additional assurance that sufficient, and not excessive, nitrogen is readily available to the coming corn crop. These soil samples need to be taken within a week to 10 days of sidedress applications of nitrogen.

**C**heck out: [www.MAEAP.org](http://www.MAEAP.org). It contains a listing of manure laboratories, sample record keeping sheets, links to computer programs, information on the Michigan Agriculture Environmental Assurance program and more.

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For more information on manure management contact your local MSU Extension office.

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