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The objective of this document is to provide you with current and helpful information regarding water protection, and the Michigan Agriculture Environmental Assurance Program (MAEAP).

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## **Intensive soil sampling techniques more accurate and cost-effective than ever, providing value for farmers**

The benefits of soil sampling to gain a greater understanding of nutrient needs across fields are well-known. In fact, between 70 and 90 percent of Michigan farmland uses some type of soil sampling today. As a general rule, more specific knowledge about the needs of a field, or parts of a field, will enhance a farmer's ability to tailor inputs and achieve higher yields.

The principles behind soil sampling – obtaining a representative sample from a field area – have remained the same in the decades since soil testing was developed, but today multiple sampling approaches are used, each with its own advantages. Intensive soil sampling strategies are more cost-effective than ever before as the cost of technology and laboratory analysis has decreased, while accuracy has increased.

Traditional soil sampling recommendations called for soil samples that represented 20 acre or more field areas. As fertilizer application equipment became capable of varying rates in real time, intensive soil sampling programs evolved as well. Grid sampling obtains samples from uniformly spaced locations across the field, often representing 2.5 acres per sample. Management zone sampling uses soil survey maps, as well as yield maps, aerial photos, topography, soil electrical conductivity, previous cropping, fertilizer and manure application history to delineate similar zones in the field.

With the high resolution information generated by these intensive soil sampling programs, field areas with deficient or excessive nutrient levels can easily be identified. Using advanced, variable rate fertilizer application equipment guided by GPS, deficient areas can have fertilizer applied in quantities to ensure optimal crop growth. Just as importantly, areas of the field that have more than adequate nutrient levels can have application rates reduced, saving money and protecting the environment. Increasingly, even small areas within a field with high nutrient levels seem to be potential sources of nutrient losses to waterways. With advanced fertilizer application methods, the potential of these areas to contribute to nutrient losses is reduced.

As a result, while the per-acre cost of intensive soil sampling is greater than non-intensive sampling, the savings in reduced fertilizer applied to high testing areas and the grain yield increase in low testing areas makes intensive sampling more profitable. Intensive soil sampling deserves a look from anyone in Michigan that currently does not soil sample, or uses older sampling methods.



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