establishing and using a soil testing program to more efficiently manage crop essential nutrients.

**Key Points**

- Use soil test information before applying fertilizer, lime, or manure.
- Soil test every 2 to 4 years, at the same time of year and following the same crop.
- Prepare a soil sampling plan before sampling.
- Sample according to an established protocol.
- Formulate nutrient applications after interpreting soil test results.
- Use Iowa State University Extension publications and pamphlets for information on soil test interpretations and application suggestions.

**Why soil test?**

Soil test to determine crop nutrient needs before applying commercial fertilizer, lime, or manure. Soil tests are used to establish phosphorus (P), potassium (K) and lime recommendations. These recommendations are based on current soil test levels, and interpreted through research from field experimentation.

For producers, managing soil fertility is important economically as well as environmentally. Under-apply nutrients, and yield and profitability will suffer. Over-apply nutrients, and money is wasted. In addition, over-applied P may result in increased transport through runoff and tile lines into surface waters, where it can cause environmental problems.

**When should I soil test?**

Establishing a reliable soil testing history is a critical part of maintaining a profitable crop production operation. Reliable soil test data is dependent on sampling consistency. Soil test every two to four years, at the same time of year and following the same crop.

Soil test levels can vary throughout the growing season, so it is important to test at the same time of year and after the same crop. For example, if a soil-testing regime begins after a crop of soybean has been harvested from a particular field, sampling should continue after soybean harvest in order to achieve a consistent analysis over a period of time.

**How do I get started?**

Prepare a soil sampling plan before sampling. You can use your county’s modern soil survey to prepare a soil sample plan. A soil survey is available at your ISU county Extension office, the Soil and Water Conservation District office, or a public library. Use the map to find out what soils are on

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How do I use this information?
Formulate nutrient and limestone applications after interpreting the soil test results. Soil test analyses are reported as parts per million (ppm). The results are interpreted by test category and adjusted by soil: very low (VL), low (L), optimum (Opt), high (H), and very high (VH). The optimum category is the most profitable category to maintain over time. The low and very low categories indicate deficient soil test levels, while the high and especially the very high categories indicate a higher test level than required for crop production.

Nutrient applications with soil test levels in the H and VH categories seldom generate a profitable yield response. The very high soil test category indicates that the nutrient concentration exceeds crop needs, and further additions of that nutrient very seldom produce a profitable yield response.

**What’s a good soil sample?**
Sample according to an established protocol. Accurate soil testing begins in the field. Getting an accurate, consistent and representative sample will provide the most accurate (and profitable) analysis. Sample depth is critical, and soil test calibrations are set with 6- to 7-inch sample depth.

Set up a sampling pattern before going to the field, and practice a consistent soil sampling technique. Soil sample by taking multiple cores per sample. If the uniform sampling area is large, take more than one sample.

Don’t soil sample right after lime or fertilizer applications. Dust from gravel roads can affect soil tests, so be careful when sampling in field areas near roads.
Best Management Practices, or BMPs, use the most effective and practical means available to reduce or prevent water pollution from farm operations. BMPs are selected based on assessment, analysis of the impact of alternative practices and their economic considerations. They are implemented using current available technologies, management skills and available resources. BMP information sheets available from ISU Extension include:

- NMEP 1, Soil Testing
- NMEP 2, Phosphorus Application
- NMEP 3, Manure Resources
- NMEP 4, Residue Management
- NMEP 5, Crop Rotation
- NMEP 6, Crop Yields
- NMEP 7, Nitrogen Application
- NMEP 8, Nutrient Management Plan
- NMEP 9, Equipment Calibration
- NMEP 10, Conservation Reserve Program
- NMEP 11, Conservation Practices

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