SOIL SAMPLING FOR NUTRIENT MANAGEMENT PLANS

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Farmers develop nutrient management plans to better manage their fertilizer dollars. Increasingly nutrient management plans are required for federal, state, and county government programs. These programs require plans that are written using Wisconsin Nutrient Management Standard 590 guidelines. The Standard requires routine soil testing at least once every four years. Soil testing provides the foundation of sound nutrient management plans.

The Natural Resource Conservation Service Code 590 references UW-Extension A2100, "Sampling Soils for Testing," as the soil sampling guide for Wisconsin. This publication provides guidelines for soil sampling for both conventional fertilizer recommendations and for site-specific management for variable rate fertilizer applications. The method of fertilizer application determines the soil sampling procedure.

Whole field "conventional" soil sampling is used for single uniform fertilizer recommendations for individual fields. These applications are based on the average of the soil test analysis for each field. The basic soil testing guidelines strive for accurate representation of field nutrient needs and include, following a 'W' pattern in the field, pulling 10 or more cores per sample, and no more than five acres per sample. Field areas to avoid are fence lines, field edges, dead furrows, eroded areas and low spots.

Site-specific (grid) sampling results are used to develop an application map with variable lime and fertilizer rates throughout a field. With grid sampling, a systematic approach is used to divide the field into squares of approximately equal size called grid cells. These can be 5 acre, 2.5 acre, or 1 acre in size. With grid point sampling, at least 10 cores are collected from a small area (10 foot radius) around a geo-referenced point. Field areas to avoid are identical to conventional sampling. Grid sampling guidelines in A2100 recommend that fields that in the past have tested in the responsive range (interpretive level of high or below) be sampled on a grid no larger than 200 feet to sufficiently represent the nutrient variability of the field.

Many Southwestern Wisconsin farm fields consist of small, contoured strips. Attempts have been made to develop Nutrient Management Plans on these fields using soil tests derived from grid sampling techniques. Contour strips do not easily lend themselves to the "systematic approach" of dividing a field into grid squares of approximate equal size. Examples of contour fields that were grid sampled show how whole fields are missed or samples are taken on fence lines or field boundaries. As shown in these examples, grid sampling contour strips often results in sampling that does not represent the soil conditions of these fields.

Choosing the appropriate soil sampling procedure is critical to nutrient management planning. Individual fields must be accurately represented in the soil test analysis.

References

Peters, J.B., K.A. Kelling, and L.G. Bundy. Sampling Soils for Testing UWEX A2100. R-05-02-1.9M-50.

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