

SOIL SAMPLING AS A BASIS FOR FERTILIZER RECOMMENDATIONS IS IT WORTHWHILE?

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Today's farmer will continue to be progressive only as he applies scientific methods to his operation. An excellent example of applying science to farming is in the use of the soil test.

The validity of the soil test as an indication of fertilizer requirement has been well established. High correlations have been obtained at the Othello Unit between soil tests for K and percent K in the potato petiole (3). Also, good relationships have been established between soil tests and yield response of potatoes. In spite of sampling and handling problems, outlying testing trials have shown about 80% accuracy in predicting a need for phosphorus and potassium as measured by crop response. Confidence in the soil test as a basis for determining fertilizer needs is indicated by the large volume of soil tests sent in to the Washington State University Soil Testing Laboratory each year.

The soil test is accurate. Any problems of inaccuracy lie, not with the soil test itself, but with the sample. Obtaining samples which adequately represent the condition in the field is a major part of the job. Soil variability, particularly in leveled fields in the Columbia Basin, has been demonstrated many times. It cannot be over emphasized, therefore, that the soil test is no better than the sample itself.

This problem has been discussed in detail by university personnel in public meetings. Proceedings of this conference for the past two seasons contain detailed recommendations for sampling fields -- both those known to be variable and also those which appear to be uniform (1, 2, 3). There is no question that for an accurate fertilizer program attention must be paid to more intensive sampling of the field. This is particularly true for high value crops such as potatoes.

The following recommendations are based on the policy of the Washington State University Soil Testing Committee:

1. Consult leveling maps (cut and fill sheets) to determine where the heavy cuts and fills are located.
2. Sample the cut areas, the fill areas, and the untouched areas separately, if possible. Furthermore, sample each area of a field separately according to slope, soil color, texture, drainage, etc.
3. It is important to have some measure of variability in fields which appear to be uniform. In fields of five acres or more, take more than one sample. For example, a ten-acre field can be divided into five areas--

the areas near the four corners and near the middle. Take a composite sample of a small area -- not more than ten feet in diameter -- from each of these areas. For uniform fields larger than ten acres in size, more than five samples should be taken -- up to 20 in large fields.

From this information two things can be determined: (1) A degree of variability and (2) where the low and high areas are located. From this information high and low areas can be roughly delineated and the areas fertilized accordingly. If the soil test indicates extreme variability, it may be best to use a blanket application based on the lowest soil test.

It is definitely worthwhile to use the soil test as a basis for fertilizer recommendations, if the fields are sampled intensively. In most cases, this will mean (1) more samples per field, and (2) more care in taking samples than in the past.

LITERATURE REFERENCE

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