



Natural Resources Conservation Service  
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## Determining the Realistic Yield Potential for Nutrient Management Planning

Nutrient Management Note

**Question:** In a Comprehensive Nutrient Management Plan (CNMP) or Nutrient Management Plan (NMP) do we use our Revised Universal Soil Loss Equation (RUSLE2) yields from the electronic Field Office Technical Guide (eFOTG) or the county average plus 10%?

**Answer:**

First some clarification, you will need two separate yield numbers to complete a CNMP or NMP. First, RUSLE2 uses a “**yield estimate**” to estimate the risk of soil erosion. Secondly, a “**realistic yield potential**” (formerly “**yield goal**”) is used to make agronomic decisions including nutrient management. You may base each number on a different soil in that field.

### “Yield Estimate” for Soil Erosion and Water Quality Risk Assessments (RUSLE2 and the Iowa Phosphorus Index)

For resource risk assessments, use the eFOTG crop yield estimate for the dominant, critical soil in the field (see [Choosing the Planning Area of a Field by “Dominant Critical Area”](#) Iowa Tech Note 29, 2008) to estimate the average annual soil erosion rates in RUSLE2. Then use this erosion estimate in the Phosphorus Index to estimate the risk of phosphorus delivery to nearby surface water. The dominant, critical soil is the part of the field which adequately represents the real risk of erosion.

### “Realistic Yield Potential” for Agronomic Decisions

For agronomic decisions, an estimate of the crop yield is used in some cases to determine nutrient replacement rates. This estimate previously was used to make nitrogen application rate decisions. However, that “yield goal” method is no longer being used for Iowa State University nitrogen recommendations.

A less precise estimate of yield can now be used. P & K recommendations are, generally, based on broad soil test categories to recognize the uncertainty due to variability within the field and the variable growing conditions. The realistic yield potential is used along with the average nutrient concentrations in harvested grain or biomass to estimate P and K removal rates. This is then used to estimate the fertilizer application rates needed to maintain the soil test P & K levels when soil tests are optimum. These removal rate estimates may also be used when the soil tests are higher than optimum to manage manure so that soil test phosphorus does not increase unsustainably.

For our purpose, the “realistic yield potential” is a reasonable estimate of the prevailing average yield in a field or section of field using past data with, perhaps, an adjustment to account for management changes which could improve yield. Consistent with ISU guidance outlined in ISU publication [PM 1268: Establishing Realistic Yields](#) and the use of the estimate for P & K application rates, two simplified methods to determine a realistic yield potential are described below.

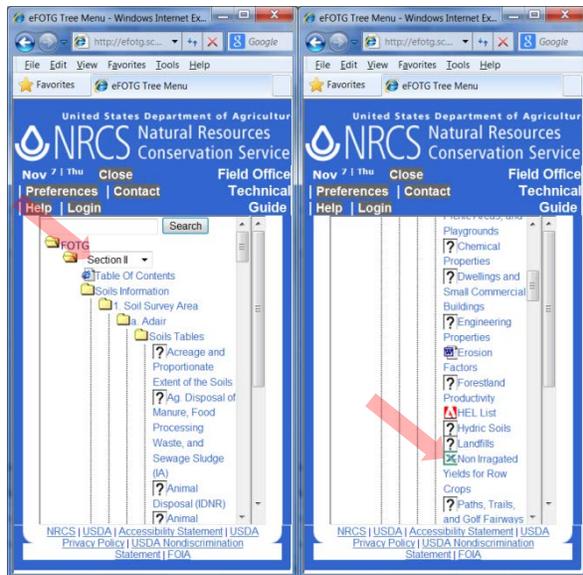
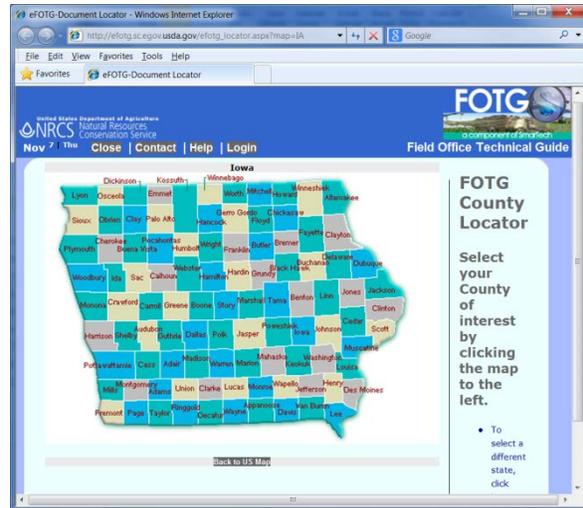
1. The best source of an estimate is a producer's own yield records to establish a field's average yield. Add 10% to a multi-year moving average to determine the realistic yield potential. Use two or more years of data for continuous cropping systems such as continuous corn. For rotations use three, four, or more years as needed to adequately represent the field. Extreme outliers from, for example, droughts or disease can be ignored.

2. The eFOTG crop yield estimate is an appropriate realistic yield potential. To find the eFOTG crop yield estimate

- a) go to [eFOTG](#)
- b) select county

- c) select Section II
  - Soils Information
  - Soil Survey Area
  - <county> (again)
  - Soils Tables
  - Non-Irrigated Row Crop Yields by Map Unit

Choose the soil that best represents the field, probably the predominant soil by area. The producer may choose a different soil or combination of soils in the field in a weighted average, based on their experience, to use for their agronomic decisions. The corn yield estimate (bu/acre) is in the "cornyld" column of the spreadsheet. Soybean's (bu/acre) are in the "soybnyld" column.<sup>1</sup>



As noted in the 590 standard, other credible sources of yield estimates can be used including local research, yield data on similar soils using similar cropping systems, and industry data for new crops and varieties. Use these yields on an interim basis until better data is available. [PM 1268: Establishing Realistic Yields](#) may continue to be used.

**Document and justify the data and method used in the nutrient management plan.**

<sup>1</sup> The eFOTG crop yields utilizes National Agricultural Statistics Service (NASS) 5-year county yields and adjusts them based on the soil's suitability to grow corn which was established through research and varietal trials conducted at various locations across Iowa. Previously, the eFOTG yield estimates used the county average. Now they represent an estimate of the top 25% production for the soil. Adding 10% is no longer necessary.