

Calculating crop and ethanol yields and irrigation needs in 4 easy steps

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Estimating crop yields based on available water in semi-arid regions has been made easier for several hundred farmers who are using a special calculator computer program developed by an Agricultural Research Service (ARS) scientist.

Several hundred [farmers](#) in the Central Great Plains have picked up a copy of the device, called the MultiCalculator CD, at field days and other outreach meetings, according to David Nielsen, the agronomist who developed it at the ARS Central Great Plains Research Station in Akron, Colo.

The MultiCalculator uses three simple Excel spreadsheets, downloadable at: <http://www.ars.usda.gov/Services/docs.htm?docid=19206>. In four steps, the yield calculator predicts non-irrigated [crop yields](#)—a vital factor in the semi-arid central plains.

First, farmers estimate how much available [soil](#) water their fields have. Farmers can tab to a table on a different screen that helps them make this estimate, giving multiplication factors for various soil types. For example, farmers on the predominant soil type in the area, silty loam, would multiply the depth of their wet soil by 2.2 to get the number of inches of soil water available for the crop at planting time.

In the next three steps, farmers choose a crop, a location, and guess the percentage of average precipitation they expect during the growing season.

The computer instantly shows the yields they can expect. The yield calculator does this for 18 crops, including cereal grains, seed legumes, oilseeds, and forages.

The water calculator also works in reverse—in five steps—beginning with the farmer choosing a crop, then the target yield. It tells how much irrigation water will be needed to achieve the target yield.

In addition, the calculator will also tell farmers how many gallons of [irrigation water](#) they will need for each gallon of ethanol produced from the corn they grow.

The calculations are derived from data from long-term ARS research at Akron, which showed a linear relationship between crop yields and seasonal crop [water](#) use.

Provided by United States Department of Agriculture

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