



Organic Nutrient Value Calculator

Introduction

Many farmers use organic nutrient sources to help meet crop nutrient needs. These organic sources include manure, poultry litter, compost, biosolids, and other available materials. In this document “organic” refers to materials derived from animals and plants, not a system of certification of production methods.

Organic sources are often viewed as “free” nutrients because they are by-products of primary income-generating activities such as meat or milk production. However, manure and other organic nutrient sources do have real economic value because they provide nutrients for crop growth and reduce the need to buy commercial fertilizers. The Organic Nutrient Value Calculator (ONVC) is a spreadsheet that uses information you provide to assign a value to the nutrients supplied by organic sources.

Rational

The task of assigning a dollar value to an organic nutrient source is not straightforward. Many factors impact the perceived value. For example, an organic source may contain significant levels of phosphorus; however if the field on which the source will be applied does not require phosphorus, is there any value associated with the source’s phosphorus content?

The ONVC makes several assumptions when estimating the value of the nutrients in an organic source. The ONVC assumes that the value of a nutrient in an organic source is the same as the value of that nutrient in a commercial fertilizer. In addition, the ONVC only assigns a value to those nutrients that the crop requires, as determined in the nutrient management plan. The ONVC assigns no value to nutrients that are available in excess of crop needs. For this reason, it may not be realistic to utilize the ONVC to assign a selling price to organic nutrient sources produced on your farm. It is appropriate to use the ONVC to determine the value of the organic nutrient source(s) used on your farm.

Other factors to consider include the cost of application and incorporation. Consult custom work rates for Maryland to better determine the true cost of using organic nutrient sources.

Additional benefits such as the addition of organic matter to the soil and improving the soil tilth are more difficult to quantify and have not been incorporated into the ONVC.

Value Determination

The ONVC provides a list of common commercial fertilizers that provide nitrogen, phosphate or potash. While most contain a single nutrient to best estimate the cost of that nutrient, monamonium phosphate (MAP) and diamonium phosphate (DAP) have been included as sources of P₂O₅ due to limited availability of triple super phosphate in some areas. The spreadsheet determines the cost of the N portion of the MAP or DAP based on the price of the N fertilizer you selected. The cost of the N is subtracted from the total price and the value of the P₂O₅ is determined from this number.

Using the ONVC

To use the ONVC you will need to collect the following information:

- prices for each of the commercial fertilizer nutrient source options you are considering;
- nutrient recommendations for the crop on which you plan to apply the organic nutrient source (from your nutrient management plan); and
- current analysis for the organic nutrient source you plan to use.

Yellow cells in the ONVC indicate that you will need to type in information.

Blue cells will display a drop-down arrow . Click on the arrow and select from the list of options.

Step	Action
1	Type the crop you plan to grow (corn grain, corn silage, wheat, etc.).
2	Select the organic source, type the application rate, and select the unit of measurement.
3	Select the preferred fertilizer product(s).
4	Type the commercial fertilizer price (\$/ton).
5	Type the organic nutrient source analysis results (%).
6	Select the method of incorporation.
7	Select the time until incorporation.
8	Type the crop nutrient requirements (lbs/ac) for the field (from your nutrient management plan).

The ONVC will display the dollar value of each of the nutrients supplied by the organic nutrient source, but only if they are required for crop growth. In addition, the ONVC will calculate the total value of the organic nutrient source, the value of the N supplied in the year of application, and the value of the N supplied in two subsequent years through the process of mineralization.

The ONVC also calculates the value of the ammonium nitrogen ($\text{NH}_4\text{-N}$) provided by the organic nutrient source. The availability of $\text{NH}_4\text{-N}$ is directly related to incorporation practice. Organic nutrient sources that are incorporated soon after application will provide more $\text{NH}_4\text{-N}$ than sources that are surface applied and not incorporated.

There are several reasons why farmers incorporate manure. Among them are odor mitigation and retention of $\text{NH}_4\text{-N}$. Farmers often ask if the cost of incorporating manure is offset by the associated $\text{NH}_4\text{-N}$ savings. To determine the answer to this question, consult Maryland Cooperative Extension Fact Sheet 683, "Custom-Work Charges in Maryland" (<http://extension.umd.edu/publications/PDFs/FS683.pdf>). Compare the cost of incorporation to the "Value of $\text{NH}_4\text{-N}$: \$/acre" (last cell in the "Value of Organic Source" table of the ONVC).

Conclusion

The ONVC can be used to compare the value of the nutrients in an organic source to the price of commercial fertilizer. This information can be used when making decisions about where to apply organic nutrient sources and whether to apply at a pre-set rate or at a rate to meet N, P_2O_5 , or K_2O requirements. Finally, use the ONVC to determine if the cost of incorporating manure can be justified by the resulting $\text{NH}_4\text{-N}$ savings.

UMCP-ANMP
09/09