



FERTILIZER USE

#2 IN A SERIES OF 3

WHY do farmers use fertilizers?

Fertilizers are just one tool in a farmer's tool box that help keep soils healthy in order to grow the best possible crops. Healthy crops start with healthy soil.



If soil already contains nutrients, WHY add more?

The main nutrients required for growing crops are nitrogen (N), phosphorus (P), potassium (K) and sulphur (S). Different crops use these nutrients in varying proportions. These nutrients must be in sufficient amounts and balanced in the soil for healthy plant growth to occur.

As plants grow, they draw nutrients from the soil as they take up water. When crops are harvested, nutrients, now contained in the plants, are removed from the soil. The greater the crop yield, the greater the need for more nutrients to be added back into the soil so that the next crop can grow to its full potential.

If nutrients are not replaced through the use of conventional and/or organic fertilizers, then the soil slowly becomes less fertile. Consequently, crops are less able to compete with weeds and resist plant diseases, insects and drought, which may result in less food being grown.

IS MORE FERTILIZER BETTER?

No. "More" doesn't mean "better". The key is to apply the right product, at the right time, in the right place and in the right amount for maximum uptake by the crop and minimal loss to the environment.

Fertilizer application is all about balance. If too many nutrients are added to a crop, then there is a risk that crops won't consume them quickly enough and if there is too much rain, the nutrients can run off the land into waterways. If too few nutrients are added, then plants won't grow to their full potential, resulting in less food being produced.

FERTILIZER IS NATURE'S HELPER

It takes careful management and many years, even decades for soil to build organic matter to grow healthy crops. Different crops require different amounts of nutrients – by adding a balance of nutrients, farmers can grow healthy, productive crops.



Farmer applying seed and fertilizer using modern farm equipment



FERTILIZER USE

MODERN FARMING = MORE EFFICIENT USE OF FERTILIZERS



Fertilizers have been developed with blends of specific nutrients to meet the needs of particular crops.

Global Positioning Systems (GPS) on tractors and equipment place seeds, fertilizers and pesticides in the right place.

Advances in farm equipment make it possible for farmers to apply specific amounts of seed, fertilizer and pesticides (inputs) in specific areas of a field (down to the square foot) based on soil needs and a crop's growth potential. This practice, known as **precision farming**, minimizes the use of inputs and fuel while maximizing crop yields (amounts produced).



Corn

The development of more specific and more efficient fertilizers has resulted in better crop production. For example, farmers now produce 1/3 more corn than 20 years ago for each pound of nitrogen applied¹ while, at the same time, maintaining or improving soil quality.²



Improved farming practices and fertilizers have helped feed the world while saving habitats that would otherwise need to be used for growing food. During the last 40 years, farmers in North America have tripled food production while using less land.²

Alfalfa can be grown as a green manure crop.



HOW DO ORGANIC FARMERS ADD NUTRIENTS TO SOIL?



Organic farmers often use organic matter in the form of compost or manure to provide additional crop nutrients. **Green manuring**, which involves growing a legume crop, such as beans or alfalfa (rich in nitrogen), and plowing it under, is another source of organic nutrients.

Whether organic or conventional, modern agriculture practices focus on soil health and adding nutrients back into soil. Both organic and conventional farmers are concerned about ensuring the health of the land for generations to come. Both focus on producing safe and nutritious food.



Young soybean plants