snapAG GROWING CROPS

FERTILIZER

#1 IN A SERIES OF 3

WHAT is fertilizer?

Fertilizer is food for plants. It adds to the nutrients found naturally in the soil. Like people, plants require nutrients to grow.

Corn stunted and yellowing from nutrient deficiency

Plants and nutrients

Plants need 17 nutrients to grow normally.[1] Nitrogen (N), phosphorus (P), potassium (K) and sulfur (S) are nutrients needed in large amounts.[2] These are called **macro-nutrients**. Crops also need certain nutrients in much smaller amounts. These are called **micro-nutrients**. Soil contains nutrients but not necessarily in the right amounts for good plant growth.

As crops grow, they use nutrients from the soil. When they are harvested, they take nutrients with them. Although some nutrients remain in the soil and are left in the crop residues that remain on a field after a crop is harvested, soil nutrients need to be replenished for the next crop. This can be done through many methods, but the most effective way is by adding fertilizer.

Using science

Farmers send soil samples to laboratories for testing to find out which nutrients – and how much of each – are needed for each crop. Soil nutrient levels will vary from year to year, from field to field, and even within each field.

If soil doesn't have the right levels of nutrients, then the plants suffer from nutrient deficiency and cannot function properly. For example, nutrient deficiency in cereal crops, such as wheat, barley or oats, may cause crops to be shorter and thinner and result in less grain being produced.

FERTILIZER COMES FROM NATURE

Nitrogen fertilizer is made using natural gas and nitrogen from the air.

Potassium fertilizer comes from salts from evaporated oceans.

Phosphorous fertilizer comes from fossilized sea remains found in ore deposits.

Sulfur fertilizer comes from fossil hydrocarbons (often found in areas with high volcanic activity).

These naturally occurring minerals are manufactured into a form that plants can readily use – referred to as **synthetic** or **conventional** fertilizers or nutrients.

Compost and manure are examples of **organic** nutrients. Many farmers recycle manure from animal barns and pens to improve their soil.

Fertilizer and seed are applied at specific depths in the soil

FERTILIZER

ARE FERTILIZERS HARMFUL TO THE ENVIRONMENT?

Both conventional fertilizer and organic nutrients must be applied correctly. If too much is used, there is a risk that nutrients will run off the fields into waterways and/or be released into the air. Too many nutrients in water can cause excessive algae and plant growth that reduces oxygen levels in water and harms aquatic life.

The "4Rs"

Farmers are committed to "4R Nutrient Stewardship" – applying the **Right** rate of the **Right** nutrient source at the **Right** time in the **Right** place. 4R Nutrient Stewardship is a science-based approach that focuses on increased production, environmental protection and improved sustainability – the ability of farmers to continue to grow healthy crops into the future.[3]

A better understanding of how fertilizers work and how to use them most effectively enables farmers to apply soil nutrients in the amounts they need, and when and where they are needed, minimizing or avoiding loss of nutrients to soil, water and air.

Field peas

Green manuring involves growing a crop such as legumes (peas, clover, lentils) that will be left in the field, adding organic matter and protecting the soil from erosion. This is an old agricultural practice still used today.[4]

Loading fertilizer and seed to apply to soil

HOW ARE FERTILIZERS REGULATED IN CANADA?

All fertilizers imported to or sold in Canada are regulated by the Canadian Food Inspection Agency (CFIA) under the *Fertilizers Act*.

> "Thanks to modern fertilizers, world food production has more than doubled since 1960. Today, about HALF of our global food supply is directly linked to the use of commercial fertilizers."[5]

References available @ www.aitc-canada.ca