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## BOOSTING HUMAN NUTRITION WITH FERTILIZER

In discussions about using fertilizers and various plant nutrients, the entire purpose of using these materials is too frequently overlooked. All of the effort that goes into acquiring, transporting, applying, and managing these valuable resources is for the primary goal of growing healthy and abundant crops for humans and animals.

Removing crop products from the field extracts nutrients from the field. The harvested products may be used for things such as blue jeans, biodiesel, animal feed, or eaten directly by people. It becomes necessary to replenish the soil as the nutrient reservoir becomes gradually depleted. Some of the goals of productive agriculture include:

**Food security**—refers to having access to adequate food, without fear of hunger or starvation. Commercial fertilizers are estimated to support over half of the current global food production and clearly have a vital role in meeting the goal of food security for everyone.

**Nutrition security**—means having access to adequate food components for human nutritional needs. Many of the healthful components of food are boosted by the application of fertilizer (such as protein, carbohydrates, oil, vitamins, and minerals). This security involves access to nutritional food and making wise dietary choices.

**Micronutrient nutrition**—is increasingly important in many parts of the world as human diets in many less-developed countries have shifted towards greater consumption of “staple” cereal crops (such as corn, wheat and rice). The yield of many micronutrient-rich crops (such as various beans, fruits and vegetables) has not benefited as much from the Green Revolution, and these foods now comprise a smaller proportion of the diet of the world’s poorest people.

A variety of practices are being used to boost the nutritional value of crop plants. This includes improved agronomic practices to achieve “biofortification” with minerals such as zinc (Zn), selenium (Se), and iodine (I). Genetic approaches are effective in boosting the concentration of iron (Fe) and vitamins in plants.

Some recent scientific papers indicate that there may have been a decline in the nutrient concentration of some vegetables during the last 50 to 100 years. This is likely due to the well known “dilution effect”, where higher-yielding and larger plants may take up the same quantity of nutrients from the soil. This results in an apparent dilution of the mineral concentration in the harvested crop.

To a large extent, the supply of soluble plant nutrients in the soil determines the composition of the plant. Crops grown in nutrient-deficient soils will likely have low yield and may have poor nutritional qualities for humans and animals. Adding the appropriate plant nutrients to soil supports high yields, and also sustains the essential nutritional food properties. Without the proper nutrients, plants cannot possibly provide an adequate and nutritional food source for people.

IPNI has recently published a comprehensive scientific review of this topic, which can be downloaded for free at: <http://info.ipni.net/FCIHH>.

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