NUTRIENTS ARE ESSENTIAL FOR HUMAN HEALTH

Fertilising Crops to Improve Human Health

'**Plant Nutrition and Health Risks Associated with Plant Diseases**' by Don M. Huber.

Part 03

Fertilisers & Human Health
An 8 Part Series

Main Message

Healthy plants promote healthy people.

A varied diet is required to provide the full complement of essential nutrients needed, since no single plant source contains all of the essential carbohydrates, fats, amino acids, minerals, vitamins, etc. required in their proper ratios or concentrations.

Traditionally, these essential nutrients have been achieved through cultivated crops and animals.

Nutrients need to be optimal and balanced, as either a deficiency, or an excess of one element greatly influences the activity of the others. Nitrogen, phosphorus, potassium, sulphur, calcium and magnesium are required in the largest amounts. However, boron, cobalt, copper, chloride, iron, manganese, molybdenum, nickel and zinc are required in much smaller quantities.

Plant nutrient deficiencies can reduce both the quantity and quality of nutritive components of plants. When plants become deficient in one particular nutrient, the performance of other nutrients may also be affected making these vitamins, protein, carbohydrate, fat and other essential nutritional components less beneficial.

Key Points

- Plants provide the primary source of minerals and other nutrients for animals and humans.
- Healthy plants promote healthy people.
- Generally speaking, as the yield of the crop increases so does the need for available nutrients.
- When plants become deficient in a particular nutrient, other nutrients may also be affected so that the vitamins, protein, carbohydrate, fat and other essential nutritional components that plants are grown for will be affected.
- As primary food and feed sources, plants must provide nutrients in adequate quantity, safety and nutritional quality to be of benefit.

> "We encourage all of our industry peers to find their niche in these proven, cost-effective strategies to reduce vitamin and mineral deficiencies around the world".
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> Source: Scott Montgomery, Vice President and Global Procurement Leader, Cargill Inc., FFI Executive Management Team Chairman

Wheat Crop in Huaiyuan County, Anhui Province, April 2013.

RLF. 25+ Years of Plant Nutrition.

RLF Specialty Liquid crop nutrition fertilisers have been developed, manufactured and continually refined over a period of more than 25 years to a position today where our products are targeted to provide the nutrition needs of any particular crop, or for any particular deficiency.

Our long experience tells us that farmers and growers know, only too well, that:

- As much as 60% of crop yield is dependent upon nutrient availability
- Crop nutrition is the foundation of a healthy and productive harvest
- Optimum growth environments do not sustain themselves, and a crop nutrition program should be managed throughout the entire year

It is often only when a deficiency symptom reveals itself that farmers know they have a problem that could have a marked effect on a crop's health, yield potential and value. This realisation often comes too late.

RLF's science-based approach helps change this scenario. It uses the science of the leaf to facilitate delivery of nutrient rich foliar applications in a safe, stable and optimally balanced way. This significantly improves productivity and enables more effective assimilation of the nutrient elements for the plant's immediate use. It is an effective way to achieve maximum benefit.

Crop nutrition with emphasis on the trace elements is RLF's niche – we are world leaders.

Complete Scientific Review Extracts are:

From: ***Plant Nutrition and Health Risks Associated with Plant Diseases*** *by Don M. Huber, Chapter 9, Fertilizing Crops to Improve Human Health: A Scientific Review, October 2012 (ISBN: 978-0-9834988-0-3).*

Fertilizing Crops to Improve Human Health: A Scientific Review, is a joint publication by the International Plant Nutrition Institute (IPNI) and the International Fertiliser Industry Association (IFA).

Plants provide the primary source of minerals and other nutrients for animals and humans. Thus, the sufficiency of human nutrition is dependent in large measure on the availability and nutrient sufficiency (quality) of the plants consumed directly, or indirectly through animals.

Healthy plants promote healthy people.

A varied diet is required to provide a full complement of the essential nutrients since no single plant source contains all of the essential carbohydrates, fats, amino acids, minerals, vitamins, etc. required in their proper ratios or concentrations.

Traditionally, each self-sustaining society has cultivated crops and animal sources to provide the energy (carbohydrate), protein, and fat nutrients required in the largest quantity; with the essential minerals and vitamins also generally being available through these three primary food groups.

A deficiency or excess of one element greatly influences the activity of others and sometimes can exert catastrophic effects as secondary and tertiary consequences reverberate throughout the entire metabolic network of the plant (Evans et al., 2000). Nitrogen, phosphorus, potassium, sulphur, calcium, and magnesium are required in the largest amounts. However, boron, cobalt, copper, chloride, iron, manganese, molybdenum, nickel, and zinc are required in much smaller quantities. Plant essential carbon, hydrogen and oxygen are supplied through air or water while the remaining elements come from solubilization of various salts and minerals in soil or water.

Generally, as yields have increased, the need for available nutrients also has increased to support the increased physiological activity of the plant and to compensate for the larger amount of nutrients removed with the harvested crop.

If anyone nutrient becomes limiting, yield and quality of the harvested component is often disproportionately reduced because of the intricate interrelationship of each nutrient with physiological processes (Rengel, 1999).

Plant nutrient deficiencies can reduce both the quantity and quality of nutritive components of plants. When plants become deficient in a particular nutrient, other nutrients also may be affected so that the vitamins, protein, carbohydrate, fat and other essential nutritional components that plants are grown for will be affected.

As primary food and feed sources, plants must provide nutrients in adequate quantity, safety and nutritional quality. Factors that result in a nutrient deficiency for plants also affect their nutrient value or nutrient availability for animals or man.

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- Healthy plants promote healthy people.
- Generally, as yields have increased, the need for available nutrients also has increased.
- When plants become deficient in a particular nutrient, other nutrients also may be affected so that the vitamins, protein, carbohydrate, fat and other essential nutritional components that plants are grown for will be affected.
- As primary food and feed sources, plants must provide nutrients in adequate quantity, safety and nutritional quality.
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