

NUTRIENTS ARE ESSENTIAL FOR HUMAN HEALTH

Fertilising Crops to Improve Human Health

Human Health Issues Associated with Nutrient Use in Organic and Conventional Crop Production by Holger Kirchmann and Lars Bergstrom.

Part 07

Fertilisers & Human Health
 An 8 Part Series

Main Message

In recent years, there has been greater understanding of the need for agricultural systems to not only produce sufficient food from crop outcomes, but for them to also be nutritious and healthy. If this sufficiency is not enough to cover human need, then it will result in malnutrition, starvation, and ultimately shortened lifespan – so adequate, health-filled production is an obvious key requirement.

So, providing sufficient and healthy food for everyone is probably one of the most important survival issues for mankind into the future. The eradication of famine and malnutrition has been identified as the most important task on Earth (UN Millennium Project, 2005).

A number of field studies and national agricultural statistics clearly indicate that organic crop production cannot provide sufficient food for the current and growing population in the world. Crop yields are too low, mainly due to lack of nutrient supply.

The other major issue is the quality of the food produced. Crops may contain too little of the nutrients essential for both human and animal well-being.

This review discusses this issue and draws several conclusions worthy of respectful reading.

Key Points

- Organic crop production cannot provide sufficient food for either the current or expected world population.
- No evidence exists that organically grown crops are of a superior quality or that the use of mineral fertilisers deteriorates food quality. In contrast, controlled application of plant nutrients in mineral form enables improvement of crop quality.
- Large-scale organic production will bring about two major changes—food supply may not be secured and shortage of certain foods will affect the dietary composition.
- Focus should first of all be on proper nourishment. It seems that any possible differences in product quality may actually be of minor importance for health as long as the supply of essential nutrients is sufficient.

“Given the political economy of food, the commodification of food systems, and growing patterns of inequality worldwide, the new nutrition reality calls for a broadened community of actors who work in mutually reinforcing and interconnected ways on a global scale,” says Dr Branca. “Without a profound food system transformation, the economic, social, and environmental costs of inaction will hinder the growth and development of individuals and societies for decades to come.”

Source: Dr Francesco Branca,
 Director of the Department of Nutrition for Health and Development
 World Health Organization



RLF-treated bitter gourd, Guangdong Province, April 2017

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.

In the modern farming era, where intensive farming techniques and technologies are required to bring about the yield necessary to provide sufficient food for the world, RLF products offer an optimistic future for farmers and growers the world over. RLF is a world leader in crop nutrition.

RLF's advanced science and technology endeavours and commitment over many years deliver the same levels of advantage and opportunity for all farmers and growers, no matter what size their enterprise is, or in what growing environment they operate.

There are several key points of difference and these include:

- Quality of elements and materials used
- Engineered and tested technologies that allow its products to be fully and efficiently absorbed by the crop
- High-performance formulations
- Stable solutions
- Based on crop nutrition removal science and plant physiology
- Quality assured production utilising specialised manufacturing techniques

Complete Scientific Review Extracts are:

From: *Human Health Issues Associated with Nutrient Use in Organic and Conventional Crop Production* by Holger Kirchmann and Lars Bergstrom, Chapter 10, *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).

In recent years, there have been intensive discussions about agricultural systems that can produce sufficient amounts of nutritious and healthy food. Cropping systems can affect human health in several ways: through production of insufficient amounts of food and products of insufficient quality.

Enough Food

If the amounts of crops produced by agricultural systems are not sufficient to cover human needs, this will result in malnutrition, starvation, and ultimately shortened lifespan. Food shortage is definitely one of the most important aspects when discussing health issues relating to food, although excessive diets, over-consumption and obesity can be a main cause of untimely death in rich countries.

A number of field studies and national agricultural statistics clearly indicate that organic crop production cannot provide sufficient food for the current and growing population in the world. Crop yields are too low, mainly due to lack of nutrient supply, especially of N. Providing sufficient and healthy food for everyone is probably one of the most important survival issues for mankind in the future. Food production is coupled to a moral imperative, as adequate food supply is a cornerstone of human welfare.

Development of agricultural practices ensuring food sufficiency is a basic human requirement, a precondition for satisfactory social conditions and a necessity for civilizations to flourish. Lack of food, on the other hand, is a tragedy leading not only to suffering and loss of life but also to inhumane behaviour, political instability and war (Borlaug, 1970).

In fact, eradication of famine and malnutrition has been identified as the most important task on Earth (UN Millennium Project, 2005). Thus, when discussing different forms of crop production, it is of the utmost importance to examine without prejudice the forms of agriculture that can contribute to food sufficiency and security, at present and in the future.

Nutritious and Healthy Food

The other major issue is the quality of the food produced. Crops may contain too little of the nutrients essential for animal and human well-being, reduced levels of protective antioxidants and anticancer compounds, high levels of unwanted elements, pesticide residues, toxic microorganisms or high concentrations of natural toxins.

Our review provided no evidence that organically grown crops are of superior quality or that the use of mineral fertilizers deteriorates food quality. In contrast, controlled application of plant nutrients in mineral form enables improvement of crop quality. Despite the great interest in food quality among supporters of organic agriculture, we conclude that focussing on food supply and dietary composition is most important for human health.



RLF crop nutritional trial on potato, Inner Mongolia, September 2019


Conclusion

Although claims about nutritional benefits are used as an argument for organic products, our review corroborated earlier studies also showing that organic products do not have a superior quality.

Considering the dietary composition (i.e. proportions of carbohydrates to fats, intake of products with sugar and white flour, consumption of fruits and vegetables, amount of fish or meat eaten, etc.) has a great impact on human health (Willet, 1994; Taubes, 2001; Trichopoulou and Critselis, 2004).

Focus should be on proper nourishment first of all. It seems that any possible differences in product quality may actually be of minor importance for health as long as the supply of essential nutrients is sufficient, which can be regarded to be a healthy diet (Ames and Wakimoto, 2002).

Our analysis indicated that large-scale organic production will bring about two major changes—food supply may not be secured and shortage of certain foods will affect the dietary composition.

- 
- Organic crop production cannot provide sufficient food for the current and growing population in the world.
 - No evidence that organically grown crops are of superior quality or that the use of mineral fertilizers deteriorates food quality. In contrast, controlled application of plant nutrients in mineral form enables improvement of crop quality.
 - Large-scale organic production will bring about two major changes — food supply may not be secured and shortage of certain foods will affect the dietary composition.
 - Focus should be on proper nourishment first of all.