

# Water soluble fertilizers: The perfect solution



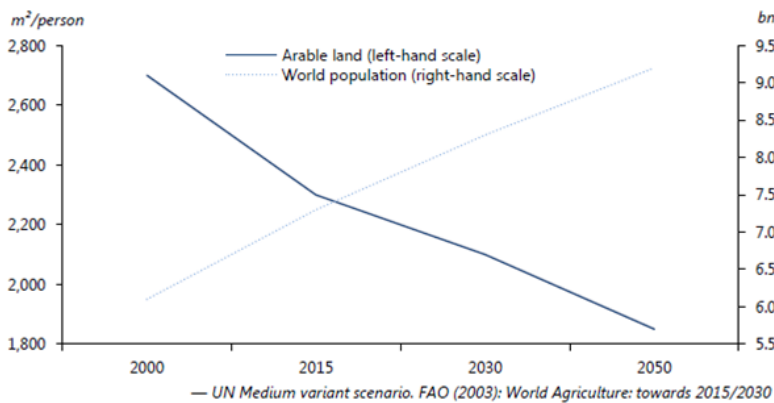
With the world's population set to approach 10 billion by 2050, the great challenge facing humankind is to increase agricultural productivity to meet the food and nutrition demands of the future. A major problem is that this will have to be achieved on scarcely more farmland than is available today.

Estimates of the amount of farmland available per person indicate a steep downward trend in the period to 2050, and consequently crop yields per hectare will have to increase sharply to meet demand. This will be especially important in developing countries, where population growth rates are forecast to be highest.

## Increasing Water Use Efficiency

Higher demand for irrigation will be just one of many significant pressures on available water supplies. As countries develop economically, their pattern of water use changes, with proportionately more demand arising from industrial and domestic uses. The charts below highlight the typical share of water consumption by sector in developing and developed countries, and demonstrate a lower share of the finite water resource available for use in irrigation.

Projected available farmland per person up to 2050

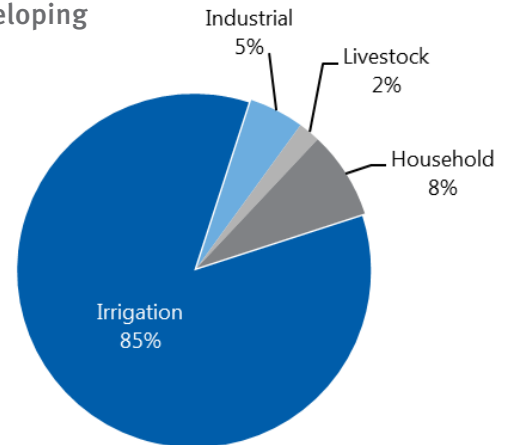


Applying more fertilizer where nutrients are insufficient in the soil is only part of the challenge, because the necessary increases in crop yield per hectare will have to be achieved in a sustainable manner, maximizing the efficiency of nutrient and water use, and minimizing any adverse impact on the environment and climate.

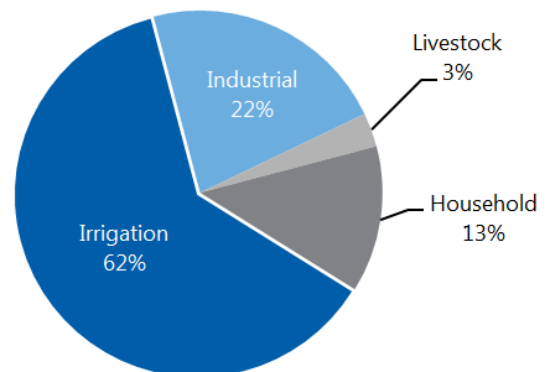
Beside higher fertilizer use, the required increase in food productivity up to 2050 will also call for an increase in irrigated land, and this will focus attention on maximizing use efficiency of a limited water resource.

Demand shares for water between developing and developed countries

### Developing



### Developed

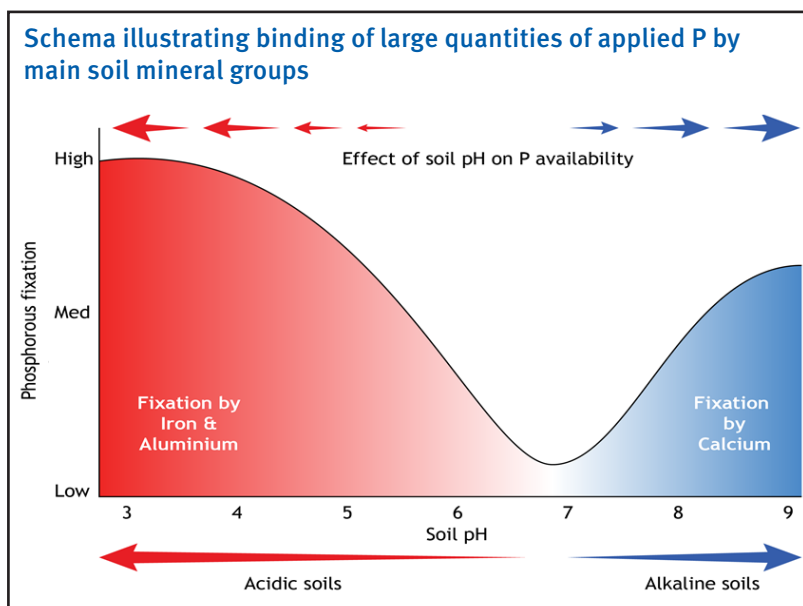


## Increasing Nutrient Use Efficiency

Nutrient loss to the environment is undesirable and uneconomic, and increasingly coming under pressure from legislators. China's National People's Congress recently introduced legislation under which there must be no further increases in annual N, P, K use after 2020; from then on farmers must implement application techniques that focus on improving nutrient use efficiency. China is the world's largest consumer of NPK fertilizers, yet the efficiency with which they are used by crops has been in decline for decades.

Two of the other largest global fertilizer users, the US and France, have been taking steps to improve their nutrient use efficiency over recent years, much of which has concentrated on the minimizing losses of nitrogen.

For phosphate fertilizer, a further challenge is that when applied in large quantities, it is strongly bound in many soils to other soil minerals, either forming aluminium and iron phosphates in acidic (low pH) soils, or calcium phosphates in neutral to alkaline (high pH) soils. In some cases, up to 95% of phosphate applied in this manner can be bound by soil minerals and rendered unavailable to crop roots as illustrated by the following diagram.



As many of the soils in regions where irrigation is commonly used are frequently either acidic or alkaline, large single base applications of phosphate fertilizers can be problematic, and water soluble fertilizers containing phosphate when applied in regular low doses, which closely match crop requirements through irrigation (fertigation), can improve both crop availability and use efficiency very significantly.

Given the primary challenge of increasing food production, it seems clear that combining the application of water with fertilizer nutrients, using the technique of fertigation, may provide a “perfect solution” to many of the challenges associated with increasing agricultural productivity, in a sustainable manner, by maximising fertilizer and water use efficiency, and reducing environmental and climatic impact.

It is, after all, a fundamental principle that water and fertilizer nutrients are inseparable resources for optimum crop growth:

- Water is the medium that transports nutrients to crop roots (and leaves with foliar sprays);
- Water is the single most important factor controlling the rate of chemical and biological processes in soils;
- Shortage of water (drought) limits soil processes, nutrient uptake and crop growth;
- Fertilizer nutrients increase a crop's ability to take up, and use water more efficiently

## Enhance your understanding of water soluble fertilizers

Argus has recently launched a new strategy report offering you in-depth analysis of the emerging water soluble fertilizer market, helping you:

- Understand the drivers of demand and future growth
- Gain insight into global and regional demand
- Survey the main producers and their capacities by region
- Harness the growth potential of this premium sector
- Assess your company's route into the WSF market

Find out more about **Argus Water Soluble Fertilizers** today.

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