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Challenges for Innovative Techniques in Food Agriculture

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Food agriculture in the 21st century faces multiple challenges: it has to produce more food to feed the growing populations, declining and aging rural labour forces, it is in need of more efficient and environmentally sustainable production techniques, and the necessity to cope with the ever changing climate. World population is expected to exceed 9 billion by 2050 with most of this increase occurring in agriculture dependent developing countries.

The stream of innovations in food science that has been witnessed during the past few decades has been continuously increasing the global food supply, albeit at a slower pace than desired. It has reached the stage where technological advances are being approached with care to ensure that the increasing quantity of food being produced using modern agricultural techniques is not being at the detriment of the quality and nutritional value of food.

Projections by FAO on the future demand and supply of food necessary to keep pace with population growth and changing dietary habits until 2050, predict that agricultural production will only be 60% higher than what it was in 2005. Cereal production for food and feed needs to increase by 30% while livestock production needs to double to meet rising demand for milk and meat by 2050. However land available for expansion of agriculture is decreasing, while on the other hand water is becoming an increasingly scarce resource.

Most of the increase in production over the next 35 years must therefore be derived from improved yields and higher cropping intensities. Yield growth has been the linchpin of historic production increases and will definitely continue to play this role in the future. However local constraints to boosting yield remain significant in many countries, thus threatening local food supplies in countries where they are most needed. This can only ascertain with more vigour the need to have more innovative research and further in depth studies under more challenging conditions to respond to the food dilemmas looming in the next three decades ahead.

Globally around 1.4 billion ha of land has the potential for agricultural production under rainfed conditions. Spare land is usually not accessible due to lack of infrastructure as it is often times distant from local markets and other public utilities. Where these constraints are coupled with fast population growth and inadequate income opportunities, land scarcity has led to poverty. In the past, irrigation has played a strong role in contributing to past yield and production growth. Even if the world area equipped for irrigation has been growing steadily over the past years, the potential for further expansion remains however limited.

In a few sentences above I have tried to highlight the areas where innovative techniques are really needed to produce a giant leap in food agriculture. In this issue of Innovative Techniques in Agriculture, experts from across the globe are providing different perspectives to some of the widely studied areas of food science and of the agricultural realm at large. This is not enough considering the enormity of the challenges ahead. We are in need of more articles to raise technological knowhow among the planting community and at the same time public awareness about the emerging trends in food quality and what it means for different societies, in terms of choices, risks and benefits. I thus encourage food technologists and more so the younger generation of scientists to make their research known by supporting this high impact journal through their articles.

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