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Opinion Article

Development of Food Sustainable and Agriculture Production

Zhao Aldenrath*

Department of Food Production, University of California, California, USA

DESCRIPTION

There are 925 million people who live in hunger-stricken conditions worldwide, according to a recent estimate. A further 2 billion people are anticipated to be added by 2050. Plant and agricultural genetic engineering activities need to be far more intense than in the past if we are to face the challenges to global food security and safety in this scenario. The majority of agricultural goods are produced by domesticated plants, which are generally referred to as crops. Further to providing the majority of food resources for human nutrition and components for animal feed directly, they also indirectly provide the bulk materials needed to produce biofuels, fibre, and construction materials. Moreover, a few cultivated plants are grown and prepared for use in medicine. The survival, productivity, expansion, and development of the global food, health, and economic systems depend very critically on crops.

In the past, man employed a wide variety of plant species for agriculture, but now, the majority of the food we eat comes from a very small number of plant species. As a result of the use of omic technology, new methods for increasing crop yield are now accessible. The primary branches of omic technologies are genomics, epigenomics, proteomics, and metabolomics, which provide molecular descriptions of the genome, epigenome, proteome, and metabolome employing cutting-edge analytical platforms, such as mass spectrometry. These scientific developments offer molecular insights into crop growth, development, resistance, and yield in a continually changing environment study to improve agricultural productivity, genetic toughness, and other factors to feed the growing global population.

Plant biodiversity

The process of domestication and breeding has significantly decreased the genetic diversity of the most significant agricultural plants. But, a new trend that represents a higher degree of consciousness is now in view. In order to meet the challenges of producing more food in unfavourable environmental conditions and in a sustainable agricultural system with reduced inputs of pesticides and fertilisers and with less water requirements, it is becoming increasingly clear that protecting genetic diversity is necessary to increase the gene pool of domesticated crop species. The previous century saw the abandonment of many historic varieties, landraces, and wild crop cousins that were recognised to have traits for resistance or tolerance. In order to better the search for genotypes that might be more resistant to world global changes, several research projects have recently been launched to support plant germplasm banks. Also, the discovery of novel genes in both the plant and animal kingdoms may be strategically essential for the speedy creation of species that are adaptable to changing climatic circumstances.

Frontiers of sustainable agriculture

It goes without saying that the biosciences are substantially responsible for this most recent agricultural revolution. In comparison to traditional plant breeding methods, modern biotechnology applications, particularly those connected to the different "omics" technologies, sped up the plant breeding process. Currently, commercial crops that have undergone genetic modification are produced in farms all over the world. As a result, the biotech crop acreage expanded from 1.7 million hectares in 1996 to 160 million in 2011. With the most recent great advancements in proteomic platforms, this trend is predicted to persist and even intensify. Crop breeding improvement initiatives will move more quickly because to rapid gene discovery made possible by genomics, proteomics, and other related "omics" areas of biotechnology. It is essential to comprehend the basic proteome patterns of plant growth and development if agricultural plants biotechnology is to advance. An developing technique called "phenotyping" at the molecular level describes plant behaviour and quantifies traits like growth and yield in response to genetic mutation and environmental factors. The goal of plant phenomics, also known as high-throughput phenotyping in plants, which strives to bridge the gap between genetic, physiological, and agronomic techniques, is to advance plant science. Finding functional genes important for sustainable agriculture is one use of omics data. The

Correspondence to: Zhao Aldenrath, Department of Food Production, University of California, California, USA, E-mail: zhaoaldenrath23@gmail.edu

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development of new crop types for sustainable farming can then be achieved by editing these genes.