

# THE WORLD FOOD DAY AIMS TO RAISE AWARENESS ON FOOD SECURITY, SUSTAINABLE AGRICULTURE AND BIODIVERSITY, IN ORDER TO ACHIEVE THE GOAL OF ZERO HUNGER BY 2030. PLANT GENETIC RESOURCES PLAY AN IMPORTANT ROLE IN THIS CONTEXT. WHICH, DO YOU THINK, ARE THE BEST WAYS TO BRING THESE RESOURCES TO FULL FRUITION BY BREEDERS AND FARMERS?



**Dr Kent Nnadozie**

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“Our actions are our future”

#ZeroHunger is at the heart of FAO's mandate. After a period of decline, world hunger is, unfortunately, on the rise again. Today, over 820 million people are suffering chronic undernourishment, according to the latest FAO 2018 State of Food Security and Nutrition in the World (SOFI) report. We must all work together to ensure that everyone, everywhere has access to the safe, healthy and nutritious food they need to lead active and healthy lives. Plant genetic resources are essential for life on earth, and comprise the basic building blocks for all our food and agriculture. No country is self-sufficient when it comes to the plant genetic resources (PGR) that form the basic building blocks for the world's food basket. Plant genetic resources are essentially the seeds and planting material that the world relies upon to produce food. This means it is critical for us to share the world's natural resources, including plant genetic resources for food and agriculture (PGRFA).

The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA, or International Treaty), hosted and administered by FAO, provides the international framework to achieve these objectives as we work to ensure equity and food security for all. The International Treaty aims to ensure that the wealth of the world's food crop diversity in conserved, shared and sustainably used so that farmers can continue to grow the food needed to feed our growing world population. In the absence of active human management, most crop varieties would cease to exist; therefore, conserving and boosting crop biodiversity is critical for food security, now and in the future. The International Treaty provides a global solution to the challenges of crop diversity loss and climate change adaptation through global mechanisms, notably through:

- a Multilateral System of Access and Benefit-sharing, encouraging sustainable use of the world's plant genetic material for food and agriculture (PGRFA);
- sharing information through its Global Information System, which contains the information plant breeders and scientists need to utilize PGRFA available around the world; and
- ensuring the fair and equitable sharing of benefits arising out of the use of PGRFA through mechanisms such as the Benefit-sharing Fund, which supports agricultural projects dealing with PGRFA in developing countries.

The International Treaty's Multilateral System currently contains over 2.1 million samples of the world's most vital crops, which are available to farmers, plant breeders and researchers as they grow the right food crops in various environmental conditions. To date, 4.3 million transfers of such material have taken place through the Multilateral System, allowing breeders, farmers and scientists to access the plant genetic resources needed to ensure the growth of essential food crops around the world. Currently, there are 144 Contracting Parties to the International Treaty, all of whom can access the plant genetic material they need to find solutions to their unique situations.

Our actions today will determine our world's future. It is, therefore, crucial that we work together to conserve our precious plant genetic resources and work towards a world with #ZeroHunger.

One of the main constrains for using plant genetic resources is the lack of accessibility to useful databases. There are many databases of plant genetic resources, but in most cases the information is scattered in different places which present the information in many different ways. One important advance in this matter has been the establishment of Genesys, the global portal to information about plant genetic resources. Genesys holds data about almost four million accessions, including passport and, to a lesser extent, characterization data. It provides access to about one third of the accessions estimated to be held worldwide. However, in spite of this effort, a high quantity of accessions is not represented in this database and a huge amount of data about the included accessions is missing. The effort at world level for increasing the visibility of the stored germplasm is by far the most important challenge on the way to an increased use of plant genetic resources.

On the other hand, The Nagoya Protocol aims to preserve the equitable benefit sharing arising from the use of genetic resources, but, in order to turn it into an efficient tool, significant efforts have still to be made regarding its implementation. So far, it is not implemented in many countries and this leads to the underutilization of plant genetic resources. It is necessary to join efforts to get an efficient and equitable benefit sharing.



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“ Combatting hunger starts with providing small-scale farmers with a reliable yield. This, in fact, can go hand in hand with addressing the challenges society is facing in the next few decades. An increasing world population requires an increase in food production with a reduction in the use of fertilizer or feed. Climate change also requires us to adapt our crops to extreme environmental conditions such as heat and drought. In order to be able to breed for the crops of tomorrow we need to learn from the genetic diversity today to define strategies to optimize crop production in the future.

Plant breeding cannot do without (novel) genetic diversity. Unlocking the diversity stored in global gene banks is a first step in identifying nature's building blocks, which we need for the crops of tomorrow. However, preserving the diversity not yet present in global gene banks is equally important to achieving our future goals as society. As food security is a global challenge, all genetic resources of food crops should be exchanged under the ITPGRFA (International treaty of plant genetic resources for food and agriculture). In order to make use of the full potential of genetic diversity of our food crops, this genetic diversity needs to be accessible to breeders worldwide under realistic conditions. Within the ITPGRFA benefit-sharing is secured and traceable. Unfortunately, still not all of our food crops are listed in Annex 1 of the ITPGRFA such as pepper and tomato. This is potentially hampering the effective future use of genetic resources of those food crops, which are currently (or not yet) present in global gene banks for breeders and farmers.

Biodiversity holds the key to food and nutrition security. Farmers worldwide are relying on plant genetic resources (PGR) to grow crops which are adapted to local conditions and meet the diverse needs of consumers. Breeders have been using genes from traditional varieties and crop wild relatives to develop today's modern, high yielding varieties. Still, the potential of PGR is not sufficiently used and current farming modes increasingly rely on a limited number of species: 90% of our calorie supply originates from just 15 crops out of potentially 50,000 edible plants.

This trend is partly attributed to a lack of incentives for farmers to diversify production and have a more active role in the management of genetic resources (GenRes). Increased efforts are needed to demonstrate the benefits of diversity in agroecosystems, notably in terms of stability and resilience. This implies that farmers are rewarded for implementing practices which support agrobiodiversity. Furthermore, effective partnerships are needed between the conservation, research, farming and breeding sectors to mobilize in-situ genetic resources and speed up the development of locally adapted varieties. Successful examples can serve as multipliers for new approaches to GenRes management and use. The European Innovation Partnership EIP AGRI can play an important role in promoting good examples and catalysing cooperation across different sectors to increase awareness about GenRes at regional and European level.



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