Introduction to the State of the Art Report on Quinoa around the World

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Why write a report on the state of the art of quinoa in the world in 2013?

In 2013, the United Nations declared the International Year of Quinoa. It gave global priority to quinoa, fostering expectations and highlighting challenges. The scientific studies and articles compiled herein describe with precision the potential contribution of quinoa and its limitations with regard to its cultivation, and promote its consumption in different parts of the world.

The state of the world's quinoa tracks the "footsteps" of quinoa to determine current sectorial trends in 2013 for this exceptional crop which, due to its nutritional qualities, its diversity and its resistance to drought and cold, has been identified as an important alternative to contribute to global food security, especially in areas where the population has no access to adequate sources of protein, or where there are environmental constraints to food crop production.

In this context, the main aim of the **State of the Art Report on Quinoa around the World** is to bring together, within a single document, up-to-date technical and scientific data on growing quinoa so as to encourage the dissemination of this knowledge, promote dialogue and debate amongst partners in the development of quinoa worldwide, and generate new expectations for the crop around the world, in view of its contributions to food security and the family farming economy and also considering the inherent risks of uncontrolled expansion. Special emphasis is given to the need to regulate the use of plant genetic resources, sustainability of agricultural systems and the fair and equitable distribution of benefits from using quinoa outside the Andean region.

This book is divided into six sections comprising currently available data on the various topics of interest related to growing quinoa around the world.

In Section 1, aspects of "Botanics, Domestication and Exchanges of Genetic Resources" are presented. Quinoa (*Chenopodium quinoa* Willd.) is an annual plant with a wide diversity of cultivars and varieties. It is among the species domesticated around Lake Titicaca, between Peru and Bolivia, a location considered to be the birthplace of quinoa and where the greatest diversity of species is conserved *in situ*, together with its wild relatives. An analysis of the current state of conservation of the genetic resources of quinoa allows us to then understand the importance of having instruments to regulate the circulation of these plant genetic resources according to their usage.

In Section 2, the "Agronomic and Ecological Aspects" are addressed to understand the requirements for the development of quinoa crops, with particular attention to quinoa's tolerance to salinity or drought. The chapter on "Plant Breeding" provides a historical overview of the development of modern varieties of quinoa.

In Section 3, we examine the "Nutritional and Technical Aspects". After harvesting, saponin must be removed before human consumption. Several chapters in this section address the high nutritional value of quinoa in human and animal diets, considering the grain's gluten-free benefits for coeliac persons and the emerging outlook for nutraceuticals.

In Section 4, "Social and Economic Aspects", we address the importance of quinoa worldwide, both from an economic perspective and in terms of the relationships between countries. Nevertheless, since quinoa is a staple food before being an export product for Andean communities, the chapter on "Marketing Diversity" presents the different ways in which groups of producers in Andean countries approach the market. This allows us to understand the logic and strength of small-scale farmer associations regarding quinoa.

In Section 5, the various chapters present updated data on "Quinoa Crops in Andean Countries": Bolivia, Peru, Ecuador, Chile and Argentina.

Section 6 addresses "Experimentation and Current Distribution" of quinoa in new producer countries. We examine the adaptation of quinoa in Mediterranean countries in Europe, its introduction in Asia based on the analysis of the case of India and Pakistan, its experimentation in Africa, the United States of America and Brazil.

The conclusion presents global outlooks in view of the geography and geopolitics of quinoa in an international setting, global challenges, and the role of quinoa in achieving the goal of zero hunger.