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"Bridging the gap between increasing knowledge and decreasing resources"

Studying Quinoa *Chenopodium quinoa* Willd Adaptability from Tropical to Temperate Conditions

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Abstract

The low diversity in cultivated crop species has been considered a potential treat to food security. The homogeneity of the used crops in the human diet affects human health by increasing high-energy and low-nutrients diets ignoring an adequate nutritional diversity and also producing genetic erosion in crops. Quinoa (*Chenopodium quinoa* Willd) is an important andean crop that can increase the food and nutritional security due to its healthly composition and gluten absence. This alternative crop has an exceptional adaptability that could mitigate the effects of the climate change in several countries around the world. The aim of this study was to evaluate the adaptability and production of nine quinoa varieties under tropical and temperate conditions. Multi-environment trial involving were diverse sets of 9 varieties tested in 4 places under tropical (Colombia) and temperate (Czech Republic) environmental conditions using a randomised complete block design with four replicates. Yield parameters and phenological phases were evaluated. In the first phenological stage, the varieties Pasankalla, Blanca de Hualhuas, Blanca Sajama, Tunkahua, Amarilla de Marangani showed the best adaptation to both tropical and temperate conditions, while Blanca Dulce, Dark Commercial and Rosada de Huancayo had low germination rate and weak seedlings under conditions of Czech Republic. The selected varieties showed a great range of pericarp colours, flavour and grain size. Our first observations, confirm that some quinoa varieties have good adaptability to temperate conditions and the final effect on yield components will be determined.

Keywords: Adaptability, *Chenopodium quinoa*, food security, quinoa, variety

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