



Towards a sustainable future. Innovations in quinoa irrigation and fertilization management

Improve profitability and food security through the incorporation of computer tools in agronomic decision for quinoa for a wide geographic region (25%) of the total quinoa area in South America.



Argentina / Chile / Ecuador / Perú

Sustainable management of irrigation and fertilization in quinoa

Initiative

The project aim is to generate and transfer a Latin American online tool for agronomic management of quinoa to optimize strategies for choosing cultivars, sowing dates, irrigation and fertilization in the Andean region of Peru and south-central Chile based on knowledge about its ecophysiology. The objectives are i) Generate an online model for the development of quinoa crop CRONOS-QUINOA (<http://cronos.agro.uba.ar>), ii)

Determine yield and water consumption scenarios in potential and dryland conditions using the AQUACROP model (<http://www.fao.org/aquacrop>), iii) Generate an online nitrogen fertilization calculator and iv) Transfer and disseminate the results of the project to farmers, consultant and students linked to quinoa crop in the study regions.

Digital and accessible tools based on crop ecophysiology for agronomic decision in quinoa

Tech solution

Optimization of decision on water management and fertility, based on knowledge about quinoa ecophysiology and information of climate and soils, providing accessible tools to farmers and technicians such

as simulation models (CRONOS-QUINOA, AQUACROP and online calculator nitrogen fertilization) of free access calibrated for quinoa in those environments plus technical manuals.

Results achieved in the sustainable management of quinoa

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Carolina Lizana"

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Impacts and Results

This project proposes to reduce the gaps in yield associated with inadequate management of irrigation and fertilization in quinoa. To achieve this purpose, the generation of knowledge will be combined with the development of free access computer tools for farmers, technicians and agricultural professionals. In this way, the environmental impact will be reduced, for example that associated with inadequate or excessive use of irrigation or nitrogen. By increasing yields for a

greater efficiency in the use of resources, it will contribute to improving the quality of life of farmers, via an increase in the profitability of their establishments. If the objectives proposed by the project are achieved, the average water productivity could be raised from 6 kg grain ha⁻¹ mm⁻¹ estimated for Andean environments to the upper value of this efficiency (13.3 kg grain ha⁻¹ mm⁻¹). This would imply a doubling of yields for a determined level of water availability.

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