

Sustainable management of irrigation and fertilization in quinoa

ARGENTINA, CHILE, ECUADOR, PERÚ



 Webstory



Technological solution

The technological solution consists of three open-access digital tools—Cronos-Quinoa, Aquacrop-Quinoa, and a fertilization calculator—to optimize genotypes, sowing dates, water use, and nitrogen requirements in quinoa production.



Technological description

Three tools will be created for quinoa management via the calibration of simulation models: 1) the Cronos-quinoa model, to establish the best combinations of genotypes and sowing dates in each cropping environment, 2) the Aquacrop-quinoa model, to benchmark yield responses to water availability, and 3) a Fertilization Calculator, to estimate nitrogen demand under each water availability scenario. Farmers, agronomist, technicians and students related to quinoa cultivation will be trained in the use of these tools, which will be made freely available through the web pages of the institutions involved in this proposal.



Impacts and results

We expect to reach water-limited yield boundaries through improvements in irrigation and fertilization techniques. Knowledge generated will be combined with the development of online tools freely accesible by farmers, technicians and researchers in the agricultural field. The environmental impact of agriculture arising from the inadequate or excessive use of water and nitrogen will also be reduced. The yield increase linked to more efficient resource use will improve profits and farmers' quality of life.