

ICBA research paves the way to fast-tracking quinoa breeding

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Quinoa breeders now have the genetic information about the crop which will help them develop high-yielding, early-maturing quinoa varieties which are not bitter in record time.

In a study published in Scientific Reports, scientists from the International Center for Biosaline Agriculture (ICBA) identified specific segments of DNA that are associated with different traits, such as days to flowering, seed weight, and saponin content. By marking those segments, breeders can fast-track their programs and develop tailored quinoa varieties with desired traits.

Quinoa has garnered global attention for its adaptability to marginal environments and its exceptional nutritional quality. ICBA has long recognized the significance of quinoa within agricultural systems, particularly since it can survive in water which is up to a third as salty as seawater.

If quinoa is to be economically viable on a global scale and if farmers are going to adopt it, breeders will need to develop varieties with the traits that farmers desire. These include shortening the time from sowing to harvest, decreasing the bitter taste and improving its water efficiency.

Large-scale breeding of quinoa can be quite challenging and time-consuming, in part due to the plant's small flowers and the complexity of its reproductive methods. ICBA scientists endeavoured to add more tools to the breeders' toolbox so they can significantly reduce the time and complexity required to breed improved varieties.

To conduct the study, researchers needed access to diverse quinoa germplasm. They selected 201 accessions from the 1,000 accessions safeguarded in ICBA's genebank. They sowed these seeds and then recorded the observable characteristics of each plant in the field, such as days to 50 per cent flowering, plant height, saponin content, and seed yield.