



Using potato's wild relatives to increase genetic diversity within crops

Uso de parientes silvestres de la papa para aumentar la diversidad genética dentro de los cultivos

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Crops are products of artificial evolutionary processes, which results from the genotype manipulation of plants with some nutritional or economic value for human¹. As a result, genetic variability is lost over the time, and features such as flower and seed production, and also defense mechanisms are also lost². Although, in agriculture these characteristics may not be relevant to plant survival, the decrease in genetic variability leads to diseases, null stress tolerance and reduced nutritional value. Becoming a concern for farmers and leading us to the question: What can we do to conserve genetic diversity within crops?

One of the most widely used ways to increase genetic variability is to hybridize cultivated species with their wild relatives. In potato's (*Solanum tuberosum*) case, there are approximately 110 wild relatives, 34 of which are native to Bolivia and 21 are endemic³. There are also 12 species records with some risk category⁴. These species are not edible, but are resistant to pests like fungus *Phytophthora infestans* and the nematode *Globodera pallida*⁴, similarly, these wild potatoes are resistant to drought and have the ability to grow in poor and stony soils⁴.

Potato research focuses on increasing and maintaining the size and quality of tubers, while enhancing other characteristics (resistance to pests, diseases and abiotic conditions). For example, hybridization tests between *Solanum berthaultii* and *Solanum microdontum* were found to maintain the agronomic quality in the product with a reduced tuber size⁵. Likewise, experiments were conducted with *S. albornozii*, *S. andreanum*, *S. lesteri*, *S. longiconicum*, *S. morelliforme*, *S. stenophyllidium*, *S. mochiquense*, *S. cajamarquense*, and *S. huancabambense* to improve the resistance to the fungus *P. infestans*⁶. But in Bolivia, what is the research status of potato wild relatives?

As one of the potato origin centers, Bolivia has a great diversity of cultivable varieties⁷. It is known at least 500 varieties used for consumption and added to the diversity of wild relatives, we have more than 600 species of the genus *Solanum* that produce tubers. Becoming Bolivia an important country for the conservation of the genetic diversity of potato crops. Unfortunately, few experimental studies on the subject are conducted in Bolivia, and most research is descriptive of morphology, ecology, and usage of potato wild relatives. This leaves us with important information gaps that would help in the improvement.

Conflicts of interest


This publication has no conflicts of interest with any public or private entity

Ethical considerations

For the presentation of this document, previously published bibliographic material was consulted.

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