

Potato Farmers in the Andean Mountains Depend on Fungicides

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In Northern and Central Andean countries (Peru, Colombia, Bolivia, Ecuador, and Venezuela), potatoes are grown by thousands of small farmers on the slopes of the inter-mountain valleys. Potatoes play a large part in the diet of people in the Andean countries with annual consumption of 100-200 kilograms per person. Lake Titicaca, which is partly in Peru and partly in Bolivia, is regarded as the center of origin of the potato plant. The biggest biological constraint to potato production in the Andes is the disease late blight, caused by the fungus *Phytophthora infestans*. The fungus can infect all the potato plants in a field in 3 days and losses can be as high as 100% [1].

Phytophthora infestans, described as being present in the Andes as long ago as 1590, is considered to have originated in the region. Late blight was the cause of the Irish potato famine in the 1840s and caused numerous losses in potato fields in Europe and the U.S. until copper fungicides were adopted in the late 1800s. Late blight was considered of little or no importance in the Andes until 1947 when it caused heavy losses [2]. In 1952, a severe blight year, untreated plots in Peru yielded only .3 tons/acre [2]. Research in Peru with copper in typical blight years (1953-54) demonstrated a 36% increase in potato yield due to treatments [2].

Since the 1950s a high proportion of Andean potato farmers have been spraying fungicides to control late blight. A recent survey of subsistence and semi-commercial smallholders in Peru found that 94.5% used fungicides as their principal method of controlling late blight with an average of 6.6 sprays per season [3]. With weather conducive to late blight and highly susceptible cultivars, Andean farmers may spray 18 times [4]. National institutions, which are dedicated to seed production, use between 11 and 16 fungicide applications to achieve a good tuber-seed production [1]. Synthetic chemical fungicides have supplanted copper to control late blight due to their increased effectiveness and improved crop safety. A recent experiment in Venezuela with 7-8 chemical fungicide sprays showed an increase in potato yields of 63% as a result of late blight control [5].

Numerous potato cultivars with partial resistance to late blight infections have been introduced for Andean farmers. However, none are widely planted because they are not accepted by consumers [6].

References

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Andean potato farmers



Potato leaves with late blight; Fungicide treatment on right



Peruvian farmer with late blight-damaged potatoes