



INSECT RESISTANT POTATOES: SOUTH AFRICA

POTATOES IN SOUTH AFRICA

South Africa, for several reasons, can benefit from transgenic potatoes having resistance to certain pests.

- Potato is an important cash and subsistence crop in Africa, which produces 11.5 million tons of potatoes annually, 15% of which comes from S. Africa.
- The potato tuber moth (PTM) is one of the three most serious potato pests in the world and in South Africa, causing losses of 30% or more in the field and in storage.
- Confined field trials of transgenic potatoes in S. Africa demonstrate 100% resistance to the target pests, but otherwise are just like conventional potatoes.

BIOTECHNOLOGY

On the commercial scale, farmers use insecticides to control tuber moth and other pests. Smallholder farmers, however, generally do not have access to costly insecticides and subsequently suffer losses to the PTM in the field, and particularly in storage where small farmers may lose 100% of their crop due to pests and inadequate storage facilities. An environmentally safe protein that is toxic to the PTM and derived from naturally occurring bacteria (Bt) has been introduced into potatoes to benefit resource poor farmers in South Africa.



PTM Infested Potatoes

REGIONAL IMPACT

Although potentially useful for all potato farmers, PTM resistant Bt potato will be particularly beneficial for the smallholder farmer. Because potatoes are the most balanced source of minerals and vitamins of the world's main staple crops, they are an important food for subsistence farmers in the developing world where 35% of the world's potatoes are produced. Coupled with prohibitively expensive inputs for small holder farmers and a lack of naturally occurring PTM resistant potato varieties, the Bt potato will be an important crop for smallholder farmers. The crop would be especially useful in the Western Cape region of South Africa where farmers spend twice as much to control tuber moth infestation than in the rest of South Africa.



PTM Resistant Bt Potato

PROJECT STATUS

Potatoes have been field tested for multiple years in South Africa and shown to be highly effective for PTM resistance both in the field and in storage. Comprehensive safety tests demonstrate that the Bt potato is safe for humans and animals to eat and its cultivation will not have any negative environmental impacts. The Bt potato is currently awaiting regulatory approval by the South African government. After approval for environmental release is obtained, the new varieties can then be evaluated in farmer-participatory field trials. South African farmers and consumers have already shown a willingness to embrace biotechnology (cotton, maize, and soybean) resulting in improved yield or reduced cost; however, the Bt Potato would be the first publicly-funded bioengineered crop to be released in Africa.

USAID Partner Organizations: Michigan State University (MSU), Agricultural Research Council (S. Africa), AgBios (USA), Crop Technology Consulting (USA)