

Biotech breeding project looks to knock out late blight

Potato versus fungus; fungus wins – TKO. *Phytophthora infestans* is an aggressive foe wiping out entire potato crops each season. The fight against late blight globally is an expensive one, and its purse is hefty, with stakeholders losing billions of dollars each year.

Forgoing the financial cost, it is perhaps the value of the potato as a food source that places the bout against late blight in the center ring. Food production will need to increase to meet the demand to feed our growing world. Potatoes can be a real contender in meeting this increased food need.

Realizing the need to jab at the late blight problem, the Feed the Future Biotechnology Potato Partnership has stepped into the ring with the development of a 3 R-gene (R = resistance gene) late blight resistant potato. The potato contains the insertion of late blight resistant *Rpi-blb2*, *Rpi-vnt1*, and *Rpi-mcq1* genes from wild potato varieties. Confined field trials conducted at MSU in 2017 show that potato lines with the 3-R gene construct provided much greater resistance to late blight over earlier developed lines with a single resistant gene.

Potato farmer in Bangladesh



Bringing resistance genes to market

“The expectation of the project is to commercialize and bring to market the 3-R gene potato in farmer-preferred varieties, to small-holder farmers in Bangladesh and Indonesia where light blight is difficult to control and can lead to severe crop loss,” says Dave Douches, Project Director and Director of the Potato Breeding and Genetics Program at Michigan State University (MSU).

The biotech potato, developed by Simplot Plant Sciences, is nearing field testing. Douches says, “after 20 years of breeding and genetics research to develop late blight resistant potato varieties it’s exciting to be so close to seeing a potato with durable resistance perform in the field.”

Environmental benefits

The GMO potato is expected to provide environmental benefits as well. During the project’s launching in Bangladesh last December, Bangladesh Agriculture Minister Matia Chowdhury told the group that in addition to the farmers spending large amounts of money on fungicides to combat late blight, “the fungicides cause air and environment pollution and increase risk to farmers health. But the GM potato could be the ultimate solution of these health hazards.”

The Feed the Future Biotechnology Potato Partnership is a five-year \$5.8 million USAID project between MSU and partners University of Minnesota, University of Idaho, J.R. Simplot Company and institutional partners in Bangladesh and Indonesia. For more information visit www.biotechpp.msu.edu

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