



## Late Blight Devastates Potato Crops in Northern Bangladesh; 3R Gene Disease Resistant Potato Offers Solutions

Many potato farmers across the Northern divisions of Bangladesh experienced catastrophic crop loss due to a severe outbreak of late blight disease during the 2017 growing season. Dense fog, limited sunlight and cold temperatures were to blame for the unprecedented spread of the water mold, *Phytophthora infestans*.

Late blight is common in Bangladesh; however, the 2017 outbreak was especially difficult to control. Increased fungicide spraying skyrocketed grower costs and lower than projected crop production worried many farmers for whom potato provide their only source of income.

Bangladesh's districts of Debigonj, Rangpur and Nilphamari in the Rangpur division, and Bogra district in the Rajshahi Division were hit especially hard with the disease this year. Department of Agriculture – Extension (DAE) officials have reported that approximately 2,500 hectares of potato fields in Rangpur were damaged by late blight.



*Many fields throughout northern Bangladesh have experienced large crop losses due to severe infestation of Late Blight disease.*



*Late Blight can infect and destroy leaves, stems and tubers of the plant.*

Thick fog also affected other crops including beans, eggplant and cabbages. According to Prothom Alo, the leading Daily newspaper in Bangladesh, the price of beans doubled in

wholesale markets in early January. Beans that were selling for 25-30 Tk a kg jumped to 60-70 Tk a kg. The Consumers' Association of Bangladesh (CAB) has reported that the price of vegetables increased 24% in the past year. The fog, in addition to contributing to fungal diseases, also creates transportation issues thus disrupting the supply chain which also impacts retail prices.

The Feed the Future Biotechnology Potato Partnership aims to reduce the effects of late blight with the introduction of a 3R gene disease resistant potato. The potato will greatly reduce the need for costly fungicide spraying and lessen the exposure of the chemicals to the community and environment.

Dr. Abul Kalam Azad, Director General of Bangladesh Agricultural Research Institute that serves as the project implementing partner noted at the recent project launch, "The launch of the 3R-gene potato variety would save almost 25-28% production cost which is being spent by the farmers for protecting the potato crop from the devastating late blight fungal disease." This savings comes primarily from the reduced need to spray costly fungicides.

Agriculture Minister Chowdhury told the launch group that in addition to the farmers spending large amounts of money 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."

Chowdhury has been a proponent of GM crops and the impact they can have on the food supply for her country. New Age media quoted the Minister during her appearance at the National Food Safety Day program in Dhaka on February 2, 21018 saying, "Many people opposed my decision when I allowed the hybrid crop technology, but it is the hybrid technology that ensures enough food for our people right now." Bangladesh approved BT Brinjal seeds in 2014 and the crop is currently planted by over 6,000 small holder farmers.

The Feed the Future Biotechnology Potato Partnership, an USAID funded project, is managed by Michigan State University, along with partners the University of Minnesota, University of Idaho and Idaho-based J.R. Simplot Company. The project also consists of two in-country institutional partnerships, one in Bangladesh and one in Indonesia. The Partnership will develop and bring to market a three R (resistance)-gene potato containing the Rpi-blb2, the Rpi-vnt1, and the Rpi-mcq1 genes. This combination of 3 R-genes from potato species will provide a strong and durable resistance to many strains of *P. infestans*, the late blight disease causing organism.

The project's social impact goals are to increase partner countries food security, reduce malnutrition and improve health, reduce the use of harmful fungicides, reduce pre- and post-harvest losses and improve the social and economic standing of small-holder farmers. In addition, the project works to develop institutional capacity in partner institutions and their respective governments, develop biosafety operating procedures and stewardship, meet regulatory requirements to ensure safety for human health and the environment, and communicate to the public and stakeholders the benefits of the late blight resistant potato.

For more information on the Feed the Future Biotechnology Potato Partnership please visit <http://www.canr.msu.edu/biotechpp/>.



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