

techman / April 18, 2011 08:51AM

[\[International Engagement\]\[Food Security\] Sweet Pepper Gene Technology Pioneered by Academia Sinica Seen as Best Solution to Uganda's Banana Crop Crisis](#)

[International Engagement][Food Security] Sweet Pepper Gene Technology Pioneered by Academia Sinica Seen as Best Solution to Uganda's Banana Crop Crisis ([Chinese Version](#))

Academia Sinica Newsletter (2011/04/15) Gene technology pioneered by Dr. Teng-Yung FENG, emeritus faculty member of the Institute of Plant and Microbial Biology (IPMB), Academia Sinica, is seen by scientists in Uganda as the most feasible solution to a banana-wilt disease ravaging Uganda's banana crops. Using technology licensed to the African Agricultural Technology Foundation (AATF) by Academia Sinica, development of wilt-resistant bananas has now progressed to the confined field-crop testing stage and is showing promise.

Bananas are the staple food of Uganda and are the country's second largest cash-crop after coffee. However, in recent years, a devastating bacterial disease has spread across the nation destroying an estimated 30% of the nation's annual banana crop. The disease is endangering the livelihoods of the nation's farmers, 75% of whom grow bananas, and threatening an important food source in one of the poorest nations in the world. The disease, named *Xanthomonas* wilt (BXW), can wipe out a whole plantation in a year, destroying bananas and contaminating the soil. BXW was originally found in Ethiopia, but in 2001 it was detected in Uganda from where it rapidly spread across the whole region into Democratic Republic of Congo, Rwanda, Kenya, Tanzania and Burundi. Damaged caused by BXW is now estimated to cost farmers in the region half a million US dollars per year.

In 2001 Dr. FENG and his colleagues at the IPMB found that a gene isolated from the sweet pepper plant could protect plants from BXW. The gene produces a protein called Hypersensitive Response Assisting Protein (HRAP). They transplanted and tested the gene in several plants, including potatoes, tomatoes and rice and published their results in the journal *Plant Molecular Biology* and several other journals. In 2006, Academia Sinica gave the HRAP gene and another anti-bacteria gene Plant Ferredoxin-Like Protein (PFLP), royalty-free, to the African Agricultural Technology Foundation (AATF). AATF is a not-for-profit organization that promotes public/private partnerships for the access of agricultural technologies for use by smallholder farmers in Sub-Saharan Africa. AATF used the technology in the "Banana Bacterial Wilt Resistance" project in collaboration with the International Institute of Tropical Agriculture (IITA) and the Uganda National Agricultural Research System (NARS). Bananas carrying the wilt-resistant gene were successfully developed and confined field trials were started in October 2010.

Related websites:

<http://www.aatf-africa.org/>

[http://ipmb.sinica.edu.tw/faculty\\_show\\_e\\_2.php?sid=18&catid=7](http://ipmb.sinica.edu.tw/faculty_show_e_2.php?sid=18&catid=7)

[http://articles.cnn.com/2011-03-22/world/uganda.banana.gm\\_1\\_banana-harvest-banana-plant-gm-crops?\\_s=PM:WORLD](http://articles.cnn.com/2011-03-22/world/uganda.banana.gm_1_banana-harvest-banana-plant-gm-crops?_s=PM:WORLD)

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Further Information:

[Academia Sinica Newsletter 2011/04/15](#)

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[National Science Council International Cooperation Sci-Tech Newsbrief](#)

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Edited 3 time(s). Last edit at 04/18/2011 09:00AM by techman.

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