



VIRUS RESISTANT CASSAVA: EAST AFRICA

THE BEAUTY OF CASSAVA

Cassava is the primary source of calories for more than one-third of people living in sub-Saharan Africa and could also propel local economic growth through industrial usages. Cassava is an excellent source of carbohydrate and offers flexibility in harvesting because it can be harvested when needed over more than two years. Because it can tolerate drought and can grow in low-nutrient soils, cassava has the ability to grow on marginal land where cereals and other crops do not grow well. For these reasons, African people whom depend on subsistence agriculture eat between 200 and 400 kg of cassava per year.



Danforth Plant Science Center

Farmer inspects Cassava Plant

BIOTECHNOLOGY

In the early 1990s, an aggressive form of cassava mosaic disease (CMD) struck East African cassava crops and decimated more than 90% of the crop in Uganda. The resulting cassava shortage combined with African's nutritional dependence on the crop created food shortages and famine in Uganda. Recently another viral disease called cassava brown streak disease (CBSD) exploded on cassava in East Africa completely decimating the cassava harvest. In response, genetic engineers and breeders increased their effort to develop virus resistant cassava crops. Two such solutions are being developed to prevent replication of the virus in the plant. One method uses RNA interference (RNAi) which prevents specific genes from creating proteins while another generates a beneficial protein coating the viral DNA.



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Cassava Roots

REGIONAL IMPACT

In Uganda, for instance, CMD has destroyed 250,000 hectares of cassava since the early 90's and has resulted in estimated annual loss of US\$60M. In the Lake Victoria area, more than seven million people are at risk of famine because of CBSD threats. Adopting a virus resistant cassava plant can increase yields by 100% with no change in production

costs or quality. Assuming 50% of cassava growers adopt this new crop, Uganda, Kenya, and Malawi can realize aggregate benefits of US\$99M, US\$10M, and US\$23M, respectively, over 14 years.

PROJECT STATUS

Researchers at the Danforth Plant Science Center and partner institutions in Kenya and Uganda are developing resistant cassava lines. The first field trial was planted in Uganda with the cooperation of the Uganda National Agricultural Research Organization (NARO) in late 2009 and several additional field trials are planned for Uganda and Kenya.

USAID Partner Organizations: Donald Danforth Plant Sciences Center (USA), Kenya Agricultural Research Institute (KARI), National Agricultural Research Organization (NARO, Uganda)