Online journal ISSN - 1676-5680
GMR Genetics and Molecular Research
EVOLUTION AND TECHNOLOGY

Letter to the Editor

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I wish to comment on what was published online in the Science and Development Network (2005) on modifying cassava (an important food crop for all of the tropics, especially Africa) by introducing a segment of mosaic virus DNA into cassava plant cells in order to obtain cassava lines resistant to this virus.

It is not true that a productive type of cassava can be produced in this way, because the modified plant will lack fitness (ability to survive under natural conditions). It is also not true that the only way to control cassava mosaic virus is to use a massive quantity of insecticides to combat the whitefly. Strong and effective resistance to this virus was found in the 1920s in a wild relative of cassava, *Manihot glaziovii*, a species native to Ceará, in the northeast of Brazil. Storey and Nichols (1938), two English scientists working in Tanzania, at that time called Tanganika, discovered this resistance. They successfully transferred this gene from the wild to the cultivated species, through simple interspecific hybridization. The hybrid was so productive and resistant to mosaic virus that it saved cassava cultivation throughout East Africa. It continues to be a classic example of how genetic resources in the wild can be used for crop improvement.

In the 1970s and 1980s, with support from the Canadian IDRC, a germplasm of this wild species and its interspecific hybrids were provided to the International Institute of Tropical Agriculture (IITA) in Nigeria (Nassar, 1978). It enabled IITA breeders to develop cultivars that were resistant to both cassava mosaic virus and bacterial blight (Hahn et al., 1980). This family of cultivars, called MS, is now cultivated on about four million hectares in Nigeria. These cultivars have promoted Nigeria to the foremost producer of cassava in the world, as acknowledged by Rodomiro Ortiz, the IITA director (see www.geneconserve.pro.br/iita2.gif).

Although it would be interesting to produce a molecularly transformed plant through inserting virus DNA and RNA, it is essential to observe how these plants behave in the field under natural conditions, and how they face the challenge of natural selection.

REFERENCES

Hahn SK, Howland AK and Tery ER (1980). Correlated resistance of cassava to mosaic and bacterial blight diseases. *Euphytica* 29: 305-311.

Nassar NMA (1978). Conservation of the genetic resources of cassava, *Manihot esculenta*: Determination of wild species localities. *Econ. Bot.* 32: 311-320.

Science and Development Network (2005). www.scidev.net July 15, 2005. Accessed November 12, 2005.

Storey HH and Nichols RFW (1938). Studies on the mosaic disease of cassava. *Ann. Appl. Biol.* 25: 790-806.