Technology Fact Sheet for Adaptation

BIOTECHNOLOGY- TISSUE CULTURE BANANA [i]

4. BIOTECHNOLOGY- TISSUE CULTURE BANANA	
Introduction	Biotechnology involves breeding for improved performance under environmental stresses. Biological activities do attribute to crop adaptation to climate change. Biotechnology works towards producing plants and crops that resist pests and disease damage in a number of crops. Biotechnology also addresses the issue of high yielding and early maturing crop varieties. Biotechnology also helps researchers to develop more nutritious strains of staple crops.
Technology Characteristics	Biotechnology works through transferring genes from other plant lines into the crop of interest. Superior genes can be transferred from one plant organism to another. The technology has been used in such crops as Tissue banana Culture, rice, maize and sorghum, potato soya. There have been impressive successes in terms of improved yields, pest and disease resistance with Genetically Modified organisms (GMOs) or crops.
Country Specific Applicability	The technology is currently being used in the country. For example tissue culture Banana techniques have been adapted widely in Kisii, Meru and parts of Central Province e.g Thika .Tissue Culture planting materials are found to do better than the suckers with an increased higher yield about 4 to 5 times. The cultivars used in Tissue Culture Bananas include but not limited to the following : Cavendish Group(Chinese Cavendish, Giant Carvendish, Grand Nein); Williams hybrid, Gold finger, Lacatan, Valgy and Paz.
Status of the Technology in the Country	The technology is existing . It has been piloted, tested, being disseminated and is commercially available for some crops such as bananas, maize, soya beans, cowpeas, rice, cowpeas and beans. There is even a Bio-safety Authority already established in Kenya.
Benefits to Economic/Social and Environmental Development	The molecular breeding tools used in Biotechnology have resulted into a 3 to 5 fold increase in yields e.g in maize and banana. Biotechnology has assisted farmers to address the impacts of climate change in the agricultural sector, especially the harmful effects of climate change. Leading research scientists are now calling for genetically modified crops to be extended to the people in the developing world. Some research findings in KARI do indicate that biotechnology besides contributing to higher crops yields, disease and pest resistance also has some direct bearing on improved environmental conservation. Biotechnology helps farmers to produce more nutritious crops while sustaining continued farming , Biotechnology continues to make a positive contribution in alleviating world hunger and increase agricultural productivity leading to national and global food and nutritional security in an environmentally sustainable manner. Biotechnology can be used to increase food production in the face of diminishing land and water resources.

Climate Change Adaptation Benefits	Biotechnology has led to the development of genetically modified crops that have adaptive capacities in vulnerable climatic conditions especially in drought and salt tolerance. Some of the biotechnology products showing longer- term promise for adaptation to climate change include the following: • Drought tolerant maize • Drought tolerant rice • Drought tolerant tobacco • Salt tolerant rice
Financial Requirements and Costs	US $ 232.5. The costs relate to the adoption of the technology by farmers in production of tissue culture banana excluding the cost of the research and developing of the cultivars.

[i] **This fact sheet has been extracted from TNA Report – Technology Needs Assessment Reports For Climate Change Adaptation – Kenya. You can access the complete report from the TNA project website http://tech-action.org/**