Current efforts in plant biotechnology in selected African countries (continued)

Morocco	Micro-propagation of forest trees and date palms
	Development of disease-free and stress-tolerant plants
	Molecular biology of cereals and date palms
	Molecular markers
	Field tests for transgenic tomato
Nigeria	Micro-propagation of yam, ginger, cassava, and banana
	Long-term conservation of yam, cassava, banana, and medicinal plants
	Embryo rescue for yam
	Transformation and regeneration of yam, cowpea, cassava, and banana
	Genetic engineering of cowpea for virus and insect resistance
	Marker-assisted selection of maize and cassava
	DNA fingerprinting of yam, cassava, banana, and pests and microbial pathogens
	Genome linkage maps for yam, cowpea, cassava, and banana
	Human resource development through group training, degree-related training, fellowships, and networking
Rwanda	Production of biofertilizers based on rhizobials and azolla (nitrogen-fixing bacteria) for rice cultivation
	Tissue culture of medicinal plants
	Micro-propagation of disease-free potato, banana, and cassava
Senegal	Well-established microbial resource centres serving West Africa in microbial-plant interaction
	Production of biofertilizers based on rhizobials and mycorhizals (mycorhize fungi) for rural markets
	Well-established in vitro propagation of ana tree (*Faidherbia albida*), gum tree (*Eucalyptus Canaldulensis*), sesbania (*Sesbania rostrate)*, and Senegal gum (*Acacia Senegal*), in cooperation with several international agencies
South Africa	*Genetic engineering*
	Cereals and seeds (maize, wheat, barley, sorghum, millet, soybean, lupins, sunflowers)
	Sugarcane
	Vegetables and ornamentals (potato, tomato, cassava, cucurbits, sweet potato, ornamental bulbs)
	Fruits (peaches, apples, bananas, apricots, strawberries, table grapes)
	Molecular marker applications
	Diagnostics for pathogen detection
	Cultivar identification (potatoes, sweet potato, ornamentals, cereals, cassava)
	Seed-lot purity testing (cereals)
	Marker-assisted selection in maize and tomato
	Markers for disease resistance in wheat and forestry crops

Current efforts in plant biotechnology in selected African countries (continued)

South Africa *(continued)*	*Tissue culture*
	Production of disease-free plants (potato, sweet potato, cassava, dry beans, banana, ornamental bulbs)
	Micro-propagation of coffee, banana, potato, avocado, blueberry, strawberry, chrysanthemum, date palm, rose rootstocks, apple rootstocks, ornamental bulbs, and endangered species
	Embryo rescue of sunflowers, table grapes, and dry beans
	In vitro selection for disease resistance (tomato nematodes, guava wilting disease)
	Long-term storage (cassava, potato, sweet potato, ornamental bulbs)
	In vitro gene bank collections (cassava, potato, sweet potato, ornamentals)
	Forest trees, medicinal plants, indigenous ornamental plants
Tunisia	Abiotic stress tolerance and disease resistance
	Genetic engineering of potatoes
	Tissue culture of citrus, date palms, and prunus rootstocks
	DNA markers for disease resistance
Uganda	Micro-propagation of coffee, citrus, banana, cassava, granadella, pineapple, and sweet potato and potato
	In vitro screening for disease resistance in banana
	Production of disease-free banana, potato, and sweet potato plants
Zimbabwe	Genetic engineering of maize, sorghum, and tobacco
	Micro-propagation of coffee, potato, cassava, tobacco, sweet potato, and ornamental plants
	Marker-assisted selection
Zambia	Micro-propagation of trees (*Uapaca*), cassava, potato, and banana
	Hosting Nordic-funded gene bank for the Southern African Development Community

Source: *Adapted from Brink, Woodward, and DaSilva 1998.*

Notes

1. For example, Friends of the Earth is calling for a moratorium on the production and use of GM foods until their safety can be guaranteed (Jonquires 1999). Greenpeace is demanding a prior agreement between countries before international trade in GM foods takes place. Countries or trading blocs try to ban or otherwise prevent the importation of such foods either by treaty or unilaterally (DeGregori 2000; Srinivasan and Thirtle 2000a).

2. There is an increasing tendency in many industrial countries towards labelling GMOs. In January 2000 the governments of Australia and New Zealand announced that they would require labelling of GM foods. In Japan new labelling requirements in force since April 2001 have already compelled food processors to reject GM ingredients, prima-

rily maize and soybeans, rather than pay for labelling and risk consumer disfavour. Negative public perceptions of GMOs are most pronounced in the European Union, where the labelling of GM additives and flavourings has been compulsory since April 2000 under European Commission Regulation No. 50/2000 (Jonquires 1999; Lehmann and Pengue 2000). It is perhaps understandable that GM crops have not made inroads into Europe and Japan, where consumers are well fed, farmers are prosperous without GM crops, and green parties and anti-globalization non-governmental organizations promote a precautionary approach to food safety.

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