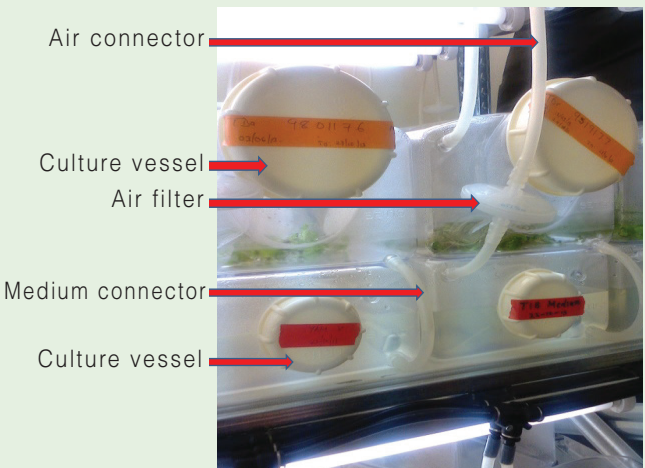




Temporary Immersion Technology

Temporary Immersion Bioreactor system (TIBs) is next generation Tissue culture technology, involving timed immersion of plant tissues in liquid medium to allow for culture aeration. Each unit is a bioreactor - an enclosed sterile environment provided with inlets and outlets for air flow under pressure. TIB technology circumvents limitations associated with conventional tissue culture. These include size of culture container (hence nutrients), insufficient aeration and abnormal leaf functioning (vitrification) which affects protein-, photo-, cellulose and lignin syntheses, high contamination and labour costs and low gas exchange. Although TIBs require interplay of plant physiology, chemical and physical sciences, growth rate is significantly enhanced therein since gas exchange is guaranteed and is applicable to numerous crops.



Yam plantlets in TIBs

Funded by the Bill and Melinda Gates Foundation, IITA's TIBs is Twin Flask type, having 1 container for the medium and the other for the cultures. It has potentials for both plantlet and yam microtuber production which will facilitate production of quality breeders' seed yams from which healthy foundation and certified seed yams will be generated. The IITA's TIBs is established with 128 units and can produce between 12,000 to 19,200 seed yams. It is programmable and remotely controlled online. It can also be used to fast-track genetic improvement through in vitro variations, selection and production of secondary metabolites. TIBs is critical for rapid evolution of formal seed systems.



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