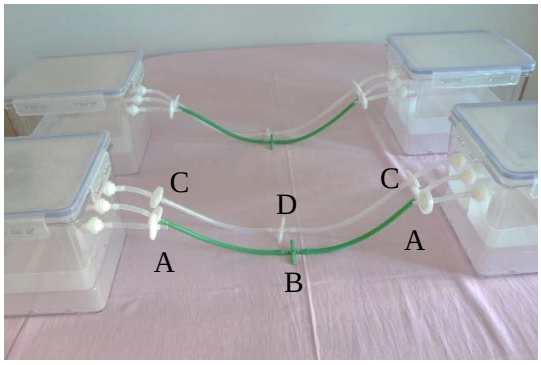
Connection and function of the bioreactors



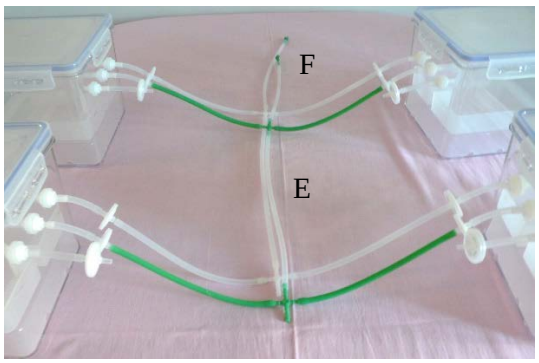


Figure 1. Green silicon tubes of equal length are placed on the middle filters (A). Attach green 4-way connectors (B) to the tubes for connection of the bioreactors. White silicon tubes of equal length are placed on the outer filters (C). Attach white 4-way connectors (D) to the tubes for connection of the bioreactors. Long silicon tubes (E) are used to connect the bioreactors horizontally. The end of the last bioreactor from the middle filter and the outer filter are attached to stoppers (F). from the middle filter and the outer filter are attached to stoppers (F).

Figure 2. The end of the tube from the middle filter of the first bioreactor is connected to a 10W pump (1) and an electronic valve (G) using two 3-way connectors. Both the pump and the electronic valve is then inserted into a 2-way splitter socket attached to a timer (1). The end of the tube from the outer filter of the first bioreactor is connected to a 5W pump (2) using a 3-way connector and then attached to timer (2). Both timers are then inserted to an extension lead.

Operation: Start pump 1 using timer 1. The electric valve is then closed and the airflow from the middle filters is pushing the nutrients from the bottom to the basket with the plant material. The nutrients will stay in the basket as long as pump 1 is on. When pump 1 is off the electric valve is open and when pump 2 is on the air is pushed out through the electric valve and the nutrients are going down. The nutrients can go down by gravity but it takes longer time. Pump 2 and timer 2 are used to aerate the bioreactors. The air is going out through the second outer filter.