Poster

Micropropagación de plantas en biorreactores de inmersión temporal (BIT)

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ABSTRACT

Micropropagation is a method to produce genetically identical plantlets (clones or also called microplants) by using tissue culture techniques. The aim of this work is to obtain a large number of potato microplants already rooted, free of pathogens and with genetic uniformity.

The optimization of this micropopagation process begins with the sterilization and stabilization of the material to be propagated, in our case potatoes. This process is carried out to eliminate any microbial contamination of the donor or parent plant and to reduce the risk of contamination during in vitro culture. First, several healthy tubers (free of apparent pathogens) will be selected, washed in water for 1 hour, internally disinfected with a solution of sodium hypochlorite and tween 20, and then rinsed with sterile water to remove the disinfectants. After that, the potato buds will be cut and placed in sterile culture medium. The in vitro culture will be carried out under controlled conditions for a period to stabilize plantlets before transplanting them to soil.

A fine-tuning process will be performed to optimize the micropropagation process from plantlets obtained from in vitro cultures. This fine-tuning process will consist of three phases:

In the first phase, it will be measured which type of cut on the node is the most optimal according to growth performance position of the node in the culture medium shall be checked, whether horizontally or inclined.

During the second phase, the yield between two of the most consumed potato varieties in Spain will be compared. During this phase, auxins and cytokinins will be added to the medium to check if there is noticeable improvement in rooting and plant growth [1]. Also, the optimal pH in the medium for potato growth will be analyzed.

A temporary immersion system will be carried out in the third phase, as it is an effective tool for micropropagation, because it increases the multiplication coefficient and improves the quality of regenerated material in vitro [2]. Therefore, during this phase, the efficiency of a robotic or automated process of temporary immersion in a bioreactor (BIT) will be compared with the manual process.

REFERENCES

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