Acclimating Plants Grown Using the Process of Micropropagation into Natural Growing Environments to Create Disease-Resistant Plants

Lloyd, Makenzi (School: Wiregrass Ranch High School)

Agriculturally speaking, the world is in desperate need of another “Green Revolution” to make up for widespread food shortages. Food security has become a global epidemic, and this is largely due to the fact that farmers simply cannot keep up with the demand for food that the current, exponentially-growing population has. A major cause of food shortages in our society today is the increasing amount of diseased plants that are being grown using traditional methods. A possible solution to this problem is implementing tissue culture methods, such as micropropagation, into our farming practices to create more disease-free plants. Unfortunately, these methods are often associated with relatively high failure rates due to plants dying at the final stage of the process: Acclimatization. This study aimed to identify whether or not the rate of acclimation of plant cultures had any effect on growth and survival. Additionally, this study tested whether or not micropropagation was more successful than traditional planting. One test group was planted traditionally, while the other four groups were planted at varying lengths of time. The height and mass of the plants were measured every two days after planting to be compared with a statistical analysis at the end of experimentation, which results yielded significant differences between trials. This led to the conclusion that the rate of acclimatization does have a significant effect on the survivability of plants. This contributes to the literature in this field by the implementation of the most effective acclimation method into the real world. Having this method be commercially applied can influence the future of agriculture and, more importantly, provide enough food for the ever-growing population of the world.

Awards Won: