Screening for Biotic and Abiotic Stress Resistant Somatic Clones From Cultivated Strawberry

CHEOL-MIN YOO, CATALINA MOYER, CHERYL DALID, VANCE M. WHITAKER, AND SEONGHEE LEE*

Gulf Coast Research and Education Center, University of Florida, IFAS, Balm, FL

Abstract

Variation in somatic clones occur naturally through the process of shoot regeneration from callus using tissue culture. This variation can be heritable by means of genetic or epigenetic changes and provides an alternative approach to conventional breeding or transgenic methods to introduce desirable important agronomic traits to the crops. Here, we report that our University of Florida, Institute of Food and Agricultural Sciences strawberry breeding program developed a protocol for shoot regeneration from callus induced either from runner segment or in vitro grown leaf tissue of octoploid strawberry as an explant. Preliminary field evaluation showed a considerable amount of phenotypic variation among the regenerants. We then selected for increased Phytophthora crown rot resistance by inoculating somatic clones of Sweet Sensation® ‘Florida 127’ and ‘Florida Radiance’. Furthermore, we screened clones from ‘Florida Radiance’ and ‘Florida Beauty’ for heat resistance. Generally, 10% of the population survived the biotic or abiotic stress. Our findings suggest that the method of somatic variation has a great potential to improve elite strawberry varieties for disease resistance and fruit quality. In this presentation, we will discuss the procedure and the results in detail.

The abstract was presented at the 2021 FSHS Annual Meeting.

*Corresponding author. Email: seonghee105@ufl.edu