

Accelerating Breeding for Pestalotia Resistance III

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Summary

The UF Strawberry Breeding Program continues to prioritize resistance to *Neopestalotiopsis* sp. The release of Ember™ ‘FL 20.80-4’ was a small step in the right direction. In the last year we gained additional insight into the genes behind resistance, and used molecular tools to increase resistance throughout the program, with a number of new selections having much greater resistance than current varieties.

Introduction

A new strain of *Pestalotia* caused by a species of *Neopestalotiopsis* has become a primary focus of the UF Strawberry Breeding Program. Current UF varieties do not have the resistance or tolerance needed to prevent plant and yield losses when plants come infected from nurseries.

The breeding program currently uses DNA technology to predict the performance of every cross and of many individuals from the seedling level for their resistance or susceptibility to *Neopestalotiopsis* sp. In this year’s report we will show the progress made to increase resistance throughout the entire breeding program as well as to refine our knowledge of the genes contributing to resistance.

Methods

The methods for this project are briefly summarized as follows:

1. We continued making crosses with strong resistance sources from with and outside the UF breeding program.

2. All varieties and advanced selections were inoculated to test for resistance throughout the whole breeding program.
3. DNA genotyping was used to predict the performance of every cross and selection for resistance and to refine knowledge about resistance genes.

Results

Inoculation of selections in the field over the last three years showed that an increasing number of selections have better resistance than current commercial varieties. Fig. 1 shows the wide distribution of results across nearly XXX advanced selections.

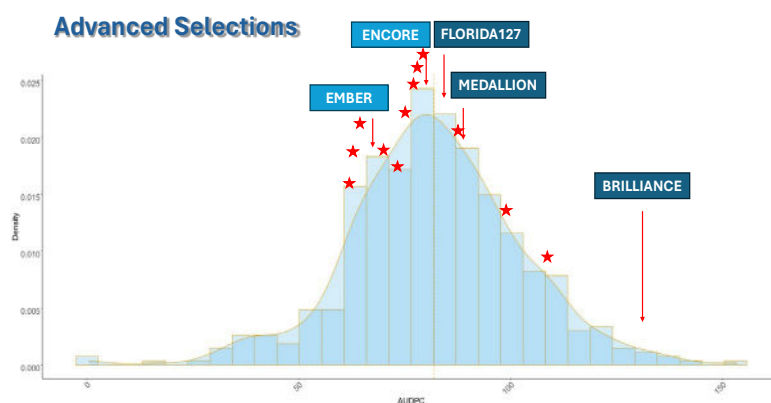


Figure 1. Distribution of resistance in the entire UF breeding population in 2024. New Stage 3 breeding selections (red stars) are compared to current released varieties (red arrows) showing a trend toward more resistance.

We also clearly identified two genes contributing to resistance that are specifically being targeted now in the program (Fig. 2).

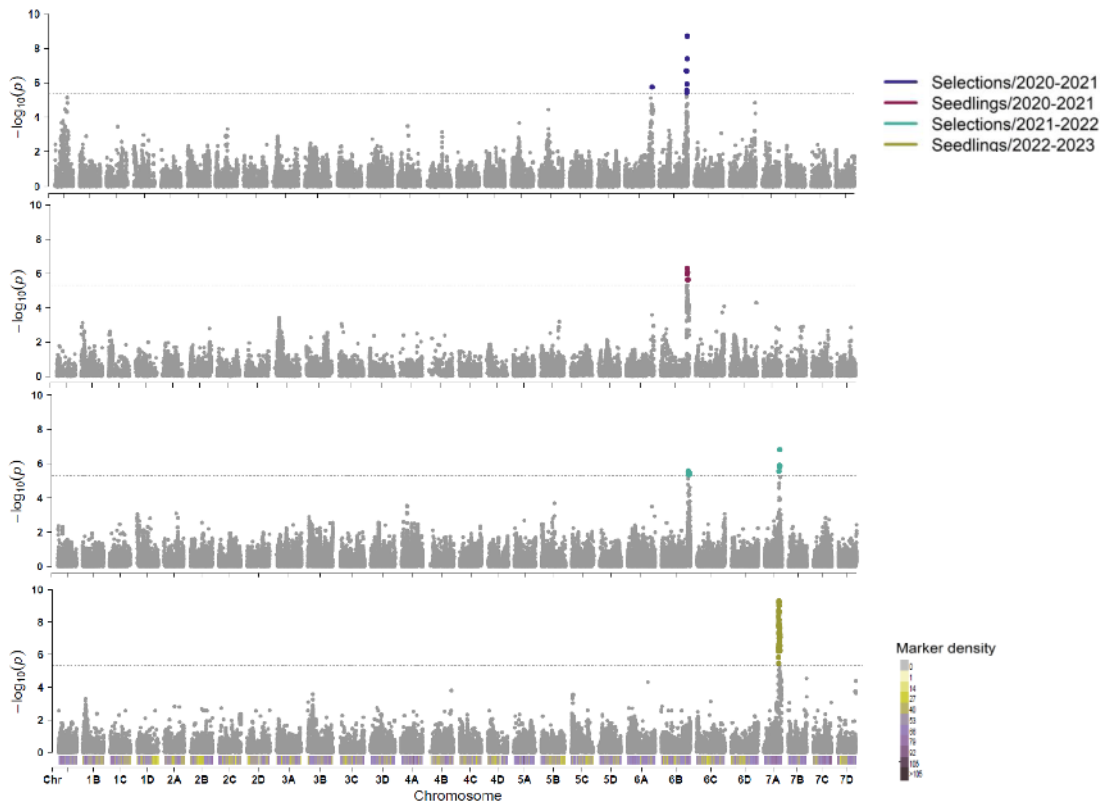


Figure 2. A GWAS analysis shows two resistance genes on chromosomes 6B and 7A in the UF strawberry breeding program.

Takeaways

This fall we will conduct replicated trials of stage 3 selections, many of which (see Fig. 1) have improved resistance beyond even that of Ember™ ‘FL 20.80-4’. If any of these have sufficient yield and quality, they can be trialed with growers as soon as Fall, 2025. Our increased knowledge of genetic resistance is helping us to breed smarter and faster for resistance.

Contact

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