Allelism Test between Crosses of High Oleic x High Oleic and Very High Oleic x Very High Oleic Peanut Genotypes.

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Crosses were made between high-oleic (HO) x HO and between very high-oleic (VHO) x VHO peanut genotypes. The HO parental genotypes were F435-OL-2 and 'Flavor Runner 458' and ranged between 20 and 40 oleic (O) to linoleic (L) fatty acid methyl ester ratio. Whereas, the VHO parental genotypes were 'Georgia Hi-O/L' and 'Georgia-11J' and consistently had O/L ratios ≥40 over three and four years, respectively at the Tifton, Georgia location when grown under maximum-input production practices with irrigation. F_1 plants from the HO x HO cross combination had an average O/L ratio of 32.7 (range 20.6-47.2); whereas the F_1 plants from the VHO x VHO crosses had an average O/L ratio of 49.9 (range 37.0-65.8). These F_1 hybrids showed some allelic mean differences between the HO x HO and VHO x VHO cross combinations, but both crosses had similar large range of differences with the VHO x VHO F_1 range shifted higher than the HO x HO F_1 range. Likewise, F_2 populations had on the average an O/L ratio of 31.0 (range 12.4-53.8) for the HO x HO cross combinations; whereas the F_2 populations had on the average an O/L ratio of 46.8 (range 25.4-63.4) for the VHO x VHO cross combination. Both crosses had a large range in O/L ratios, however the VHO x VHO cross combination had the highest average O/L ratio and the F_2 range shifted higher, as might be expected. Individual plant selections were selected within the two F_2 cross combinations for testing progeny rows in F_3 populations. F_2 plants were selected based upon < 20, 20-30, 30-40, and >40 O/L ratios. $F_{2:3}$ progeny rows varied considerably within each of these categories of O/L ratios, but the VHO xVHO had the highest O/L ratios in the 60-70 range. Thus, pedigree selections will continue to be made within these VHO x VHO cross combinations for development of even higher potential pure-line VHO peanut genotypes in the future.