Trends in Soybean Traits over Breeding Generations

Many studies on agronomic and seed traits in soybean crops have focused on trait diversity within large germplasm collections rather than regional trends. Phenotypic trait diversity and trends at a breeding program’s scale are poorly understood and scarcely reported due to the confidential nature of most soybean breeding programs, especially in the private seed sector.

In a recent article published in *Crop Science*, researchers report on trends in soybean traits over decades of breeding in two public programs at the University of Guelph in Ontario, Canada. Both seed and agronomic trait trends were assessed and trait correlations compared over time.

This research quantified 13 agronomic and seed traits within 139 pedigree-related cultivars and their historical relatives, demonstrating yield increase in the Guelph and Ridgetown programs at a rate of 17.1 and by 15.7 kg ha$^{-1}$ yr$^{-1}$, respectively. Analysis of seed trait correlations show that historical accessions had different patterns of associations compared with the modern cultivars.

Understanding trends in soybean improvement and trait relationships at a breeding program scale allows breeders to make better parental selections while gaining a more complete understanding of the impact of their selections on the phenotypic diversity within the program.


Diverse, pedigree-related modern and historical soybean cultivars are tested at the Woodstock Research Station (Woodstock, ON, Canada).