

Innovative Precision Phenotyping Solutions for Canola Breeding at Corteva Agriscience

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Canola has emerged over the last decades as an important oilseed crop with more than 70 million tons estimated to be grown annually. However, a key limitation that has persisted throughout the history of canola domestication is the need for improved resistance to shatter, which causes substantial seed and yield losses annually. Shatter resistance has therefore become a key market trait and making genetic improvements is a top priority within breeding. Initial data collection for shatter at Corteva Agriscience involved assigning a categorical score based on visual symptoms, but the approach was highly subjective and labor intensive. An initial attempt at improving shatter phenotyping then used trays placed in between plot rows for the collection and counting of shattered pods; however, this data was affected by the location of trays and the collection of intact pods. With precision phenotyping, a low-cost solution was developed to distinguish and capture amounts of shattered and intact pods with widely available technology. Results and learnings gained throughout the process of developing a phenotyping solution for shatter will be presented. This is a key example of how precision phenotyping solutions can support breeding selections and provide key data for the commercialization of new hybrids.