Selection of Soybeans Using Average Canopy Coverage

Digital imagery is used to measure early-season soybean canopy coverage, providing a cost-effective and robust way to predict and improve grain yield.

Digital imagery can help to quantify seasonal changes in desirable crop phenotypes treated as quantitative traits. Because limitations in precise and functional phenotyping restrain genetic improvement in the post-genomic era, imagery-based phenomics could become the next breakthrough to accelerate genetic gains in field crops.

Purdue University researchers have developed a selection method that helps soybean breeders and seed companies who want to increase rate of grain for yield, increase return on investment from R&D, and/or market varieties with precision metrics. Researchers used field images to measure soybean canopy development from phenological stage V2 to R5, i.e., growth stages. Variance component analysis indicated that a parameter, described as average canopy coverage, is a highly heritable trait with a promising genetic correlation with grain yield, enabling indirect selection of yield via canopy development parameters. Fast canopy coverage is an early season trait that is inexpensive to measure and has great potential for application in breeding programs focused on yield improvement.

Advantages:

-Robust, simple, and cost-effective

-Improved yield

-Measures early season traits

-Prediction of yield during early stage of R&D

Potential Applications:

-Breeding programs focused on yield improvement

-Soybean breeders

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Category

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