

# **SPEED AND UNIFORMITY OF SUGAR BEET SEED GERMINATION AND PLANT DEVELOPMENT DETERMINED BY IMAGE CAPTURE AND ANALYSIS**

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Seed priming increases yield potential primarily by causing faster and more uniform germination, which in turn supports faster and more uniform emergence and crop development. Automated germination time course analysis has allowed more precise characterisation of the impact of priming and other seed treatments. The technology finds application both in priming and coating protocol development and in commercial product quality assurance. The detailed germination time course profiles generated have been exploited to provide indices of both speed (time to 50% germination and mean germination time) and uniformity (time from 25% to 75%, and 10% to 90%, germination). Generally, primed seed is within the range of 20-30% faster and 15-40% more uniform than checks, depending in part on the method by which treatments are compared. While a close relationship between speed of laboratory germination and field emergence has been established, the relationship between uniformity in laboratory and field remains to be fully characterised. Methods are described to fill this gap in knowledge, whereby individual plant sizes for the period between emergence and canopy closure are determined from field plot images.