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A VARIABLE RATE GRAIN DRILL FOR PLANTING SEEDS TREATED WITH SILVER NANOPARTICLES

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ABSTRACT Precision farming can be an effective tool to maximize output while minimizing input (i.e. fertilizer, pesticides, herbicides, etc) through monitoring environmental variables and applying targeted action. A new frontier for precision farming is plant protection with regards to seed protection. Silver nanoparticles can protect wheat seeds against fungi when used as a preplanting fungicide. Variable planting of regular & nano treated seeds based on static variability of pathogens in the field requires the use of a variable rate grain drill. Since variable grain drills are not commonly used, we set out to convert a regular grain drill into a precision grain drill in a simple, inexpensive & reliable way. For this purpose additional parts were designed & added to a conventional grain drill. The accuracy of planting with this planter was tested at variable speeds equal to 2, 4 and 6 rotations of the planter's drive wheel. According to the results, the reliability for this planter can reach 90% using appropriate rotation times.

Keywords: Variable Rate Grain Drill, Silver Nano Particles, Seed Treatments