

Air Seeder Distribution and Seed Damage to Soybeans, Wheat and Canola

Higher seed moisture and lower fan speed can reduce the damage inflicted on soybean seed in an air seeding system.

WE HAVE SEEN an increase in the size of farm equipment over time for improved efficiency. In the case of 60-ft air seeders, this raises concerns over how uniformly crops can be seeded and the risk of seed damage. The wider the air seeder, the greater the airflow required to carry seeds down the length of the implement and to prevent plugging. However, excessive airflow can cause seeds to bounce and result in damage by moving seeds more aggressively through the unit.

Large-seeded crops like soybeans are at higher risk of splitting and seed coat damage. This type of damage increases seed mortality and reduces germination. Air seeders and planters are both viable options for planting soybeans in Manitoba, but information is currently limited on how damage occurs in an air seeder and what impact seed moisture content might have on this damage.

The goal of this study was to understand the consistency of distribution in large air seeders (60-ft wide Bourgault and John Deere) and the effect of fan speed on distribution and damage to

large (soybeans), medium (wheat) and small (canola) seeds. Three fan speeds were tested for each seed type, including the lowest setting recommended by the manufacturer (low speed), 15% higher RPM (medium speed) and up to 30% higher RPM (high speed). These speeds were tested on soybean seeds at moisture contents of 8%, 10% and 13% at the time of seeding.

Seed distribution was acceptable for both air seeders tested. Results suggest that manifolds positioned closer to the centre of the unit were more likely to receive more product than those located at either end of the machine. However, the manifold position had no significant effect on soybean, wheat and canola germination.

Soybean seed damage was minimal for all trials. The influence of fan speed on soybean damage was insignificant. However, seed moisture content had a noticeable effect on germination potential. Soybeans at 13% seed moisture resulted in 3.6% higher germination than those at 8% seed moisture. Fan speed did not

affect wheat and canola germination in either system.

A soak test was conducted on soybean samples collected from the John Deere air seeder openers to assess the damage inflicted on the seed coat. Fan speed and manifold position had no statistically significant impact on seed quality. However, soybean seeds at 8% moisture had more seed coat damage than those at 10% and 13%.

Overall, a combination of lower fan speed and higher seed moisture content presents the best opportunity for reducing soybean seed damage in an air seeding system. It is important to note that each seeder used in this study has a unique distribution system and results gained from one cannot be applied to another. This highlights the need to test these results on individual farms, for different seeding systems and different seed lots. Assessing plant stand each spring is one way to keep track of seed survivability, which pencils out into profitability. ▶



Bags were placed around each opener to collect product during each repetition.

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