2017 Plantability Testing for Larger Soybean Seed

Soybean Seed Size

B PIONEER

Sovbean seed size is influenced by both genetics and the environment. Under similar growing conditions, varieties will differ from each other in the seed size they produce - small, medium, or large. Genetic effects on size of seed are largely predictable but weather conditions and their effects on seed size are not. Consequently, growers are sometimes faced with using seed sizes that are above or below the norm. With appropriate planter adjustments, however, excellent planting accuracy and stands can be achieved, even with large or small seed.

This bulletin, produced in a collaborative effort between DuPont Pioneer and equipment providers, offers management tips to help growers maximize planter performance and ensure the highest possible planting accuracy with larger soybean seed. Refer to your planter manufacturer's owner's manual for complete recommendations.

Seed Delivery

Central Commodity System (CCS™), Bulk Fill or Air Seed Delivery (ASD) planter systems may be challenged with larger seed as well as treated seed. To help ensure a high level of performance, proper attention must be given to:

Planter Lubricants: The liberal use of talc, graphite or a talc/graphite blend, specific by planter type, is critical. Thorough mixing of these lubricants in seed generally produces the best results.

Seed Treatment: The planter performance of untreated versus treated seed may be different. Generally, larger seed combined with treatment will require a higher level of management. Tank pressure, fan speeds and other adjustments should be made for the specific seed/ treatment combination that is being planted. Refer to the planter operator's manual for recommendations.

Ground Speed: High population settings, especially when combined with high ground speed, may provide challenges. With higher ground speeds, the metering units are operating at faster RPM's, making it more challenging to keep seed in place as the unit rotates. If meters are "starving" for seed, a reduction in ground speed may provide a solution. Do not exceed the planter manufacturer's recommendations for ground speed.

Seed Metering

Kinze® Brush Meter: Brush meters have two discs available for soybeans. When the size falls on the split, typically you will need the 48-cell (dark blue) plate.

Table 1. Kinze brush meter plates for soybean.

| Сгор | Plate Color- code (Disc Part No.) | Upper Brush Retainer | Cells | Seed Size range | Lubricant |
|----------------------|---|----------------------------|-------|-----------------------|-------------------|
| Soybean | Black (GA5794) | GD11122 | 60 | 2200- 4000 | Graphite/ talc |
| Specialty Soybean | Dark Blue (GA6184) | GD11122 | 48 | 1400- 2200 | Graphite/ talc |

FIELD FACTS

Kinze EdgeVac[®]: Kinze recommends graphite and does not generally support talc/graphite blends except for extremely high humidity conditions.

Case IH[®] Vacuum Planter: The soybean seed disk with 130 holes can create a low vacuum issue when the larger soybeans touch each other. This causes the soybean seeds to sit in the pocket incorrectly. Use the soybean disk with 80 holes. If the maximum planting speed is too slow with the 80-hole soybean disk, use a 100-hole soybean disk.

Table 2. Case IH vacuum planter disks for soybean

| Description | Part Number |
|------------------------------|-------------|
| 3.5 mm 100-hole soybean disk | 87698876 |
| 4.5 mm 100-hole soybean disk | 87698875 |

John Deere® Vacuum: Start with eight inches of vacuum and adjust to match seed size/treatment. John Deere recommends talc only and does not support the use of graphite or talc/graphite blends.

John Deere Radial Bean Meter: There are three standard soybean seed size settings. Refer to operator's manual for correct setting to match seed that is being planted.

Soybean Plantability Testing by Pioneer

Pioneer conducted plantability tests of 2016-produced soybean seed using seven different planter metering units.

Seed tested included 10 sources ranging in size from 1985 to 2726 seeds/lb.

Planter stand seed drop of 1000 seeds would represent perfect plantability.

| FIELD FACTS | VOL. 17 | N |
|-------------|---------|---|
|-------------|---------|---|

0.1

1

DUPONT PIONEER AGRONOMY SCIENCES

[®], ™, SM Trademarks and service marks of DuPont, Pioneer or their respective owners. © 2017, PHII Pioneer® brand products are provided subject to the terms and conditions of purchase which are part of the labeling and purchase documents.

2

Figure 1. Seed drop using a Kinze brush meter with a 60-cell plate for soybean seed ranging from 1985 to 2726 seeds/lb.



Figure 2. Singulation using a Kinze brush meter with a 60-cell plate for soybean seed ranging from 1985 to 2726 seeds/lb.

1100 900 900 800 700 600 500 1985 2117 2233 2312 2355 2386 2405 2614 2652 2726 Seed Size (seeds/lb)

Figure 3. Seed drop using a Kinze brush meter with a 48-cell plate for soybean seed ranging from 1985 to 2726 seeds/lb.



Figure 4. Singulation using a Kinze brush meter with a 48-cell plate for soybean seed ranging from 1985 to 2726 seeds/lb.

Case IH® Vacuum ASM – 100-Cell Soybean Disk



Figure 5. Seed drop using a Case IH vacuum meter for soybean seed ranging from 1985 to 2726 seeds/lb.



Figure 6. Singulation using a Case IH vacuum meter for soybean seed ranging from 1985 to 2726 seeds/lb.

John Deere Vacuum – 108-Cell Soybean Disk



Figure 7. Seed drop using a John Deere vacuum meter for soybean seed ranging from 1985 to 2726 seeds/lb.



Figure 8. Singulation using a John Deere vacuum meter for soybean seed ranging from 1985 to 2726 seeds/lb.

Kinze Brush Meter – 48-Cell Plate

Kinze® Brush Meter – 60-Cell Plate

1100

1000

900

800

700

Seed Drop





Figure 9. Seed drop using a John Deere radial bean meter for soybean seed ranging from 1985 to 2726 seeds/lb.



Figure 10. Singulation using a John Deere radial bean meter for soybean seed ranging from 1985 to 2726 seeds/lb.



Precision Planting eSet® Vacuum

Figure 11. Seed drop using a Precision Planting eSet vacuum meter for soybean seed ranging from 1985 to 2726 seeds/lb.



Figure 12. Singulation using a Precision Planting eSet vacuum meter for soybean seed ranging from 1985 to 2726 seeds/lb.

AGCO White[®] Air



Figure 13. Seed drop using a White air meter for soybean seed ranging from 1985 to 2726 seeds/lb.



Figure 14. Singulation using a White air meter for soybean seed ranging from 1985 to 2726 seeds/lb.

Plantability Testing - Conclusions

Seed size had very little effect on seed drop and singulation for any or the meters tested over the range of 1985 to 2726 seeds/lb.

Results indicate that acceptable plantability could be achieved with seed as large as 1,985 seeds/lb with proper planter settings or plate selection on any of the planters tested.

April 2017

The foregoing is provided for informational use only. Please contact your Pioneer sales professional for information and suggestions specific to your operation. Product performance is variable and depends on many factors such as moisture and heat stress, soil type, management practices and environmental stress as well as disease and pest pressures. Individual results may vary.