Field Notes
March 26, 2007
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We are off to a slow start this year for good reason. Given the short seed supply this is not the year to experiment with planting in marginal conditions. There will be little or no seed to re-plant fields if the first attempt does not produce a satisfactory stand. Several of the calls I have had recently have revolved around drilling or calibration of drills.

Last Friday Howard Cormier and I took advantage of the "teachable moment" to provide a lesson in drill calibration to one of his growers Mr. Dane Hebert. Following is a discussion and photographs (taken by Howard) during the lesson.

First we determined the drill spacing or distance between runners. In this case it was 7 inches. Then we converted 7 inches to feet by dividing 7 by 12. Seven inches equals .58 feet. We then divided the number of square feet in an acre (43,560) by .58 feet to determine the distance **one** runner would have to travel to cover one acre. Dividing 43,560 square feet per acre by .58 feet results in the figure of 75,103 feet per acre. We will need this number to calculate the number of seed per foot needed for the desired plant population. Information on the bag of seed stated there were 19,120 seed per pound. The farmer wanted to plant 30 pounds of seed per acre. Multiplying 19,120 seed per pound by 30 pounds of seed per acre produced the value of 573,600 seed per acre. Dividing 573,600 seed per acre by 75,103 feet per acre resulted in 7.64 seed per foot of drill row.

The drill drive wheel was marked with mud so its revolutions could be counted. In the photograph above and right two flags can be seen, one in the foreground and one near Mr. Hebert in the distance. These flags represent the distance covered with 10 revolutions of the drive wheel of the planter. We measured the distance then divided by 10 to determine the effective circumference of the wheel. It is important that this be performed in the field to account for the depression the wheel makes in the soil. In this instance the distance covered was 76 feet 8 inches. Dividing by 10 resulted in an effective circumference of the drive wheel of 7 feet 8 inches or 7.67 feet. As in the beginning we converted inches to feet by dividing 8 inches by 12 inches.

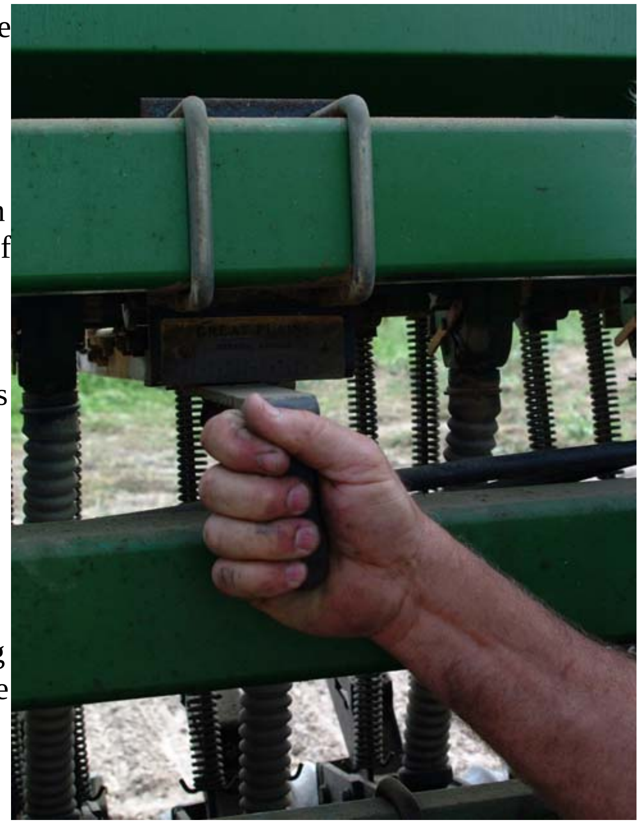
Multiplying the figure of 7.64 **seed** per foot of drill row by 7.67 **feet** per turn of the wheel told us we needed 59 seed per revolution of the wheel. Because it is difficult to turn the wheel one time by hand and get a normal seed drop we turned the wheel 5 times. This meant we needed to have 5 times 59 seed or 295 seed to provide 30 pounds of seed per acre.

To set the drill we parked the tractor and removed a seed drop tube from each side of the drill. The hopper is divided into two sides meaning each side had to be calibrated. Then we placed seed in the hopper of sufficient amount to cause "normal" flow through the down tubes when we turned the drive wheel by hand.

The photograph above left shows the down tube removed from the hopper. The other photograph shows the mound of seed over the opening in the hopper. It is important that enough seed be in the hopper to cause normal seed flow.

Before catching seed we turned the drive wheel several times to prime the flow. We then placed a small paper bag under the hopper opening and turned the wheel 5 times. Then we counted the seed. Based on the count we made adjustments to the planter and repeated the procedure.

In this case the planter was worn from use so the adjustments had to be made not on the numbers on the scale, but by measuring the fluted cylinders under the hopper. When both sides were matched up the flow was still different. One side had to be opened about 1/8" more than the other to get them to flow the same amount of seed. The whole procedure was tedious and took about 3 hours, but was well worth it especially this year. We missed the target of 30 pounds per acre by 3 pounds planting 27 pounds per acre. The next day the farmer repeated the procedure to plant another variety with intentions of planting 60 pounds per acre. He ended up planting 57 pounds per acre, even closer than the first variety. The farmer also said having done it once made it easier and faster to do the second time. If you figure being off by as little as 3 pounds per acre and the price of seed or a poor stand it is clearly worth the time and effort to calibrate.



Below is a summary of the calculations we performed.

Determine drill spacing in **FEET**. 7 inches or 7 in/12 in = .58 ft

Divide 43560 square feet per acre by .58 feet to determine the linear distance under each runner to cover one acre. 43560 ft^2/.58 ft = 75,103 ft

Determine the number of seed per acre needed based on the desired planting rate of 30 pounds per acre. 19,120 seed per pound (on the bag) X 30 lbs = 573,600 seed per acre

Determine the seed per foot of drill row by dividing seed per acre by feet per drill row per acre. 573,600 seed/75,130 ft = 7.64 seed per foot

Determine the effective circumference of the drive wheel. Mark the wheel and the starting point then drive the planter while counting the revolutions of the wheel and mark the spot where 10 revolutions are completed. Measure this distance. Convert the inches in the measured distance to decimal. Divide this distance by 10.

Measured 76’8”   8”/12” = .67’   76.67’/10 revolutions = 7.67’ per revolution (effective circumference)

7.64’ seed per foot X 7.67 feet per revolution = 59 seed per revolution or 295 seed per 5 revolutions.

If you have questions about the procedure give your county agent a call. There are a number of procedures published by seed companies and others that will do the calculations for you providing you plug in the correct information. This procedure can be done with a pocket calculator and time once you understand the process. Doing it a couple of times makes it easier.