

Post Rock Extension District Column

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Does seed size make a difference with your seeding rate for your wheat?

The 2022 wheat crop will soon be or has been drilled for the upcoming crop. Producers have been studying and contemplating their choice of wheat varieties and are ready for the next step!

Wheat seeding rate recommendations in Kansas, historically, have been expressed in pounds of seed per acre and vary accordingly to precipitation zone. However, **seed size** can have a significant impact in the final number of seeds actually planted per acre according to Dr. Romulo Lollato, K-State Research and Extension, Wheat and Forage specialist.

A variety with **larger** kernels, when planted in pounds per acre, will result in **less** seeds planted per acre and possibly thinner stands. If the weather and soil fertility during the growing season are not favorable for fall tiller formation and survival, the thinner stand might result in reduced grain yields. Examples of varieties with large to very large kernels include Bob Dole, LCS Revere, SY Rugged and WB 4595.

On the other extreme, a variety with **small** kernels can result in above-optimal stand establishment, increasing plant-to-plant competition for available resources such as water and nutrients. Additionally, planting in pounds of seeds per acre can reduce seed costs when wheat kernel size is relatively small. Examples of varieties with small to medium kernels include KS Hatchett, LCS Chrome, SY Monument, Tam 114 along with WB Grainfield.

Seed size can be measured in terms of the number of seeds per pound. The “average” range is about 14,000 to 16,000 seeds per pound for a wheat variety, but it can range from less than 10,000 seeds per pound to over 18,000 seeds per pound. Although seed size is specific to each individual wheat variety, it can vary within variety depending on seed lot and seed cleaning process.

It is clear from KSU research that wheat variety plays a major role in determining wheat kernel size as does the quality of seed cleaning. Overall, in recent research, the number of seeds per pound decreased (or individual seed size increased) as the quality of the seed cleaning process increased.

If planting occurs in seeds per acre instead of pounds per acre, we might see the opposite results where seed cleaning will actually increase stand establishment. The KSU research also indicated that the seed cleaning process increased stand establishment. These results were possibly due to better seed quality as the cleaning process removed small and shriveled grains that may have lower vigor than larger, healthier grains. Regardless of planting in seeds per acre or pounds per acre, the research reinforces the importance of

measuring wheat seed size before planting to avoid the final amount of seeds planted per acre being too far away from the original target.

Certified seed, or seed submitted for germination testing, will have seeds per pound information available. However, an easy on-farm method to estimate the average seed weight of a seed lot is to collect several representative 100-seed samples and weight each 100-seed sample in grams. To calculate seeds per pound, divide the conversion factor 45,360 by the average weight the 100-seed samples. Samples should be collected from the lot as is, including large and small kernels in the same proportion as found in the seed lot. The targeted number of seeds per acre is then divided by the number of seeds per pound to determine the number of pounds to be planted per acre. The following table is a quick reference guide to adjust the planting rate in pounds per acre based on seed size and the targeted number of seeds planted per acre:

Table 1: Reference guide to adjust planting rate in pounds per acre

	Target planting rate (seeds per acre)				
	600,000	750,000	900,000	1,200,000	1,500,000
Seeds/lb.	Pounds of seed per acre				
10,000	60	75	90	120	150
12,000	50	63	75	100	125
14,000	43	54	64	86	107
16,000	38	47	56	75	94
18,000	33	42	50	67	83
20,000	30	38	45	60	75

The following is an example of how to use the reference guide. A dryland wheat producer in north central Kansas whose target may be 750,000 seeds per acre has a seed lot with large kernels, averaging 12,000 seeds per pound. Seeding rate in pounds per acre for this seed lot for a final placement of 750,000 seeds per acre should be ~63 lb./ac. The same producer, planting a different lot with smaller seeds averaging of 16,000 seeds per pound, should plant ~47 lb./ac to achieve the same final seed placement of 750,000 seeds per acre.

If you have further questions on wheat production, contact me at any Post Rock Extension District Office in Beloit, Lincoln, Mankato, Osborne or Smith Center.

Post Rock Extension District of K-State Research and Extension serves Jewell, Lincoln, Mitchell, Osborne, and Smith counties. Sandra may be contacted at swick@ksu.edu or by calling Smith Center, 282-6823, Beloit 738-3597, Lincoln 524-4432, Mankato 378-3174, or Osborne 346-2521. Join us on Facebook at "Post Rock Extension" along with our blog site at postrockextension.blogspot.com. Also remember our website is www.postrock.ksu.edu and my twitter account is @PRDcrops.