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The Strength of Going Soft (Wheat)

Wheat is grown all across this country, but if you've ever seen a map of wheat fields in the U.S., usually it's divided out by the different types of wheat. You might also notice that here in the corners of SE Kansas, NE Oklahoma, and SW Missouri, we are unique in that we grow both hard red wheat of the High Plains and soft red wheat of the Mississippi River Valley. But if the two types of wheat were competing for field acres in this area, it would seem soft wheat has recently gained an upper hand. More fields are being planted to soft wheat as its influence creeps farther west and more farmers are giving it a try.

Because soft and hard wheat are rarely grown in the same area, rarely are varieties of both types tested head to head. However, variety plots of both classes do grow side by side at the K-State Southeast Research and Extension Center in Parsons, allowing us to directly compare the two. The varieties are tested for a number of traits, including yield, test weight, protein %, and this year the grain was tested for DON. DON stands for deoxynivalenol, but we just call it vomitoxin, the toxic chemical created by the fungus *Fusarium* head blight.

The presence of vomitoxin in the grain had a big impact this last spring as cases of high vomitoxin dockages were occurring at the co-ops and the ports. Gretchen Sassenrath, crop production specialist and lead researcher of the Parsons wheat variety trails, said, "The soft wheat varieties had much less *Fusarium* head blight infection, as seen by lower DON levels, and there was noticeably less stripe rust than in the hard wheat varieties." The results for DON can be seen for soft wheat varieties in chart 1 and hard wheat varieties in chart 2. Generally, DON is preferred to be kept below 5 ppm and as can be seen in the charts, only one experimental variety of soft wheat went above 5 ppm, while a number of the hard wheat varieties went beyond the threshold.

Dr. Sassenrath noted that test weights and yields were better in the soft wheats, as can be seen in charts 3, 4, 5 and 6. However, she also noted, "Correlation does not equal causation, just because the DON and yield are correlated, doesn't mean head scab was the ONLY factor decreasing yield (or head scab caused the yield drop). But it likely contributed to it." The lower test weights this

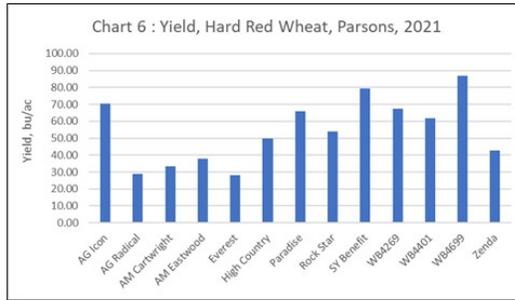
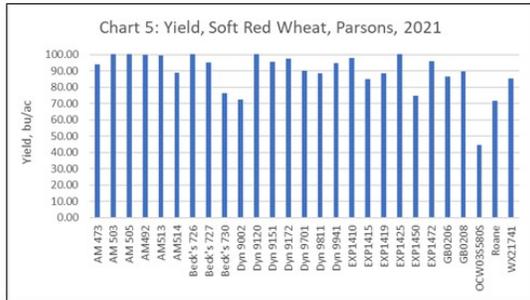
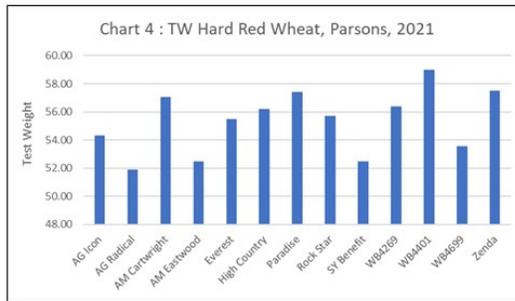
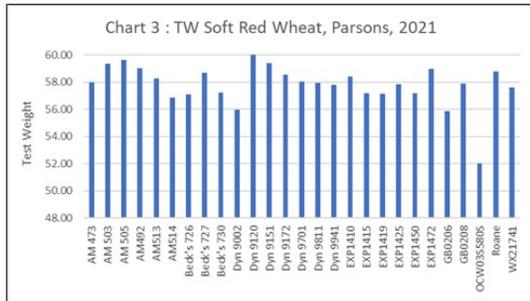
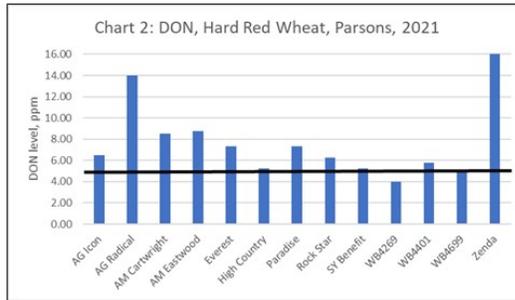
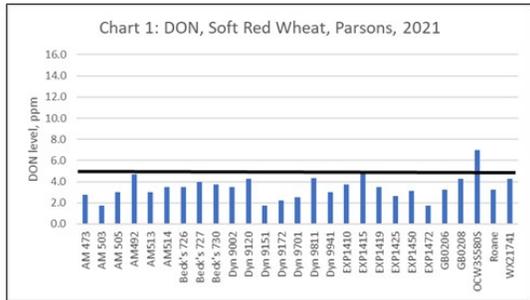
year in both hard and soft were caused by too much rain and humidity at just the wrong times during flowering and grain fill. In years past it's been evident that while both hard and soft wheat do better in favorable winters, soft wheat has more yield resistance to less optimal growing conditions. In this area, that usually means too much rain in late spring.

Yields in soft wheat are nearly always higher than in hard wheats, largely because protein is naturally lower in soft wheats, but there could be some yield benefits to stronger fungal disease resistances as well. Dr. Sassenrath stated that none of the variety trails are sprayed with a fungicide so those resistances can be observed. However, there is a separate fungicide trail that took place showing some very interesting results. Those results deserve to be discussed in a later article closer to next year's fungicide timing. It should also be noted that in the variety trails, both soft and hard wheat get the same amount, type, and timing of fertilizer. Usually soft wheat has an increased yield response to a larger amount of nitrogen and farmers tend to apply more units of nitrogen on soft wheat fields.

There could be some disadvantages for soft wheat though. Dr. Sassenrath says that this year, the soft wheat had "noticeably higher aphid infestations". The aphids can carry barley yellow dwarf virus, which was also noted to be much higher in the soft varieties, but the rate increase of barley yellow dwarf was not directly measured.

Another strength of soft wheat is its current price advantage over hard wheat, and futures projections indicate this trend is likely to continue for the near future. In the past this was not always the case for a number of factors but partly due to hard wheat having a large export market in comparison to soft. In any case, always have a marketing plan before planting, be sure that the local grain elevator takes soft wheat, or have plans to haul it to an elevator that does. Disease resistance, environmental resilience, higher yields, and likely better market prices, are a number of reasons why many long time hard red wheat farmers are thinking about giving soft red wheat a try. If you have any questions or would like to see that full data from the Southeast Research and Extension Center in Parsons, contact me at 620-724-8233 or email jcoover@ksu.edu.

If there is a variety you would like to have included in this year's variety testing, please let us know soon. K-State Research and Extension has no bias towards or against any specific seed genetics company. No promises, but we'll see what we can get ahold of.



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