Some Thoughts on Spring Wheat in Northwest Kansas

Lucas A. Haag, Ph.D., Extension Agronomist
K-State Northwest Research-Extension Center
Colby, Kansas
lhaag@ksu.edu (785) 462-6281 www.northwest.ksu.edu/agronomy

Overview:

Spring wheat is a cool season grain crop that in adapted areas of production (generally considered to be the Northern Great Plains) typically produces a higher protein and higher quality grain for milling and baking purposes. Spring wheat can be produced in Northwest Kansas and adjoining areas. Yields will be lower than summerfallow winter-wheat but likely similar to winter wheat yields when planted after row-crop harvest as a continuous cropping practice. Grain quality will be an important component of marketability.

Management:

Spring wheat traditionally has not been a recommended crop in northwest Kansas, however if spring wheat is to be seeded the K-State recommendation is to plant from February 25th through March 15th. I would stress that the ending date is likely more important than the starting date from the standpoint of minimizing heat stress, which will be the yield limiting factor in most years. In research plots at Colby, dormant seeded spring wheat in December has shown to be viable in stand establishment. Seeding rates significantly higher than those typically used in winter wheat are likely necessary due to the reduced window for initiating productive tillers. In addition, heat stress will be exceptionally detrimental to tillers of spring wheat as compared to winter wheat making the density of main stems even more important to achieving yield potential. We currently have no datasets regarding appropriate seeding rates for spring wheat but our limited experience would suggest 1.3 to 1.8 million seeds per acre to be an appropriate range. We began seeding rate trials in 2020 and they will continue into the future. Our first year of collected data falls in line with our current recommendations. With respect to nitrogen management, I suggest growers consult the recommendations offered by North Dakota State University in publication SF712, “Fertilizing Hard Red Spring Wheat and Durum”. Spring wheat will reach physiological maturity and be harvested slightly later than winter wheat in our region.

Experimental Data:

Spring wheat has been evaluated at several points in time in Northwest Kansas. From a historical context, during a 35-year study at Colby (1915-1950), spring wheat grown on fallow averaged slightly less than ½ of winter wheat grown on fallow. Additional research in the 1970’s demonstrated a similar relationship. More modern research was conducted in 2001 through 2005 in which spring wheat averaged 49% of winter wheat. Due to the increase in information request from producers regarding spring wheat I began conducting spring wheat variety trials in 2019. In 2019, the trial was planted into chem-fallow ground and included 16 spring wheat varieties which produced a range in yields from 56 to 37 bu ac^{-1}. These yields were 36 to 55% of winter wheat grown adjacent to the study. Grain samples from this trial are currently being evaluated for milling and baking quality.

In 2020, the spring wheat variety trial was no-till seeded into the prior year’s corn stalks (i.e. harvested in the fall of 2019). Despite the heavy levels of residue from the exceptional dryland

corn crop (approx. 140 bu ac^{-1}), excellent stands were obtained. Yields ranged from 18.8 to 24.3 bu ac^{-1}. No significant differences (P=0.1420) were observed among varieties in 2020, however, numerical trends for the highest yielding varieties were similar to those in 2019 as well as those observed in a trial conducted just across the state line in Red Willow County by the University of Nebraska.

Our data would show a significant reduction in yield potential for spring wheat relative to winter wheat in a fallow type system. However, when seeded into the prior-year's row crop (corn or sorghum) stalks, I believe that yield differential is likely to diminish significantly. It is important to note however, that yield alone is not the determining factor for the viability of the practice. Differences in cost structure and revenue could very well make spring wheat an economically feasible alternative, provided that quality grain can be raised and marketed at a premium to winter wheat.

Marketing:

Producers should be aware that hard red and hard white spring wheats are different market classes than hard red or hard white winter wheats. While small quantities are likely being blended off without notice, any concentration greater than 2% would be considered a mixing of classes that could result in the rejection of shipments. A local delivery point (Cornerstone Ag, Colby, KS) did exist in northwest Kansas for 2020 spring wheat production. As per the writing of this letter they plan to again receive spring wheat if prior arrangements are made by the producer. Additionally, a producer may also be successful in marketing spring wheat through the use of their on-farm storage to allow proper segregation, time to perform necessary testing of grain quality, and then direct marketing to a mill. If it is shown that spring wheat of sufficient quality can be grown in the region, it is possible that additional delivery points would be established, however I believe it more likely that this niche market will function mostly on the use of identity preservation practices, on-farm storage, and direct marketing.

Summary:

Spring wheat can be produced in this region and may offer a viable alternative to the practice of summer-fallow. Producers should have marketing plans in place prior to production and manage the crop to ensure quality. There remain however, many unknowns regarding the production of spring wheat and its long-term viability in Northwest Kansas and adjacent areas. As we have done for other emerging crops we will continue to provide annual updates to RMA as our knowledge base increases. Please do not hesitate to contact me if I can provide any additional information.