

ECONOMIC & POLICY UPDATE

VOLUME 20, ISSUE 9

Editors: Will Snell & Nicole Atherton



Economics of Various Winter Wheat Management Strategies



Author(s): Jordan Shockley

Published: September 28th, 2020

Planting season is right around the corner for those in Kentucky growing winter wheat this year. Are you thinking about adjusting management practices by increasing seeding rates or adding phosphorus in anticipation of increased yields? Have you ever wondered how planting and harvest timings affect winter wheat yields? Over the past three years, Dr. Katherine Rod (former Plant and Soil Science graduate student) and Dr. Carrie Knott conducted research, funded by the KY Small Grain Growers' Association, to answer these questions.

Experiments conducted in Princeton, KY, examine how various winter wheat management strategies affect yields and overall economics, compared to the University of Kentucky's recommendations. The specific input adjustments examined include increasing the seeding rate of winter wheat from 35 plants/ft² (University of Kentucky's recommended rate) to 56 plants/ft² and applying in-furrow phosphorus (P₂O₅) at a rate of 42 lbs./ac (University of Kentucky's recommended rate is 0 lbs./ac of P₂O₅). Table 1 illustrates that increasing the seeding rate for winter wheat and applying in-furrow phosphorus increases yields slightly, but not enough to offset the cost of the additional inputs for all scenarios. Given a winter wheat price of \$5.25/bu, seed price of \$16.50/bag, and a triple superphosphate price of \$522/ton, these adjustments in management strategies result in losing up to \$31.15/ac as compared to University of Kentucky's recommended rates.

Other management strategies examined included how planting and harvest timings affect both winter wheat and double-crop soybean yields. Harvesting winter wheat earlier (mid-June) than normal (beginning of July) allows for earlier planting of double-crop soybeans, affecting both yields in a double-crop wheat and soybean rotation common in Kentucky. However, harvesting earlier requires on-farm drying of winter wheat to avoid a moisture dockage at the elevator. The prices used for this analysis include a wheat price of \$5.25/ac, a soybean price of \$8.50/ac, and a \$0.05/bu point removed for drying and storing winter wheat. Table 2 illustrates that October planting is optimal for winter wheat in Kentucky compared to November planting. Furthermore, a management strategy of planting winter wheat in October and harvesting earlier than normal results in a net return increase of \$35.20/ac. Anecdotal evidence suggests that most wheat producers in Kentucky have already adopted the October planting and early harvest strategy. However, this research highlights the economic justification for this strategy based on yield gains alone. Couple this management strategy with a good marketing strategy and October planting with an early harvest can result in further increases in net returns for a double-crop wheat and soybean system in Kentucky.

Table 1. Yields and economic returns for applying phosphorous (P₂O₅) and an increased seeding rate for winter wheat in Kentucky as compared to UK's recommended rates (Base)

	Seeding Rate (Plants /ft ²)	P2O5 Rate (lbs/ac)	Wheat Yields (bu/ac)	Additional Cost (\$/ac)	Additional Revenue (\$/ac)	Net Returns (\$/ac)
Base	35	0	74.1	--	--	--
Base + P2O5	35	42	75.3	\$23.75	\$6.60	-\$17.15
High Seed	56	0	75.7	\$22.60	\$8.45	-\$14.15
High Seed + P2O5	56	42	77.5	\$47.60	\$16.45	-\$31.15

Table 2. Double-crops wheat and soybean yields and overall economic returns for various planting and harvest timings for winter wheat in Kentucky.

Planting Timing	Harvest Timing	Wheat Yields (bu/ac)	Reduced Revenue (\$/ac)	Soybean Yields (bu/ac)	Additional Revenue (\$/ac)	Net Returns (\$/ac)
October	Normal ¹	88	0	52	0	0
November	Normal	64	-\$129.30	52	0	-\$129.30
October	Early ²	89	-\$49.80	62	\$85.00	\$35.20
November	Early	59	-\$195.30	62	\$85.00	-\$110.30

1-Normal harvest around July 1st

2-Early Harvest around June 12th

Author(s) Contact Information:

Jordan Shockley | Associate Extension Professor | **jordan.shockley@uky.edu**