National Fertilizer Solutions Association

FLUID FACTS

NFSA AGRONOMIC NEWSLETTER

Apply Winter Wheat and Double-Crop Soybean Nutrients NOW!

Fall is an ideal time to prepare most fields for wheat/soybean double-cropping. Historically, fall prices for phosphate (P) and potash (K) fertilizers -- the backbone of a sound double-crop program -- are bargains and it makes good economic sense to apply them now! Establishing a sound fertility program is the first step to improving yields and profit potential.

Fall Apply P & K. From a practical standpoint, it is convenient to apply P and K requirements for both crops in the fall prior to wheat planting. This practice allows for planting of soybeans as soon after wheat harvest as practicable, especially in no-till systems. Because P and K are relatively immobile, fall-applied P and K will remain in place for spring and summer growth.

Results from Kansas research show the advantage of improved soil test values from P and K applications on wheat following soybeans (Table 1). For an investment of $12.60/ac in P and K fertilizer, this program yielded an additional 28 bushels of wheat and an additional $98/ac.

When following wheat with double-crop soybeans, remember you have to cover the nutrient requirements of both the wheat and soybean crops. Under intensive wheat management programs, some growers are producing from 80- to 100-bushel wheat, followed by 50-bushel beans. Nutrient removals for a 70-bushel wheat crop and 30-bushel soybean crop are shown in Table 2.

Table 2. Nutrient removal by a 70-bushel wheat and 30-bushel soybean double-crop.

Crop	N	P_2O_5	K_2O	S
	-----	lb/ac		-----
70-bushel wheat	105	39	24	5
30-bushel soybeans	120*	26	41	3
Double-crop total	225	63	65	8

*Soybeans will fix about half of their N.

In order to effectively manage a wheat/soybean double-crop rotation, the University of Kentucky suggests applying P according to single-crop wheat recommendations and K according to soybean recommendations prior to planting wheat. Utilizing these fertilization rates will account for the larger P response potential exhibited by wheat and potential K response by soybeans.

Band P for Efficiency. Yields often can be enhanced through placement of P fertilizer. In an Oklahoma study, banding 10-34-0 at 40 lb P_2O_5/ac with wheat seed produced 40% higher yields than broadcast applications, and 112% higher than the check plot under early winter stress conditions. Banding P with the seed resulted in a 7-bushel yield increase and a return of $24.85/ac over broadcast P application.

Table 1. Effects of annual rates of phosphate and potash on P and K soil tests and the average yields of six wheat varieties in southeast Kansas.

Soil Test P	Soil Test K	Fertilizer Rate P_2O_5	Fertilizer Rate K_2O	Wheat Yield Avg. 6 Var.	Protein Content	Marginal Cost	Net Return
ppm	ppm	lb/ac	lb/ac	bu/ac	%	$/bu	$/ac
5.5	48	0	0	52.8	11.8	--	--
4.5	68	0	40	57.3	11.7	1.33	9.75
13.5	48	30	0	74.3	10.9	.31	68.65
15.0	68	30	40	80.8	10.6	.45	85.40

Assumes potash at $0.15/lb K_2O, phosphate at $0.22/lb P_2O_5, and wheat at $3.50/bu.

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As soil carryover levels of P increase, the advantages of banding diminish. However, subsurface placement may provide greater P availability if dry conditions prevail early in the season.

Use Multiple N Applications. Research shows that multiple applications of N are environmentally sound and offer a number of important agronomic benefits in wheat:

* Enhanced fall root development for strong early stands.
* Subsequent winter application promotes tillering in early spring.
* Chemical weed, disease and insect control applications can be combined economically with spring topdressing.
* Based on tissue tests, N levels can be adjusted to match changing climatic conditions.
* Split applications can deliver adequate N to the crop without jeopardizing germination.

Despite the advantages of banding, Idaho research trials underscore the need to protect germinating wheat from excess soil ammonia. Ammonia evolution near the seed decreased winter wheat emergence in drier soils. Also, salt effects impede germination. Researchers found that up to 50 lb N/ac could be applied as UAN near the seed or as a pop-up fertilizer without significantly reducing emergence.

Maintain pH and Nutrient Balance. To sustain continuing crop productivity, maintain proper soil pH by liming soils to a pH value of approximately 6 and utilize soil testing to track essential micronutrient levels. Crop availability of nutrients such as molybdenum (Mo), zinc (Zn), manganese (Mn), iron (Fe), magnesium (Mg) and sulfur (S) depend on the existence of adequate soil levels and proper pH conditions. Balanced nutrition is important to maximize the value of all applied nutrients.

Research Continues to Enhance Crop Management. The Fluid Fertilizer Foundation is funding additional research to assist grower and dealer implementation of sound crop management techniques utilizing fluid fertilizers. A research project at the University of Maryland is currently studying intensive wheat/double-cropped soybean management to enhance yields of both crops and provide information about profitable management practices. This research is being led by Dr. Ronald Mulford. Intensive management of fertilizer, fungicide and growth regulator inputs has produced wheat yields in excess of 127 bu/ac.

The Fluid Fertilizer Foundation will continue to monitor the progress of this research and provide additional management information for profitably growing wheat, soybeans and other crops.