SP 763

UT Fertility Recommendations for Tennessee Row Crops

Lori Duncan, Row Crop Sustainability Specialist
Hugh Savoy, Soil Fertility Specialist
Department of Biosystems Engineering and Soil Science

Debbie Joines, Manager
UTIA Soil, Plant and Pest Center

In the era of increased environmental awareness and fluctuating crop and fertilizer prices, it has become increasingly important to apply fertilizers in such a way as to minimize losses. UT Institute of Agriculture soil fertility recommendations[1] are unbiased, research-based recommendations that reflect the need for your crops to be profitable and for the environment to be safe and healthy. Proper soil testing procedures[2] are the first step in getting the most accurate recommendations. Also, maximum nutrient uptake occurs when the soil pH is adequate, so fields should be limed as necessary. This fact sheet includes UTIA fertility recommendations for the major row crops in Tennessee: corn, cotton, wheat and soybeans.

The soil test calibration data are based on the Mehlich-1 extractant. Most commercial labs that service Tennessee use the Mehlich-3 extractant, so a calibration for Mehlich-3 has been established for Tennessee. If you have received soil test results from a lab using Mehlich-3, (1) use the table below to determine your rating associated with that value (low, medium, high or very high); (2) use that rating (low, medium, high or very high) to determine the UT fertilizer recommendation from the appropriate crop table listed in this publication. If your soil test report is in ppm (parts-per-million), multiply that value by 2 to convert to lb/acre. For example: John used Commercial Lab A. His Mehlich-3 soil test for phosphorus was 25 ppm (50 lb/acre), which falls in the UT soil test range of medium for the Mehlich-3 extract. John decides to plant cotton. For a medium-testing phosphorus soil, UT recommends 60 lb/acre P_2O_5 for a cotton field having a Mehlich-3 phosphorus soil test of 25 ppm.

Soil Test Report Values

	Phosphorus (lb/acre) All Crops		Potassium (lb/acre) All crops but cotton		Potassium (lb/acre) Cotton	
Rating	Mehlich-1	Mehlich-3	Mehlich-1	Mehlich-3	Mehlich-1	Mehlich-3
Low	0-18	0-30	0-90	0-114	0-140	0-178
Medium	19-30	31-60	91-160	115-203	141-280	179-356
High	31-119	61-210	161-319	204-405	281-319	357-405
Very High	≥120	≥211	≥320	≥406	≥320	≥406

Cotton

N (lb/acre)	**P_2O_5** (lb/acre)			**K_2O** (lb/acre)		
	Low*	**Medium**	**High - Very High**	**Low**	**Medium**	**High - Very High**
60-80	90	60	0	120	90	0

*All recommendations here are based on Mehlich-1 calibrations.

Corn

Yield Goal (bu/A)	N (lb/acre)	P_2O_5 (lb/acre)			K_2O (lb/acre)		
		Low	Medium	High - Very High	Low	Medium	High - Very High
100-125	120	100	50	0	100	50	0
126-150	150	120	60	0	120	60	0
151-175	180	140	70	0	140	70	0
176-200	210	160	80	0	160	80	0
201-225	240	180	90	0	180	90	0

Small Grain

N (lb/acre)		P_2O_5 (lb/acre)			K_2O (lb/acre)		
		Low	Medium	High - Very High	Low	Medium	High - Very High
Establishment	15-30	80	40	0	40	20	0
Topdress Small Grain	60-90	--	--	--	--	--	--

Small Grain/Soybean Rotation

N (lb/acre)		P_2O_5 (lb/acre)			K_2O (lb/acre)		
		Low	Medium	High - Very High	Low	Medium	High - Very High
Establishment	15-30	90	60	0	120	60	0
Topdress Small Grain	60-90	--	--	--	--	--	--

Soybean

N (lb/acre)	P_2O_5 (lb/acre)			K_2O (lb/acre)		
	Low	Medium	High - Very High	Low	Medium	High - Very High
0	40	20	0	80	40	0

[1]*Savoy, H. and D. Joines. Lime and Fertilizer Recommendations for the Various Crops of Tennessee. extension.tennessee.edu/publications/Documents/D20.pdf*

[2]*Savoy, H. J. and D. K. Joines. 2012. Soil Testing. UT Extension Publication 1061. The University of Tennessee. extension.tennessee.edu/publications/Documents/PB1061.pdf*

INSTITUTE OF AGRICULTURE
THE UNIVERSITY OF TENNESSEE
Real. Life. Solutions.

AG.TENNESSEE.EDU

SP 763(Rev) E12-4330-00-001-16 1M 09/15 16-0029