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Alfalfa Autotoxicity

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The Value of Straw to Soil

by James R. Gerwing, Extension Soil Specialist

The shortage of feed and bedding during a dry year forces farmers to remove straw from many small grain fields. The removal of this straw is not without cost to the soil. There are three major "costs" to removing straw from a field: 1) fertilizer value to subsequent crops, 2) loss of fresh organic matter and 3) loss of erosion protection.

The nutrient content of straw per bushel of grain produced is listed in Table 1. To determine the pounds of nutrients removed, multiply the number in the table times the grain yield and divide by two. It is normally assumed that about 1/2 of the total non-grain portion of the crop is removed because most of the leaves, glums, and some of the stems are left in the field. Multiply your cost of the fertilizer nutrients times the pounds of nutrients removed. Such small amounts of micronutrients are removed that their value can be ignored.

Using average costs for fertilizer and a 25 bushel wheat crop,

the fertilizer value of the straw removed (1/2 of the total) would be about \$5.00 per acre.

It is more difficult, if not impossible, to put a dollar value on the contribution of fresh organic material such as straw to maintaining soil tilth and the soils' nutrient and water holding capacities. One year's removal, however, will not likely have large measurable negative effects on any of these parameters. Continued removal over a number of years, however, would be a major concern to many of our lower organic matter or high clay content soils.

Straw or stover is extremely important in protecting soil from erosion especially when left on the surface. Like fresh organic material, it is difficult to put a dollar value on the erosion protection straw provides. Crop residue, however, is really the only material available to prevent wind and water erosion. It is especially important in preventing wind erosion in drought years when soils are loose and dry.

Table 1. Nutrient content of straw.

Crop	Nutrient		
	N	P ₂ O ₅	K ₂ O
----- lb/bu -----			
Wheat	0.8	.26	1.6
Oats	0.4	.14	1.0
Barley	0.4	.16	1.2
Corn	0.5	.15	1.2
Sorghum	0.6	.16	0.8

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