

What is the fertility value of that straw?

In many cereal fields this summer the baler has been into the field before the combine is finished. There is a market for cereal straw – feeding, bedding, erosion control for road construction, etc.

Now some farmers wonder if they are receiving enough compensation for their straw. It's a case that some soils just need the straw more than others. In fact, in some cases straw removal is a viable tradeoff to reduce tillage expenses to incorporate it.

But the importance of the same straw can vary from field to field based on that soil's productive capacity – in particular the water holding capacity and potassium (K) content.

Soils with moderate to high clay content tend to have high natural levels of potassium and good water holding capacity. In such soils, the loss of the straw will have little short-term effect and nothing a trip to the fertilizer dealer can't replace.

But on sandier soils with lower soil organic matter, the water holding capacity offered by straw ultimately decomposing to organic matter cannot be simply purchased. But the mineral nutrients can be.

I have listed here some textbook nutrient values of wheat straw.

Table 1. Nutrient values of wheat straw.

Nutrients per t straw	Wheat Feeds & Feeding, 1956.	Wheat Soil Fertility Guide (40 bu/ac crop)	Wheat Heard & Cavers, 2001
lb N/t	14	25	12-28
lb P ₂ O ₅ /t	3.5	9	4-10
lb K ₂ O/t	16	55	14-59
lb S/t	4	5	1-4

Obviously the nutrient value of straw can vary. Environmental and growing conditions determine grain yield and how well nutrients are mobilized from the stalk to grain. Soil fertility level and applied nutrients have a major impact on straw nutrient content. And if swaths or standing crop are rained on before combining and baling much potassium (K) can be leached below the swath.

We always make assumptions to assign nutrient values to the straw. A 60 bu wheat crop may produce a 1.5 t/ac straw crop. Considering the Soil Fertility Guide values in Table 1, this is 38 lb N, 14 lb P₂O₅, 84 lb K₂O and 8 lb S/ac and at current fertilizer prices of \$0.46/lb N, \$0.45 lb P₂O₅, \$0.37/lb K₂O and \$0.54 lb S/ac:

On clay soil, the value is about \$28/ac (no value assigned for K) and on sandier ground is \$59/ac.

The nitrogen value of straw is only metered out over time through decomposition and mineralization.

An alternative payment for straw sales to livestock growers is to trade straw for manure – such as 2-4 ton straw for 1 ton manure. Details are left to growers regarding this since manure can vary more than straw in nutrient content, moisture content, etc.

It is more difficult to assign values to the other benefits of straw – maintenance of soil organic matter levels, improved soil structure (including water holding capacity and infiltration) and erosion control.