

From: Khan, Ahsen

Sent: 8/26/2013 8:30:11 PM

To: TTAB EFiling

CC:

Subject: U.S. TRADEMARK APPLICATION NO. 85583643 - CORNBOARD - 137824-3000 - Request for
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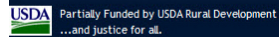
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Files: web3-4.jpg, web4-1.jpg, web4-2.jpg, web5-1.jpg, web5-2.jpg

- [Cellulosic Ethanol/Bioethanol in Kansas](#), Kansas State University Engineering Extension, 2007.
- [Corn Stover Collection Project](#), Conservation Technology Information Center, Purdue University.
- [Corn Stover for Bioethanol-Your New Cash Crop?](#), National Renewable Energy Laboratory, U.S. Department of Energy, 2001.
- [Corn Stover to Ethanol](#), SunGrant BioWeb.
- [Corn Stover to Ethanol: Macroeconomic Impacts Resulting From Industry Establishment](#), Northeast Regional Biomass Program (NRBP).
- [Determining the Cost of Producing Ethanol from Corn Starch and Lignocellulosic Feedstocks](#), National Renewable Energy Laboratory, U.S. Department of Energy and USDA, 2000.
- [Energy and Environmental Aspects of Using Corn Stover for Fuel Ethanol](#), Sheehan et al., Journal of Industrial Ecology, 2004.
- [Ethanol Reshapes the Corn Market](#), Amber Waves magazine, Economic Research Service (ERS), USDA, 2006.
- [Examining Costs/Benefits of Using Corn Stover for Bioenergy](#), ARS, USDA, 2007.
- [Growing Biofuel Crops Sustainably](#), Agricultural Research Magazine, ARS, USDA, 2009 - ARS is especially interested in determining where, when and how much corn stover can be harvested without harming soil productivity.
- [Life-Cycle Analysis of Ethanol from Corn Stover](#), National Renewable Energy Laboratory, U.S. Department of Energy, 2002.
- [Logistical Aspects of Using Corn Stover as a Feedstock for Bioethanol Production](#) slide presentation, National Renewable Energy Laboratory.
- [Macroeconomic Impacts of a Corn Stover to Ethanol Industry in the Midwest](#), Bio-based Energy Analysis Group, University of Tennessee Agricultural Economics.

Prepared January 2009, links checked November 2009.



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Nutrient content and value of corn stover.

Corn fodder is often removed from a field either by baling or through grazing following grain harvest. Removal of all or some of the corn fodder will remove nutrients that would otherwise return to the soil and be available to future crops. When corn fodder is removed, it is important to determine the amount and value of nutrients removed from the field.

On average, the dry mater weight of a corn plant is split equally between the grain and stover (stalk, leaf, cob and husk). To determine total stover weight, figure the total dry matter weight of grain removed. Take the bushels per acre harvested and multiply by 56 lb./bushel. This will equal grain weight at 15.5% moisture. Multiply this number by .845 to get total dry matter weight. This number will equal total dry matter stover per acre.

The actual yield of baled stover will depend on how it is harvested. Shredding and raking will harvest approximately 80%, 65% will be harvested by only raking and 50% will be harvested by if only the combine windrow is picked up.

The type of hybrid, soil fertility, growing conditions and residue harvest date will affect the nutrient value of the stover. The following table can be used to estimate the fertilizer value on a 100% dry matter basis. Well dried standing corn stover will often range between 85 to 90% dry matter.

| Fertilizer | Range (lbs./ton) | Average (lbs./ton) | \$/lb.** | \$/ton stover |
|------------------|---------------------|-----------------------|----------|------------------|
| Nitrogen (N)* | 15 – 25 | 20 | 0.22 | 4.40 |
| Phosphate (P2O5) | 5 – 8 | 7 | 0.24 | 1.68 |
| Potassium (K2O) | 5 – 40 | 33 | 0.14 | 4.62 |

*The nitrogen value should not be taken into account if the field is going to be rotated to soybeans the next year. About half the nitrogen tied up in the residue would be available for the next year's crop through normal decomposition. The nitrogen release rate will increase with tillage and above average rainfall.
**The value of the nutrient will vary with time and location.

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Very little nutrients leaves the field when cattle are grazed on the stover. Cattle will only consume 20 – 25% of the stover available and 98%+ of the NPK consumed will be excreted back onto the field.

Example

140 bu/acre corn yield

140 bu/a * 56 lb./acre = 7840 lbs. grain @ 15.5% moisture

7840 lb./acre grain * .845 = 6625 lbs. dry matter grain

6625 lbs. dry matter grain = 6625 lbs. dry matter stover

6625 lbs/2000 lbs./ton = 3.31 tons dry matter stover

Value of Stover Nutrients vs. Harvest method

Shredding + Rake (80% harvest)

3.31 * 0.8 = 2.65 tons harvested

2.65 tons * (\$1.68 + \$4.62) = **\$16.68**

Rake only (65% harvest)

3.31 * 0.65 = 2.15 tons harvested

2.15 tons * (\$1.68 + \$4.62) = **\$13.55**

Combine windrow (50% harvest)

3.31 * 0.5 = 1.66 tons harvested

1.66 tons * (\$1.68 + \$4.62) = **\$10.43**

These nutrient values will vary depending on the current value of the nutrients.

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Definition: (adjective)
unenthusiastic, routine, or
mechanical.

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The dried stalks and leaves of a cereal crop, used as fodder after the
grain has been harvested.

ETYMOLOGY:

Middle English, *provisions*, from Norman French *estovers*, from Old
French *estovier*, *to be necessary*, from Latin *est opus*, *it is necessary*:
est, third person sing. present tense of *esse*, *to be*; see **essence** + *opus*,
need, work; see **opus**

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