

Corn Stover Harvesting

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How much stover is produced in a typical corn field?

Corn grain accounts for

about 45% of the total dry matter yield of a corn field. Corn stover amounts would range from 3 to 4.5 dry tons per acre in fields ranging from 100 to 150 bushels of grain per acre. Dry ton means exactly that; 2000 lb of totally dry stover. You can convert wet weight to dry weight by multiplying the wet weight by the percent dry matter. If 60% of the stover would be harvested, then amounts would range from 1.8 to 2.7 dry tons per acre depending on grain yield level.

What are the risks involved with corn stover harvest?

The estimated harvest window to shred, windrow, and bale corn stover will be about 30 days after corn grain harvest, after which weather and soil conditions are often not conducive to field traffic and stover harvest. Wet weather and muddy fields during and after grain harvest would delay or prevent stover harvest. This is especially critical given the likely dependency on the schedules of custom operators who will be responsible for shredding/windrowing/baling the corn stover. Soil compaction and ruts can

easily result from extra wheel traffic on excessively wet soils. Stover moisture content greater than 30% would likely decrease the efficiency of the baling operation, and also decrease the storability of the bales due to increased risk of molding and rotting. Corn stover material will generally cause greater wear and tear on harvesting equipment than alfalfa and grass hay.

What is the approximate value of stover nutrients removed/acre?

The approximate amounts of nitrogen, phosphate, and potash removed per dry ton of harvested corn stover are 13.6, 3.6, and 19.7 lb, respectively. The approximate value of the nitrogen, phosphate, and potash per dry ton of harvested corn stover is \$9.85, \$1.33, and \$4.33 (based on \$0.50, \$0.37, and \$0.22 per lb of nitrogen, phosphate, and potash fertilizers), for a total nutrient value of \$15.48 per dry ton. If harvested stover amounts ranged from 1.8 to 2.7 dry tons, then the total value of the nutrients removed from the field would range from about \$28 to \$42 per acre.

Is any pre-harvest operation, such as windrowing, necessary?

Quite often the stover will need to be cut with a rotary hay cutter and raked with a double rake prior to harvesting. A combination flail chopper/windrower

could also be used. When harvesting corn, turn off or remove the chaff spreader on the combine. By windrowing the top half of the plant, baling may be accomplished without additional rotary cutting. Raking may still be necessary to dry the stover before baling. This method reduces overall yield but increases forage quality. Keep in mind that the tire traffic of the grain harvest operation (combine, grain carts, trucks, etc.) will make some percentage of the stover very difficult to harvest.

What is the optimum stover moisture content for harvest?

Stover moisture content should probably not exceed 30% for optimum harvesting. Target 25% moisture or lower for baled corn stover. As a rule of thumb, moisture content of stover is twice that of the grain. For example, the moisture content of stover when you harvest grain at 15% moisture would be about 30% moisture.

What type and size of package (bales, stacks) are desired?

The most feasible package would likely be 1-ton bales measuring 4x4x8 ft. Such bales are relatively high density, solid, and suitable for transport on a flatbed semi-trailer. Net wrapped round bales in the 6' size range with 3 wraps of net wrap work well, but are more difficult to transport. Other possibilities include large round bales (1/2 ton bales) or stacks (1/2 to 1 ton stacks). Consider ammoniating bales to increase forage quality and reduce spoilage.

What are the characteristics of corn stover?

Approximately 50% of the weight of the total corn plant is residue, consisting of

stalk, leaf, cob and husk. Table 1 indicates the dry matter distribution in corn residue at or immediately following corn harvest. Note the stalk contains the highest level of moisture and is one-half of the dry matter weight of the total residue material.

Table 1. Dry matter distribution in corn residue

Corn Residue	% Moisture	% of Residue DM
Stalk	70-75	50
Leaf	20-25	20
Cob	50-55	20
Husk	45-50	10

Table 2 indicates the average composition of corn residue and corn residue silage.

Table 2. Crop residue composition

	Corn Residue	
	Corn Residue	Silage
Estimated TDN %	45	50
Crude Protein %	4.0	5.3
Calcium %	0.37	0.44
Phosphorus %	0.12	0.14
Vitamin A, IU/lb.	0.0	0.0

Feeding crop residues can be more challenging with wasted feed, nutritional deficiencies and palatability issues. Whenever possible, graze corn stover to reduce overall harvest cost. Contact your local MSU Extension Livestock Educator for information on crop residue feeding for your cattle operation.

Adapted from: Ohio State University Extension "Harvesting Corn Residue" AGF-003-92.