ABSTRACT Corn stover represents typically between 40 and 50% of the dry matter (DM) contained in the aerial biomass of corn plants. After corn grain is harvested, the stover is traditionally left on the ground where part is incorporated in the soil as organic matter and protects against erosion; another part is oxidized in the atmosphere. Recent soil-crop models have indicated that 50% of the stover could be harvested sustainably on low-sloping land under no-till practice. This means that 4 to 5 t DM of corn stover could be harvested annually from about half the corn fields. In Quebec where 400 000 ha are planted each year into corn, stover could provide one million t DM of currently neglected biomass. Over a three-year period (2007, 2008 and 2009), various hybrids of corn were monitored from early September to late November at four different sites. Whole plants cut at 100 mm above the ground were collected weekly and separated into seven fractions: the grain, the cob, the husk, the stalk below the ear, the stalk above the ear, the leaves below the ear and the leaves above the ear. In 2007, corn ears were at 0.96 m above the ground on average at a site with low crop heat units (CHU). Hybrids grown in a warmer site (higher CHU) were taller and their ears were 1.21 m above the ground. The DM partitioned in seven components was: 54% grain, 14% bottom stalk (below the ear), 6% top stalk, 5% bottom leaves, 7% top leaves, 5% husk and 9% cob. During the harvest period, the total mass of fibre decreased from 8.9 to 6.6 t DM/ha for a low CHU hybrid and from 9.3 to 8.3 t DM/ha for a high CHU hybrid. In 2008, grain yield increased from 3.8 to 7.6 t DM/ha over the 12-week period while stover yield declined by 19 kg/ha per day to a level of 7.4 in mid-November at Saint-Augustin (cool site, 2500 crop heat units; average of two hybrids). At a warmer site (Sainte-Rosalie, 2900 CHU), grain yields increased from 4.6 to 10.4 t DM/ha while corn stover yield declined by 41 kg/d to a level of 8.3 t DM/ha in mid-November. Other hybrids grown in Sainte-Anne-de-Bellevue (2900 CHU) produced up to 14.4 t DM of grain but only 6.7 t DM/ha of stover. At 171 d after planting, grain, cob, husk, leaf and stalk averaged 55, 10, 4, 12 and 19% of the overall plant biomass, respectively. On average at 171 d after planting, 56% of the corn fibre was located above the first ear. The average moisture content of fibre ranged between 68 to 76% during September and declined to as low as 28% by mid-November.
In 2009, six hybrids are being monitored on three sites. More complete data will be available to be included in the full paper by February 2010. The overall data will be useful to plan stover collection in parallel or after grain harvest, to modify machinery and to identify the optimum time to harvest grain and stover.

**Keywords:** Corn, Stover, Fractions, Harvest, Fibre.