

Pordesimo, L. O., W. C. Edens and S. Sokhansanj. 2004. Distribution of aboveground biomass in corn stover. *Biomass and Bioenergy* 26(4): 337–343

Abstract:

Corn stover can be a principal feedstock for bioenergy and industrial applications because of its abundance and its current underutilization. Development of strategies/systems for the postharvest handling of corn stover involves quantifying what corn stover biomass is available over time after grain physiological maturity has been reached. It also involves understanding how the biomass is distributed in the different aboveground components of the corn plant. The objectives of this preliminary investigation were to measure the allocation of biomass to aboveground components of the corn plant over time and to develop relationships for estimating total aboveground corn plant biomass through simple corn plant dimensional measurements. Aboveground biomass distribution for two corn cultivars (Pioneer 32K61 and 32K64 Bt) was studied in standing plants from roughly 1 week before grain physiological maturity until 4 weeks after grain harvest from other plots in the field. Over the monitoring period, the amount of dry matter in stover averaged 50% of the total aboveground dry plant mass with stalks comprising 50% of the stover dry matter at the time grain was harvested. This study indicated that the more conservative 0.8:1 stover:grain fresh weight ratio, rather than the 1:1 widely used, may be more realistic at the grain harvest moisture range of 18–31% w.b. Such precondition has not been clearly emphasized in the literature. Regression equations involving stalk diameter and plant height for DeKalb 626 derived to estimate fresh green weight and dry matter of the corn plant above the ground had a maximum R^2 of 0.75.

Contact:

Shahab Sokhansanj, Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge, TN 37831-6422