

Modeling Variability in Biomass Feedstock Supplies with Limited Data: An Application of Data Clustering

The feasibility of bioenergy production depends on economic conditions, which are subject to risk and uncertainty. Before setting up a biorefinery, policy makers and investors will need to consider the costs and risks of obtaining and managing variable sources of bio feedstock supply. These supplies may vary greatly across locations and time, so it is important to accurately characterize feedstock variability. However, traditional statistical techniques used to characterize variability may fail when observations are few. We apply clustering algorithms to improve feedstock supply variability estimation for agricultural residues. By accounting for variability among similar observations, variability across observations that are different can be more readily identified. Preliminary simulation results show that, after clustering, there is higher biomass total supply variability and higher variability in the distances firms may need to travel to obtain sufficient supply.