FORAGE HARVEST LOGISTICS MODELING UPDATE

Brian D. Luck[1]

Harvesting corn for silage utilizes multiple pieces of equipment to ensure rapid and economical production of silage. A model of corn harvest for silage production, capable of predicting machine working status and total harvest time for a field, using a single harvester, and any number of user defined transport vehicles, as a function of machine specifications and field properties was developed. Three forage harvesting systems were observed using Global Positioning System (GPS) equipment and the collected data used for the TruckSim model validation. The harvest model predicted harvest times within 10% of observed data and yielded similar results to a previously assessed harvest system. Model scenarios were used to explore the effect of differently sized transport vehicles on harvest time and it was found that placing transport vehicles with longer cycle times at the end of the rotation has the potential to reduce harvest time. The TruckSim model can be used to determine the optimal number of transport vehicles and their dispatch order to minimize total harvest time. The TruckSim model can be found at:

https://wimachineryextension.bse.wisc.edu/precision-agriculture/forage-harvest-simulation/#/home

[1] Biological Systems Engineering Department, University of Wisconsin-Madison, 460 Henry Mall, Madison, WI 53706