

Study shows farm equipment rough on roads

The data demonstrated that the farm equipment tested causes more damage than an 80,000-pound semi-truck.

RECENT DECADES have seen significant increases in farm size and farm equipment. Combined with regulations that encourage farmers to store manure as a liquid and apply it within a short time frame, manure hauling and application equipment is now built to deliver much heavier loads. Local road officials report increased pavement damage due to these heavier loads traveling on their roadways.

Cooperative study

A pooled fund study was launched in 2008 to shed light on this issue. State transportation departments in Minnesota, Iowa, Illinois and Wisconsin sponsored the research along with industry partners that included professional nutrient applicators associations in the four states, farm equipment manufacturers, tire manufacturers, the Minnesota Pork Producers and the Professional Dairy Producers of Wisconsin.

The pavement performance study investigates the effects of farm equipment on the structural

responses (stresses and strains) of asphalt and concrete pavements. It also compares the pavement damage caused by heavy farm equipment with that caused by a typical 5-axle, 80,000-pound semi-truck. Researchers used two newly constructed asphalt pavements and two existing concrete pavements at the MnROAD testing facility for the study. They tested axle load, vehicle weight, vehicle speed, wheel type, and traffic wander combinations to determine the structural response of both asphalt and concrete pavements.

Results are in

Study results appear in *Effects of Implements of Husbandry (Farm Equipment) on Pavement Performance*, a report released in November 2011. It includes information about which factors have a pronounced effect on pavement responses to farm implements—like traffic wander, seasonal effects, pavement structural characteristics, and vehicle type and configuration. The data also demonstrated that

the farm equipment tested causes more damage than an 80,000-pound semi-truck.

What can be done?

The research report identifies actions to minimize pavement damage due to farm implement loading. These include:

- increase the number of vehicle axles
- ensure even distribution of load between the axles
- avoid travel on fully saturated and/or thawed base and subgrade
- avoid travel on asphalt pavement with high surface temperatures
- construct a paved shoulder
- design and build the road to meet the heavier loads
- operate vehicles at least 16 inches away from the edge of the pavement

Putting these recommendations into practice will require major capital expenditures by the farmer and the local road agency. Some towns and counties are starting to work with farmers to modify hauling and spreading operations in ways that increase traffic safety and reduce road damage. One such approach is creating a one-way road system that allows farm equipment to travel down the center of the road away from the pavement edge.

An operation like this requires cooperation, planning, public communication, traffic control and local leadership to succeed. Look for more details about study results and what some Wisconsin local road officials are doing to help protect their roads and facilitate farm equipment operations in the next issue of *Crossroads*. ■

Larger farm equipment can put extra stress on local roads unless producers and local road agencies work together to minimize damage.

