

Watcharachan Sukcharoenvipharat 2012: A Study on Potential of Tractor-Towed Trailer for Transporting Sugarcane. Master of Engineering (Agricultural Engineering),
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Transportation costs are relatively high in agricultural production process. It is complicated and there are many factors involved. Recently, transportation of sugarcane to the factory are carried by trucks which used high investment. However, in plantation of sugarcane, tractors are used in soil preparation, planting and maintenance, which is used only for four months a year. Therefore, the objective of this research is to study the potential of tractor-towed trailer for using in the transportation of sugarcane to the factory comparing with truck.

The data studied were obtained from interviews of farmers, transportation provider and sugarcane factory. The carried weight of tractor-towed trailer was slightly higher than that of truck. Transportation with tractors- towed trailer needed less fuel consumption than truck at same distance. The fuel consumption was varied with running distance. Besides, it was found that the cost of maintenance for tractor was lower than truck. However, the tractor took more running time than the truck for same distance.

Mathematical model using LINDO showed that for selected farms, transportation cost with tractor-towed trailer was less than one with truck. Number of round trip was also smaller with tractor-towed trailer. However, running time was longer for tractor-towed trailer except for farm number four. This may be due to higher slope of road from farm to factory.

When analysis with CPLEX was carried out, it was found that transportation with only tractor-towed trailer were less than truck. Moreover, the lowest cost appeared when using 185 tractor-towed trailer combined with 10 trucks.

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