

# EVALUATION OF DIFFERENT GPS SIGNAL CORRECTIONS TO IMPROVE FIELD ACCURACY OF THE AUTOPILOT SYSTEM

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## ABSTRACT

Precision farming is considered as a plant production technology that supports the producer to define and apply the optimal input level in each part of his fields. In this way, the input utilization can be rationalized and thus the load of the environment can be decreased and cost reduction can be obtained at the same time. GPS positioning is the foundation of the site-specific technology. Positioning accuracy plays a key function both from technical and economic aspects. From technical side it defines the accuracy of any application. At the same time, development of GPS receivers for higher accuracy levels is a very cost demanding invest from economic side. The accuracy of GPS positioning by means of corrections from different sources were investigated in several studies. The authors intended to investigate the effect of GPS accuracy upgrade on positioning accuracy in practice. For this purpose, the steering accuracy of a Trimble Autopilot hydraulic robot pilot system installed in a New Holland T 6030 tractor was investigated. Test runs were done in a real field in different directions (North – South, South – North, East – West, West – East). Steering was controlled by a Trimble FMX display and data were recorded by another one. Test runs were done without correction, or rather using EGNOS, OmniStar VBS, OmniStar HP, and RTK corrections both from own base and GNSS network. The average steering error (offline distance) was defined in case of each run the accuracies of steering using different corrections were compared. The effect of driving direction on accuracy with regard to the given correction signals was analysed as well.

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