



TRACTOR TRACKING APPLICATION BASED ON GLOBAL POSITIONING SYSTEM (GPS) FOR EVALUATION OF LAND PROCESSING EFFECTIVENESS BY *FOUR WHEEL DRIVE* TRACTOR

ABSTRACT

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14/369481 / TP / 11118

Soil processing with technology is an idea for effectiveness and efficiency process in agriculture. Soil processing can be done by controlling the work results with the evaluation of the operator after doing the tillage. This evaluation will help tractor navigation, yet the cost of tractor navigation is still relatively expensive. This evaluation can be used by *GPS tracker*. *GPS tracking* control helps to process the soil with high precision and accuracy so that no soil will be treated or overlapping. In this study GPS was used to design a tractor track *tracking* analysis system to evaluate the performance and effectiveness of tillage on four-wheel tractors.

In field testing, soil treatment was carried out using disc plough and using edge patterns. So that the distance calculation using the *Haversine* equation and the asymptote equation was compared to the actual distance. The GPS calibration equation produces is $y = 0.9146x$. On the results of the plot *tracking* of 25 meters x 15 meters it shows good results because the display of GPS readings when *tracking* is in accordance with the plot of the land. Furthermore, the evaluation of the quality of the level of accuracy or accuracy of wide-distance work with the *Root Mean Square Error* (RMSE) method on the four largest corrected fields was 43.5 cm on the Pajangan 2 field and the smallest was 14.3 cm on the Moyudan 1 land. The operator factor, type of land, the presence of termite nests and chunks of rock is a factor in the effectiveness of tillage with four-wheel tractors.

Keywords: GPS, *tracking*, effectiveness, RMSE, evaluation