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Modeling and FEM Analysis of Shovel of 5-Tyne Duck Foot Cultivator

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Abstract: *For soil preparation Cultivator is important agricultural equipment. As an important agriculture equipment for soil preparation cultivator is used in which stress are form due to contact with soil where tyne and shovel works as actual member of cultivator which is direct contact with soil. We can reduce the stress from changing the design of tine or shovel of cultivator. The main objective of this analysis is to analyze the forces developed on shovel during operation. To analyze this Shovel using FEM, firstly a proper CAD model has been developed using CATIA cad software. Then by using ANSYs software FEM analysis have been done to determine the stresses.*

Keywords: Duck Foot, Cultivator, Tyne, Shovel

REFERENCES

[1]. Manikandan, G. , Shridar, B. , & Jesudas, D. M. . (2021) "Draft measurement of five tyne duck foot plough in clay soil", Journal of Applied and Natural Science, 13(SI), 73 - 79.
[2]. R. L. Raper "Force Requirements And Soil Disruption Of Straight And Bentleg Subsoilers For Conservation Tillage System" Applied Engineering in Agriculture 2005 American Society of Agricultural Engineers ISSN 0883-8542 Vol. 21(5): 787-794.
[3]. Topakci Mehmet & Celik, H. Kursat & Canakci, Murad & Rennie, Allan & Akinci, Ibrahim & Karayel, Davut. (2010) "Deep tillage tool optimization by means of finite element method: Case study for a subsoiler tine", International Journal of Food, Agriculture & Environment. 8. 531-536.
[4]. U. R. Badegaonkar, G. Dixit and K. K. Pathak, " An experimental investigation of cultivator shank shape on draft requirement", Archives of Applied Science Research, 2010, 2 (6): 246-255.
[5]. R. L. Raper, A.K Sharma. Soil moisture effects on energy requirements and soil disruption, of subsoiling a coastal plain soil. Transactions of the ASAE. 47 (6) : 1899-1905; 2004.
[6]. Prof. Srinivasan. K, Prof. Viswanath R. P, 'Design and Optimisation of Blades for Rotavators', IJIRSAT, Volume 4, Special Issue 4, April 2015.