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DESIGN & DEVELOPMENT OF CUTTER FOR ROTARY WEEDER

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Abstract

Weeds are one of the major causes of loss of agricultural produce. Weeds compete with crops for essential nutrients. Weeders are machines used for weed removal. Mechanical weeding is one of the prominent forms of weed removal. Smaller weeding machines commonly known as portable weeders are solely used for used weed removal in agricultural fields, gardens, public parks, etc. This paper discusses design of cutter wheel and blades for small weeder. Computer Aided Design (CAD) & Finite Element Method (FEM) software's are used for development of the geometry of cutter wheel. CAD model of the cutter and blades is prepared for experimentation. Important cutter parameters are changed and linear static stress analysis is carried out in FEM module. Various loads and constraints are applied at appropriate places on the cutter model. The resulting stress patterns are analyzed to minimize power requirement and optimize size and shape of the cutter and blades.

Keywords: Weeds, Weeders, cutter, blades, stress analysis, optimization.