Analysis of agricultural plough blades using finite element method

ABSTRACT

Interest in the analysis of behavior and stress distributed over the blade has increased in recent years. Hence, an investigation into a two-dimensional model to compute the effect of different shapes of agricultural plough blade (C-blade, L-blade and I-blade) on nodal displacements and stress distributions has been carried out using MicroField finite element package. To simulate the boundary conditions to which the blades are subjected, the blades were assumed as moving at a certain depth of the soil and the blades were clamped along the root of the blade. The distributed pressure created in a steady motion condition was analyzed as normal and tangential pressure that acted upon the blade. The same distributed soil pressure is assumed to be subjected upon the blades from zero depth of soil to the lower part of the blade. From the analysis, L-blade created the highest displacements and stresses over the blade compared to C-blade and I-blade.