

Energy prediction model for disk plow combined with a rotary blade in wet clay soil

ABSTRACT

A mathematical model was developed to predict the energy requirement for the combined effect of a disk plow and a rotary blade in clay soil suitable for wet rice cultivation in Malaysia. The developed equations can be used to predict the energy requirements for disk and rotary blade using mathCAD PLUS 6.0 software. The validity of the model was checked via experiments conducted in an indoor soil tank with the usage of an octagonal ring transducer for the disk and a torquemeter for the rotary blade. The variations between experimental and predicted values range from -1.4% to 3.3%.

Keyword: Mathematical model; Energy requirement; Disk plow; Rotary blade; Clay soil