

**Identifikasi Struktur Geometrik Bajak Berdasarkan Observasi Permukaan Kerja Singkal
(Ade Moetangad Kramadibrata)**

IDENTIFIKASI STRUKTUR GEOMETRIK BAJAK BERDASARKAN OBSERVASI PERMUKAAN KERJA SINGKAL

Ade Moetangad Kramadibrata
Fakultas Pertanian Universitas Padjadjaran
Jatinangor, Bandung 40600

ABSTRAK

Bajak singkal dalam pengolahan tanah membutuhkan energi terbesar di antara alat pengolah tanah pertama lainnya, karena itu identifikasi struktur geometrik permukaan kerja singkal ke dalam suatu model persamaan matematik diperlukan, agar diperoleh peluang untuk menentukan hubungan kuantitatif dengan kebutuhan energi (tahanan draft) yang dialami ketika dioperasikan dalam pengolahan tanah. Melalui metode matriks transpose terhadap titik-titik koordinat permukaan singkal yang diproyeksikan ke dalam sistem koordinat Cartesian, identitas beberapa bajak singkal yang digunakan di lahan basah, seperti bajak lanyam Cidaun (M-1) bajak lanyam Ciamis (M-2) dan bajak Brujul (M-3), serta bajak singkal yang digunakan di lahan kering seperti bajak baja Kubota (M-4) dan bajak besi Muara/Ciwidey (M-5) dapat didefinisikan ke dalam model persamaan hiperboloid. Secara umum identitas bajak-bajak tersebut dapat dinyatakan berdasarkan besarnya nilai rasio antara konstanta persamaan hiperboloid dari bajak singkal bersangkutan (a , b , dan c), dimana $R1 (=a/b) < 1$ berlaku untuk bajak lahan basah, dan $R1 > 1$ berlaku untuk bajak lahan kering.

Kata Kunci : Bajak singkal, identitas struktur geometrik, persamaan hiperboloid, tahanan draft tanah, bajak lahan basah dan lahan kering.

**IDENTIFICATION OF PLOUGH GEOMETRIC STRUCTURES RESULTED
FROM OBSERVATIONS OF MOULDBOARD WORKING SURFACE**

ABSTRACT

Tillage using mouldboard plough needs the greatest energy compared to other ploughs. Hence, the identification of geometric structures of mouldboard working surfaces into mathematical model equations is required to enable to determine quantitative relations of energy needs (soil draft resistance) as experienced by a plough when operated. Through the method of matrix transpose upon coordinate points on mouldboard working surface that had been projected into Cartesian coordinate system, the identities of some mouldboard ploughs - such as ones for tillage on lowland soil, i.e. : lanyam Cidaun (M-1), lanyam Ciamis (M-2), and Brujul Kopo (M-3); as well as for tillage on upland, i.e. : Kubota Steel plough (M-4) and Muara/Ciwidey Cast-iron one (M-5), can be defined into models of hyperboloid equations. Generally, the identities of the ploughs can be stated according to the value ratios between hyperboloid constants (a , b , and c) of respective ploughs, where $a/b = R1 < 1$ applies for lowland and $R1 > 1$ for upland ploughs.

Keywords : Mouldboard plough, geometrical structure identity, hyperboloid equation, soil draft resistance, lowland and upland ploughs.