

Operator physiological response and bullock draughtability during primary tillage

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Abstract: A study on draughtability of small sized bullocks (Pair weight of 430 kg) of Kumaon hills of Uttarakhand, India for operating primary tillage by a newly developed VL Syahi hal (plough) was conducted at ICAR-Vivekananda Parvatiya Krishi Anusandhan Sansthan, Almora in five different locations of Almora and Bageshwar district of Uttarakhand in the winter season, 2012 (November and December month). The physiological responses like pulse and respiration rate in ploughing with VL Syahi hal have increased with duration at the rate of sharp increase in the first hour followed by slow increase thereafter. The pulse and respiration rate increased by 27% and 14% respectively from its initial value after 1st hour of work. The average draft requirement of VL Syahi hal was observed to be within draughtability of the small bullocks. The bullocks could sustain the ploughing load (11.86% of their body weight) for two hours of continuous working during winter period. The average field capacity was 0.023 ha/h (43 h/ha) compared to 0.0136 ha/h (73 h/ha) with traditional plough. Considering draught, fatigue score, field capacity and soil pulverization, VL Syahi hal of 180 mm width was found to be suitable for small size bullocks of Kumaon hills of Uttarakhand.