Abstract:

A field survey was carried out in the main irrigated schemes of the Sudan, namely Gezira, Rahad and New Halfa, to collect data on tractor repair and maintenance costs. Three tractor makes, of the same age and working mostly under the same conditions, were selected. Based on the data collected, mathematical models were derived to predict the accumulated repair and maintenance (R and M) costs as percent of initial purchase price in relation to accumulated hours of use of each tractor make, and also for the three makes collectively. Other models were also developed to relate the accumulated repair rate/1000 hrs and accumulated maintenance costs to tractor age (years). The derived models indicated that the relations could be best explained by the power functions. The accumulated R and M costs, as percent of initial purchase price (y), increased as the accumulated hours of use of the tractors (x) was increased: $y = (4.0 \times 1.25)^{10^{-4}}$. The accumulated repair rate/1000 hrs (p) and the accumulated maintenance costs (m) increased with increase of tractor age (a) in years: $p = 0.343 \ a^{2.16}$ ; $m = 56.16 \ a^{1.75}$