

Repair and Maintenance Cost Models for Combines in Saudi Arabia

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Objective of this study was to develop repair and maintenance cost models for combines in Hail Agricultural Development Company (HADCO), Saudi Arabia. Three exponential models were developed. The general form of the model is:

$$\text{A.T.C.} = \alpha (N)^\beta$$

where: **A.T.C.**: ratio of accumulated repair and maintenance cost to the machine list price, **N**: accumulated engine working hours divided by 1000; or, accumulated separator working hours divided by 1000; or, percentage of machine age to its wear-out life. Results showed that any of these models could be used if one of the independent variables (**N**) is known. The first model estimated the costs when some or all machine moving parts were operating, while the second model calculate the costs when all parts were operating. This was mainly due to preparing the combine or long transportation from one location to another. Unfortunately, there was no previous studies concerning this point and further detailed investigation is needed. A comparison was made between the first model and similar models obtained by other studies. It was found that the developed model gave the least cost compared with other models due to the fact that it was developed using accurate records of one huge project. It is recommended that the use of mathematical models developed for combines repair and maintenance be used to those areas which they were developed for, or very similar in costs of spare parts and labor.