ABSTRACT

Agriculture has been the backbone of the Indian economy and it will continue to remain so for a long time. Maharashtra has diverse agro climatic conditions suitable for the cultivation of a wide range of crops and a progressive farming community.

Although, agriculture is generally recognized as the nation's most hazardous industry and displays high rates of musculoskeletal disorders with evidence to suggest that ergonomic risk factors are involved, there is very little history of application of ergonomic approaches in agricultural equipment design. Therefore, in agriculture, the application of ergonomics can help in increasing the efficiency, comfort, safety and thereby productivity of the workers without jeopardizing their health and safety.

Ergonomics is a science focused on the study of human fit, fatigue and discomfort through product design. Anthropometric data of agricultural workers is very essential for the safe and efficient design of farm machinery.

In this work, a survey is conducted to collect anthropometric dimensions of male agricultural workers and cultivators in Maharashtra state of India in the age group of 18-60 years. Almost 59 parameters are selected for the measurement from 303 male agricultural workers from the Maharashtra and data are collected. The SPSS 20 software is used for the data analysis. The skewness and kurtosis test, Shapiro-Wilk test, histograms, normal QQ plots and box plots are used to check the normality of the data. A Levene’s test is used to ensure homogeneity of variance in the samples. The frequency analysis, ANOVA and post hoc tests are conducted.

In addition to this, ergonomic evaluation of few farm equipments/implements such as maize thresher cum dehusker, electric hedge trimmer and knapsack sprayer is performed. The various DHM and ergonomic simulation tools such as RULA, lift/lower analysis, carry analysis, reach analysis, biomechanics analysis etc. are used.