MODELLING OF *Sitophilus oryzae* AGE STRUCTURE USING MULTIVARIATE ANALYSIS

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ABSTRACT

Sitophilus oryzae (rice weevil) known as severe pest to many stored products, such as rice and grains. Age structure of *S. oryzae* is important information in predicting the fertility rate in sample assessment. This study focuses on the usage of morphometric analysis of *S. oryzae* morphology to obtain data and develop into several models which is model 1 that consist of all the morphological features, Model 2 that consist of body length, body width, prothorax width, thorax width, and head width and Model 3 that consist of thorax width and prothorax width. The morphometric measurement of *S. oryzae* were taken once a week from the first week until the eighth week. Next, the numerical information from the morphometric analysis was analyse using discriminant analysis model to predict their age structure. The prediction age structure of *S. oryzae* can be relate with fertility rate of the species where most of the eggs were laid in the first 4-5 weeks thus can be use to prevent the infestation of *S. oryzae* in stored foods or products. The result from the analysis shows that model 1 that consist all of the morphological features has the highest performance accuracy which is 62.99%. This means that model 1 can be conclude as the best model to be used to predict *S. oryzae* age. However, the model is still considered poor and unreliable may due to low sample size, refraction of the sample container that affect the image produced for measurement, and multicollinearity issues.

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