

DESIGN, DEVELOPMENT AND EVALUATION OF ANIMAL FEED BLOCK MAKING MACHINE

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The dairy industry is one of the most important industries in Sri Lanka. The present status of the dairy industry in Sri Lanka is far below expectations due to low productivity of dairy animals. Insufficient feedstuff due to the seasonal production variation is the major reason for low productivity. During dry periods, farmers can use agricultural by-products as a supplement which can be preserved as a feed block in order to supply feeds continuously. Unavailability of an affordable mechanical solution is a constraint to produce feed blocks for small scale farmers. Therefore, in this study, it was aimed to introduce an efficient and affordable feed block making machine for small scale level. The main components of the machine are hydraulically operated mold, movable piston and frame. The height, width and length of the machine were 150cm, 53cm, and 55cm respectively. The total material cost of the machine was about 35,000LKR. The evaluation of the developed machine and the produced feed blocks was done in terms of durability, post compression expansion, the time taken to optimum compaction, and the shelf life. Two mixtures of ingredients with paddy straw were used for the testing of feed blocks. The suitable compaction time for the mixture with 10% molasses and for the mixture with 5% molasses and 5% cement were 15 minutes and 10 minutes respectively at 4687 KN/m² pressure. The post compression expansion for mixtures were 18.64% and 23.73% respectively. The average weight of a block was 100 g and the volume of the block can be further increased by modifications. Any change in appearance, color, and odor of the feed blocks were not observed within 10 days of storage. According to the results it can be concluded that the machine is affordable and suitable to preserve the feedstuff as blocks.

Keywords: Durability, Feed block, Post compression expansion