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Effects of production systems on the depreciation costs in tropical dairy farms

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Introduction

Depreciation of the production system is the loss of value of improvements that may occur due to physical wear and tear, by actions of nature or by use itself. The amount of depreciation must be an accounting reserve of the farm to generate resources that allow the replacement of productive factors at the end of their useful life. Therefore, depreciation should be seen as the operating cost of the farm, forming the total cost of production.

Objective

Thus, we aimed to compare the depreciation costs of dairy operations in Compost Bedded Pack (CBP), Free Stall (FS), and Drylot (DL) systems.

Material and Methods

We collected data from 960 Brazilian farms over 120 consecutive months. The production level of the farms ranged from 150 to 8,000 L of milk/day. Milk production of the farms was calculated by converting revenue beef sales (surplus animals) to the equivalent amount in milk with the same revenue and called the equivalent milk production equivalent (MYeq). Depreciation cost was modeled for two animal production categories: milking cows (MC) and non-milking animals (NMA). We used a regression model that included linear and quadratic parameters, and we added the production system as a fixed variable for all parameters tested with this model. Consultant, year, herd, and herd × system interaction were included in the model as random variables. Depreciation costs ($/farm/year) for MC were quadratically associated to MYeq ($P < 0.10$).

Results and Discussion

FS exhibited the greatest depreciation costs, followed by CB. Depreciation costs for NMA were linearly associated with MYeq ($P < 0.10$). In MYeq up to 1,000 L/day, FS and DL had the greatest costs. Between these two systems, FS had the greater costs. There was a lower depreciation cost in CB for NMA. Overall, DL farms had greater TOC when compared with CB and FS with higher MYeq. However, the depreciation costs were higher in more intensive systems, especially FS. The FS facility has more complex structures, such as individual beds, machinery for cleaning the stalls, and a manure treatment system. This structure intensively depreciates and requires repairs and maintenance; hence, there are more significant depreciation and sundry expenses than CB and DL. In addition, FS has a greater cost regarding manure treatment systems than CB, which produces 80% less manure. Lastly, we observed that DL had the lowest cost with depreciation, likely because of lower cost with waterers, feeders, fences, and shaded areas than FS or CB. Additionally, DL has mostly solid manure; thus, the facility used for manure treatment costs less than FS and CB.

Conclusions

It is concluded that DL had the lowest depreciation cost, probably due to the lower cost of drinkers, feeders, fences and shaded areas than FS or CB. In addition, DL has mostly solid manure; thus, the installation used for manure treatment costs less than FS and CB.

Bibliography

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