Using milk replacer to rear dairy male calves For meat production

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1. INTRODUCTION

In Vietnam, dairy cattle population is more than 100 thousand head with an estimated 20 thousand dairy male calves born each year. A small number of dairy male calves is kept for breeding purpose, most of them often sold for slaughter at 3 – 7 days after calving. With fresh milk price of about VND7,500/kg, the main reason that farmers do not want to keep dairy male calves is relatively high costs in sucking period. Study on using milk replacer to reduce rearing cost is an imperative need to increase economic efficiency and meat production. The research project: *"Study on techniques to rear dairy male calves for meat production in the South-Eastern of Vietnam"* had been carried out from 2008 to 2010 to build a procedure of rearing dairy male calves for meat. This article presented research results on using milk replacer to rear dairy male calves at 0 – 3 months of age.

2. CONTENTS AND METHODS

2.1. Study on formulation of milk replacer

Based on nutritive values of whole milk, imported milk replacer, material components, some milk replacers which have met nutritive requirement and cheaper cost have formulated. These milk replacers were experimented upon dairy male calves with comparing to using whole milk and imported milk replacers.

2.2. Study on using milk replacer to rear dairy male calves at 0 – 3 months of age

With the total amount 220kg of whole milk plus milk replacer used at 0 – 3 months, an experiment was implemented to find out suistable replacement level of milk replacer and distribution of whole milk at this period.

Table 1. Experimental design

Distribution of whole milk	Replacement level of milk replacer		
	70 % milk replacer	*80 % milk replacer*	*90 % milk replacer*
Only at the first month	Plot I: 8 calves	Plot IV: 8 calves	Plot VII: 8 calves
At the first two months	Plot II: 8 calves	Plot V: 8 calves	Plot VIII: 8 calves
Provided during 3 months	Plot III: 8 calves	Plot VI: 8 calves	Plot IX: 8 calves

3. RESULTS AND DISCUSSION

3.1 Formula and nutritive value of milk replacer

Based on ability to provide, nutritive values and market price, the following materials could be used for mixing milk replacer as: soy flour, rice flour, fat powder, skim milk powder, whole cream milk powder, lactose powder. Enzymes and vitamins were also added during mixing milk replacer. On that basis, three formulas of milk replacer were determined and the average nutritive values of liquid milk replacer (1 kilogram milk replacer was diluted in 7 liters of water) contained: 11.6% dry matter, 2.86% crude protein, 3.34 crude fat, 4.50% lactose, 0.29% crude

fiber, 0.44% total mineral, 6,460 IU vitamin A, 3.81 IU vitamin E. Some of indices such as dry matter, protein, fat, lactose are equivalent to nutritive values of whole milk and other imported milk replacers. The cost of self – produced milk replacer is about 2,600 – 2,700 VND per kilogram (in liquid form). This cost is much cheaper than the price of other imported milk replacers (Milk-Pro: 3,700 VND/kg; Young-Calf: 4,000 VND/kg) and the price of whole milk (7,500 VND/kg).

The milk replacer was experimented on dairy male calves with 50% milk replacer instead of whole milk in total amount 220kg of whole milk plus milk replacer. Experimental results showed that dairy male calves had normal growth development and the average daily gain was about 500grams per calf per day.

Product "Milk Replacer"

Dairy male calves in shed

Dairy male calves in yard

3.2 Technique of using milk replacer to rear dairy male calves at 0 – 3 months of age

Table 2. Economic and technical indices of dairy male calves at 0 – 3 months of age

Experimental plots	*Economic and technical indices*			
	Number of diseases (cases/plot)	*Average daily gain (g/day)*	*Total cost of feed (VND/calf/period)*	*Feed cost/1kg weight gain (VND/kg)*
Plot I	7	538^{a}	1,375,000	31,200
Plot II	9	522^{ab}	1,369,000	32,000
Plot III	11	512^{ab}	1,368,000	32,600
Plot IV	7	579^{a}	1,275,000	26,800
Plot V	6	493^{ab}	1,268,000	31,400
Plot VI	12	536^{a}	1,267,000	28,800
Plot VII	11	511^{ab}	1,168,000	27,900
Plot VIII	19	431^{bc}	1,165,000	33,000
Plot IX	20	381^{c}	1,152,000	36,900

** Means within the same column with unequal superscripts are significantly different (P < 0.05).*

The initial weight of calves was about 33 kilograms and the experimental time was 82 days. The daily gain weight of calves and other indices were presented in table 2. The results showed that calves were reared in plot IV to reach the most efficient. This means that milk replace can be used up to 80% instead of whole milk to rear dairy calves at 0 – 3 months of age for meat production and 20% of whole milk should be used in the first month. Project is continuing to study on techniques of rearing calves from 4th month to slaughter for completion of procedure.