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The Double Productive Line's Method for Raising Calves to Nine Months of Age

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Abstract: It is feasible to raise robust, constitutional calves with high daily growth and live weight by substituting protein-rich feed for a portion of the diet while growing Schwitz breed calves generated by homogeneous mating, as described in the article. There is information about walking. The calves started the trial with about the same live weights. By seven months, the control group's live weight had increased by 500 grams per day to 140 kg after 30 days. Every day, the experimental group grew by 146.5 kg and 733 g, which is 233 grams more than the control group growing everyday. By the time they were 9 months old, the calves in the control group weighed 167.7 kg live, and they gained 450 grams per day between the ages of 8 and 9 months. In the experimental group, it was 216 grams more.

Key words diet, solid constitution, homogeneous mating, digestible protein, blood serum, metabolic energy, nutritional unit, fiber, vegetable protein, artificial milk, dry matter, yield rate.

Introduction

In compliance with the March 3, 2021, President of the Republic of Uzbekistan No. PQ-5017 decision "On additional measures to support the livestock industry by the state," the fast growth of the livestock industry in our country, the introduction of cutting-edge and modern production techniques, the expansion of product types and volume, the provision of affordable and high-quality livestock products produced locally, and state support for animal husbandry-focused businesses are all being carried out.

The live weight of the calves at birth is around 25–35 kg, or 7–9% of the mother's live weight, depending on the breed of cow and the calves' developmental stage during the embryonic phase. Cattle, depending on the breed, can live up to four or five years. As a result, at every farmer's farm, assistant farm, and cooperative farm, feeding programs for cattle breeding are required. A calf rearing strategy that contributes to the production of calves with strong constitutions, healthy growth and development, and extended usage on the farm while considering their biological characteristics is necessary for effectively organizing feeding. As a result of the research of breed characteristics on farms that specialize in cow breeding, scientifically grounded technical techniques for their application are now being developed. When moving cattle among farms specializing in dairy farming, it's crucial to create a care plan and feed calves according to zootechnical requirements.

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Feeding calves in accordance with zootechnical standards helps to preserve the number of heads while also positively affecting their growth and development indicators.

When calves are born, their udders are larger than their large bellies. The huge belly's dimensions in relation to the udder are 1:3. The udder grows significantly quicker than the large belly up to a month. The large belly starts to expand faster after one month. The large belly is five to six times larger than the udder by the time the animal is four months old. The ratio of markers of variations across nutritional compartments is the same in calves when they make the switch to a complete herbivore diet as it is in adult animals. [Kozlov A.S, 84–86-b.].

Cattle calves' complicated stomachs develop both histologically and morphologically in tandem with their volumetric growth. The surface of the big abdomen enlarges dramatically due to the fast growth of the mucous layer and sliding layers on the stomach walls. The pre-meadow cells' number of parameters reaches adult animal levels by the time the animals are six months old [Kozlova A.A.; p. 30].

On the first day of a calf's life, symbiont-microorganisms occupy pre-gastric compartments; however, the kinds of these microorganisms vary depending on the kind of food taken, which in turn influences the modifications in the big stomach's digestive processes. Research has revealed that the bacteria present in calves' rumen initially manifest themselves within the first hour of their lives. During the first three to five days of their lives, calves' big abdomen fluid had 8 to 10 billion germs in one milliliter. A.S. Kozlov, pages 20–24.

One milliliter of the ruminal fluid of calves that are one month old contains 35–44 billion germs, three months' worth contains 40 billion, and six months' worth contains 44 billion [Dukhin.I.P; 20–p.]. This information is documented in the literature.

The purpose of the research. Feeding Swiss female calves up to the age of 9 months based on different technologies and determining their growth and development characteristics.

Conditions and method of research. These studies were conducted at a farm that specializes in cow breeding called "Besh Bulak Chorva" LLC in Kitob District, Kashkadarya Region. In the investigation, new zootechnical techniques and well acknowledged contemporary morpho-physiological statistical analytic techniques were employed. Initially, a scale was used to assess the live weight of the calves in both groups.

Food is defined as having enough protein to meet an animal's body's requirement for amino acids. Urea levels in the blood serum rise in response to abrupt increases in digestible protein intake and inadequate protein feeding. The liver produces urea, requiring 70 kcal of metabolic energy to make one gram of urea molecule. The body of an animal stores around 16% of nitrogen in addition to hydrogen as plant protein, carbohydrates, and oxygen. Different proteins are digested differently by plants, animals, and microbes.

The whole biological value of different kinds of food can be inferred indirectly from clinical markers (such as the level of urea in the animal's blood or milk). If the animal is fed low-quality proteins (those lacking in essential amino acids) and an overabundance of digestible protein, the sugar content will inevitably rise in urea. The development plan of young animals determines how much nutrition they require annually. The calculation of the annual need for food unit, exchangeable energy and digestible protein was calculated according to the daily standards for the month and age-related periods. Depending on the periods of feeding and their duration, the annual need of animals for various nutrients is determined.

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Table -1

Feeding ration of 6-8 month old calves

Food types	Amount of feed, kg	Food unit, kg	Dry matter kg	Hazml. protein g	Sugar, g	Raw fiber g	Sa, g	R, g	Salt g	Carotene, mg	Na, g	K, g	Cu, mg	Zn, mg	Co, mg
NORM		3,7	4,3	355	320	945	32	17	21	100		30	55	245	3,8
Control group															
Autumn wheat straw	5	1,0	1,23	25	15	1820	14	4	-	20	6,4	37,8	9	131,8	0,1
Corn silage	8,5	1,70	2,125	112	51	673	11,9	5,1	-	340	2,85	24,65	8,5	4,93	0,2
Beetroot	2	0,24	0,240	18	80	18	0,8	1	-	0,2	2,6	8,0	3,8	6,6	0,2
Amishta feed	0.8	0,80	0,72	80	32	40	1,6	3,2	-	0,5	0,64	4	3,52	28	0,1
Salt	0,021								21						
DAF	0,1							23							
Total		3,74	7,31	242	178	2551	28,3	13,3		360,7	12,45	74,45	24,82	171,33	0,6
Experimental group															
Alfalfa hay	2	0,88	1,66	202	40	506	34,0	4,4	-	98	2,53	15,2	3,6	57,3	0,1
Autumn wheat straw	4	0,8	3,38	20	12	1456	9,2	3,2	-	16	5,10	30,2	7,2	105,4	0,2
Mecca silage	5	1,0	1,25	70	30	375	5,6	30	-	200	1,7	14,5	5,0	2,9	0,2
Sugar beet	2	0,24	0,24	18	80	18	0,8	1,0	-	0,2	2,6	8,0	3,8	6,6	0,2
Amishta feed	0,8	0,8	0,72	80	32	40	1,6	3,2	-	0,5	0,64	4	3,52	28	0,1
Salt	0,021								21						
DAF	0,1							23							
$CuSO_4$,	50												20		
$ZnSO_4$	100													40	
$CoSO_4$	50														3
Total		3,72	7,25	390	194	2395	51,2	37,8	21	314,7	12,57	71,5	43,12	242,2	3,8

Six to eight-month-old calves' diets were examined, and the following markers were found:

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In the experimental group, the digestible protein equivalent to one nutritional unit was 104.8 g, while in the control group it was -64.7 g. Coarse feeds make up 26.73% of the diet, juicy feeds, 51.87%, strong feeds, 21.39%, and crude fiber in dry matter, 34.89%. These nutritional indicators were as follows for the experimental group: raw fiber content in dry matter was 32.76%, juicy feed was 33.3%, strong feed was 21.5%, and 44.9%.

Table 2

Feeding ration of 8-9 month old calves

Food types	Amount of food in kg	Food unit, kg	Dry matter kg	Hazml. protein g	Raw fiber g	Sugar g	Sa g	R g	Na g	K g	Cu, mg	Zn, mg	Co mg	carotene, mg
NORM		4,0	4,9	370	1075	335	34	13		36	59	220	3,8	110
Control group														
Autumn wheat straw	5	1,0	4,2	25	1820	15	14	4	6,4	37,8	9,0	13,5	0,1	20
Corn silage	9,5	1,7	2,375	112	712,5	57	13,3	5,7	3,23	27,55	9,5	5,51	0,2	380
Beetroot	3	0,36	0,360	27	27	120	1,2	1,5	0,3	3,9	12	9,9	0,2	0,3
Amishta feed	1	1,00	0,90	100	50	40	2,0	4,0	4,0	5,0	4,2	35,0	0,1	0,3
Total		4,06	7,8	264	2609,5	232	30,5	15,2	3814,53	82,39	28,4	182,2	0,6	400,6
Experimental group														
Alfalfa hay	2	0,88	1,66	202	506	40	34	4,4	2,5	15,2	3,6	5,7	0,1	98
Autumn wheat straw	4	0,60	2,53	15,0	1092	9	6,9	2,4	5,1	30,2	7,2	105,4	0,2	12
Mecca silage	6	1,20	1,50	84	450	36	8,4	3,6	204	17,4	6	3,46	0,2	240
Hashaki beets	3	0,36	0,36	27	27	120	1,2	1,5	3,9	12	5,7	9,9	-	0,3
Amishta feed	1,0	1,00	0,9	100	50	40	2,0	4,0	4,0	5,0	4,2	3,5	0,1	0,3
Salt	0,06								24					
DAF	0,1							23						
$CuSO_4$, mg	50										20			
$ZnSO_4$ mg	250											10,5		
$CoSO_4$ mg	50												3	
Total		4,04	6,95	428	2125	245	52,5	37,9	35,54	79,8	48,4	27,4	3,8	350

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In the course of the study, when analyzing the feeding ration of 8-9-month-old calves, digestible protein per feed unit was 65.02 g in the control group, and 105.9 g in the experimental group. In the analysis of the diet, coarse feeds - 24.63%, juicy feeds - 50.7%, strong feeds - 24.63%, and crude fiber in dry matter - 33.3%, while in the experimental group coarse feed - 36.63%, juicy feed - 38.6%, strong feed - 24.75%, and crude fiber in dry matter was 27.24%. In the experimental and control groups, the nutritional content of the ration was at the required level, the digestible protein in the ration was 242 grams in the control group fed under farm conditions, and 390 grams in the experimental group. This indicator is 113 grams less in the control group compared to the digestible protein required in the norm, and in the experimental group it is at the norm level (390 g).

When analyzing the diet, digestible protein per food unit in the diet of 6-7.5-month-old calves was 64.7 g in the control group, and in the experimental group, this indicator was 65.2 in the diet of 8-9-month-old calves. ; It was 105.9 gr. When the composition of the diet was analyzed, 26.73% of coarse feed, 51.87% of juicy feed and 21.39% of strong feed were included in the diet of 6-7.5-month-old control group calves. In the diet of calves in the experimental group, roughage made up 21.5%. Crude fiber in the dry matter content of the ration of calves at the age of 6-8 months did not differ much, that is, 34.89% in the control group and 32.67% in the experimental group. The ration of calves aged 8-9 months contained 33.3% of crude fiber compared to dry matter in the control group and 27.24% in the experimental group.

Crude fiber in dry matter was 6.06% less in the experimental group than in the control group. If the diet of 6-8-9-month-old calves contains more than the norm of calcium from minerals, there is a lack of phosphorus, and the ratio of calcium to phosphorus is not 1: 1.5 - 2.0, but rather 1: 3.5. is coming. Diammonium phosphate salt was added to the diet of calves in order to balance the ration composition, and if the ratio of sodium to potassium was insufficient, the salts of these elements, $CuSO_4$, $ZnSO_4$, and $CoSO_4$, were added.

Ensuring the rapid growth and development of young animals is crucial to generate a productive group that will eventually replenish the herd. A number of factors affect this, the primary ones being the amount of protein, vitamins, and minerals consumed. Increased roughage in the diet decreases nutritional digestion, which increases the risk of gallstones. When young calves are six months old, their live weight should be between 130 and 175 kg, and by nine months, they should be growing by 600 to 650 grams per day.

The experimental calves were weighed on a scale to ascertain their live weight, and their daily growth was computed.

Table 3

Changes in live weight and daily growth of calves in the experiment

Age of calves, month	Groups			
	Control		Experience	
	Live weight, kg	Daily growth, g	Live weight, kg	Daily growth, g
6	125±1,2		124,5±1,2	
6-7	140±1,1	500	146,5±1,1	733
7-8	153,5±2,3	450	166,5±2,2	666
8-9	167,5±2.1	466	185,5±2,0	633
6-9	167,5±2.0	472	185,5±1,9	677

The chart indicates that at the start of the trial, the live weight of the calves was nearly constant. The live weight in the control group was 140 kg after 30 days, and it increased by 500 grams per day by the time the group was 7 months old. It was 146.5 kg in the experimental group and increased by 733 g per day, or 233 grams more per day than in the control group. Calves in

the control group had a live weight of 167.7 kg at 9 months of age, and they gained 450 grams per day between 8 and 9 months of age. In the experimental group, it was 216 grams more.

Table 4

Absolute and relative growth indicators of calves up to 6-9 months of age

Age of calves, months	Groups			
	Control		Experience	
	Absolute growth, kg	Relative growth,%	Absolute growth, kg	Relative growth,%
6	-	-	-	-
6-7	15	12	22,0	17,6
7-8	13,5	11,1	20,0	13,6
8-9	14,0	10,9	19,0	11,42
6-9	42,5	34,2	61,0	48,9

The table shows that the experimental group's absolute growth in the first seven months was 7 kg greater than the control group's, 6.5 kg higher in the second seven months, and 5 kg higher in the eighth and ninth months. During the trial, that is, between 6 and 9 months, a gain of 18.5 kg was seen. The experimental group's relative growth was found to be 14.7% greater than that of the control group. The experiment's findings demonstrate that the amount of protein in the diet affects the growth and development of calves older than six months, and that meeting the calves' need for digestible protein secures their high live weight. Consequently, the absolute and relative growth of calves will be higher.

As a result, the amount of digestible protein in the food is crucial for the growth and development of calves. To guarantee daily growth and a high live weight, a portion of the meal should be replaced with feed that is high in protein. Any scientific work's outcome is based on how economically successful the experiment was. It was found that, even with the same nutritional content, calves' development is negatively impacted by a diet lacking in digestible protein. By computing the profit from the calves' live weight at the sale price, the cost was ascertained. The net profit—the difference between revenue received and expenses incurred—was used to calculate the level of profitability.

Table 5

Economic efficiency of the experiment

Indicators	Unit of measure	Groups	
		Control	Experience
Live weight of calves	kg	167,5	185,5
Selling price of 1 kg of live weight	sum	5000	5000
Income from calves	sum	837500	927500
The cost of the calf	sum	703000	726000
The cost of 1 kg of live weight	sum	4197,0	3913,7
Net profit	sum	134500	201500
Rate of return	%	19,1	27,7

The table shows that as a consequence of the experiment, the live weight of the calves in the experimental group was 18 kg higher than that of the calves in the control group, which resulted in the same sales price and a profit of 927,500 sols for the experimental group. m, and it was 90,000 fewer in the control group. The level of profitability grew by 8.6% as a consequence of the experiment, with the experimental group's net profit being 67,000 soums greater than that of the control group.

Conclusion

1. For calves older than six months, substituting alfalfa hay for a portion of the winter wheat straw in their ration guarantees a modest amount of digestible protein in their diet.

2. When developing calves, the minerals that are missing in the feed are replaced with salts of this element to meet their mineral needs.

3. During the 6- to 9-month growth period, the experimental group's calves' live weight increased by 18.5 kg in comparison to the control group. The experimental group's relative growth was found to be 14.7% greater than that of the control group.

4. Increased usage of calves on a farm with a strong constitution aids in the correct externalization of the feeding system while considering the physiological and genetic features of the calves.

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