Effect of the length of cag interval on milk yield of black and white cows

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ABSTRACT: The effect of the length of calving interval on milk yield of black and white dairy cattle was investigated. In the examined population of cows, the most favourable calving interval, from the point of view of the length of their utilisation and life milk, fat and protein yields, ranged from 371-410 days.

INTRODUCTION

Low milk yield and poor fertility of dairy cattle still remain among the most important factors limiting dairy production profitability. Majority of dairy farmers underestimate the relationship between the length of calving interval and milk utilisation and wrongly assume that the standard length of lactation is optimal for high yielding cows.

The objective of this research project was to investigate the impact of the length of calving interval on milk performance of the examined cow population as well as on the length of utilisation of these cows.

MATERIAL AND METHODS

The experimental material comprised data concerning milk performance of 167 dairy cows of black and white breed with 50 to 82% upgrade of Holstein-Friesian cattle. The herd belonged to the Plant Breeding and Acclimatisation station in Borów. The animals were utilised in years 1982-2000. All cows were kept in a stanchion system and were fed maize and lucerne silage supplemented with concentrates produced on the farm. The performed analyses were carried out on production data obtained from breeding records available on the farm. Average life yields of the examined cattle amounted to 19 862 kg, while the average calving interval for the herd was 421 days.

For the purpose of assessment of the impact of the calving interval on milk performance, experimental cows were divided into 19 groups with 10-day intervals. The shortest assumed calving interval was 330 days, while the longest – 501 days.

The performed statistical calculations employed the SAS® (1991) statistical program. Mean standard deviations for individual traits were calculated using the MEANS procedure.

RESULTS

The Table presents life yields and length of utilisation of cows in relation to the length of the calving interval. The highest milk production occurred during the calving interval between the 371st and 410th day; 32.3% of the examined population happened

to be in this interval. The lowest life yields were recorded in animals with a mean calving interval of up to 330 days (15 088 kg milk, 629 kg fat and 487 kg protein). Animals from the group with average calving interval ranging from 401 – 410 days reached the highest life yields – 30 013 kg milk, 1298 kg fat and 992 kg protein. The longest period of utilisation (4.45 – 4.85) was observed in cows whose calving interval ranged from 371 – 410 days. This group comprised 32.3% of the examined population. A significant drop of the utilisation period (below 4 years) occurred in cows with the calving interval shorter than 351 days.

CONCLUSIONS

1. The shortening of the calving interval to less that 351 days has a negative influence on life yields.
2. In the examined population of cows, the most favourable calving interval, from the point of view of the length of utilisation period (4.45 – 4.85 years) as well as life yields of milk, fat and protein, was found in the interval of 371 – 410 days.

Table: Milk yield and utilisation period of cows in relation to calving interval.

N	%	Calving interval	Yield					Utilisation period (years)
			Milk	Fat		Protein		
			kg	kg	%	kg	%	
5	**2,9**	**< 330**	**x** **15088**	**629**	**4,16**	**487**	**3,22**	**2,8**
			s *3260*	*240*		*186*		
7	**4,2**	**331-340**	**x** **17514**	**802**	**4,58**	**588**	**3,35**	**3,2**
			s *1095*	*450*		*362*		
8	**4,7**	**341-350**	**x** **20564**	**877**	**4,26**	**666**	**3,23**	**3,9**
			s *7866*	*310*		*218*		
9	**5,3**	**351-360**	**x** **24682**	**1067**	**4,31**	**785**	**3,31**	**4,4**
			s *5471*	*260*		*176*		
10	**5,9**	**361-370**	**x** **23221**	**1015**	**4,37**	**796**	**3,42**	**4,3**
			s *8527*	*367*		*261*		
17	**10,1**	**371-380**	**x** **25261**	**1098**	**4,35**	**818**	**3,23**	**4,45**
			s *8685*	*354*		*258*		
12	**7,1**	**381-390**	**x** **26982**	**1122**	**4,15**	**844**	**3,12**	**4,5**
			s *7886*	*515*		*422*		
15	**8,9**	**391-400**	**x** **28821**	**1210**	**4,20**	**889**	**3,29**	**4,77**
			s *7451*	*480*		*381*		
10	**5,9**	**401-410**	**x** **30013**	**1298**	**4,32**	**992**	**3,30**	**4,85**
			s *7989*	*441*		*352*		
10	**5,9**	**411-420**	**x** **21951**	**950**	**4,33**	**712**	**3,24**	**4,3**
			s *9414*	*415*		*334*		
9	**5,3**	**421-430**	**x** **25630**	**1154**	**4,50**	**868**	**3,38**	**4,5**
			s *6137*	*523*		*410*		
8	**4,7**	**431-440**	**x** **20962**	**928**	**4,43**	**666**	**3,17**	**4,4**
			s *3999*	*179*		*120*		
7	**4,2**	**441-450**	**x** **25962**	**1215**	**4,67**	**887**	**3,41**	**4,3**
			s *7541*	*369*		*235*		
6	**3,5**	**451-460**	**x** **24935**	**1174**	**4,7**	**542**	**3,37**	**4,45**
			s *8290*	*339*		*291*		
5	**2,9**	**461-470**	**x** **23391**	**943**	**4,03**	**788**	**3,36**	**4,3**
			s *5217*	*257*		*161*		
7	**4,2**	**471-480**	**x** **24590**	**1137**	**4,62**	**810**	**3,29**	**4,5**
			s *5944*	*294*		*223*		
6	**3,5**	**481-490**	**x** **23501**	**989**	**4,21**	**747**	**3,18**	**4,3**
			s *4213*	*215*		*321*		
7	**4,4**	**491-500**	**x** **25580**	**1145**	**4,47**	**856**	**3,34**	**4,45**
			s *2684*	*262*		*212*		
9	**5,3**	**> 501**	**x** **25265**	**1109**	**4,39**	**852**	**3,37**	**4,5**
			s *1311*	*461*		*351*		
167		**421**	**19862**	**872**	**4,37**	**653**	**3,29**	**4,33**