

A SURVEY OF MANAGEMENT POLICIES FOR FERTILITY IN RHODESIAN DAIRY HERDS

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OPSOMMING: 'N OORSIG VAN BESTUURSBELEID MET BETREKKING TOT VRUGBAARHEID BY RHODESIESE SUIWELKUDES.

Die verspreiding van die kalwingsintervalle van die melkkoeie van Rhodesië, wat hulle sogingstyd afgehandel het en waarvan daar vir 1969 verslag gehou is, was positief skeef. Die gemiddelde was presies 400 dae, maar die mode was presies 365 dae. 'n Vraelys wat aan boere tydens 1970 gerig is en wat deelgeneem het aan die melkverslagskema het aangetoon dat talle die beleid aangaande die bestuur vir vrugbaarheid bevredigend gevind het. Daar is egter bevind dat daar leentes bestaan en dat veel plek vir verbetering, veral met betrekking tot die hou van verslae en die doeltreffendheid van kunsmatige inseminasie nodig is.

SUMMARY:

The distribution of calving intervals of Rhodesian milk-recorded cows that completed lactations in 1969 was positively skew. The mean was approximately 400 days, but the mode was approximately 365 days. A questionnaire to farmers who participated in the milk-recording scheme in 1970 indicated that for many, the policies concerning management for fertility were satisfactory. However, there was ample room for improvement, especially in the keeping of records and in the efficiency of artificial inseminations.

High fertility is essential for efficient lifetime production of milk. The interval between calvings is a convenient indicator of fertility because it is easily measured, even though it does not show the reasons for success or failure. An analysis by the Milk Marketing Board of data from dairy herds in England showed that the greatest annual production of milk per cow was achieved when the mean calving interval was approximately 350 days (Milk Marketing Board, 1969). Calving intervals greater or smaller than twelve months have been said to result in less efficient production of milk (Louca & Legates, 1968; Speicher & Meadows, 1967).

Time of Insemination post partum

If the length of gestation is 280 days and a calving interval of 365 days is required, then conception must occur within 85 days post partum. It is obvious that conception rates vary, but David, Bishop & Cembrowicz (1971) have stated that a rate of 63 calves per 100 inseminations can be considered to be "a reasonable norm for present-day conditions". If this is so, inseminations should commence at about 60 days post partum, as illustrated in the calculation in Table 1, in which optimum conditions are assumed. However, there are many factors which reduce conditions from the optimum, not the least of which is post partum anoestrus (Morrow, 1970). Thus, it might be advisable to inseminate first at 50 days or earlier post partum if anoestrus is shown, as has been advocated by Olds & Cooper (1970). Boyd (1970) maintained that insemination should be delayed only until the reproductive tract had "fully recovered from pregnancy". Nevertheless, others have deplored the trend towards insemination earlier than 50 days post partum (Dawson, 1967; Shannon, Salisbury & Van Demark, 1952;

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Table 1

The result of commencing inseminations at 60 days post partum

Assuming: Ovarian cycles normal
All ovulations accompanied by oestrus
60% conception at any insemination
Oestrous cycle length of 20 days
Gestation length of 280 days
A herd of 100 cows

	Con- ception	Failure	Mean Time of Insemination post partum (days)	Calving Interval (days)
First				
Insemination	60	40	70	350
Second				
Insemination	24	16	90	370
Third				
Insemination	10	6	110	390
Total	94			Mean 359

Trimberger, 1964), because of poor conception and resultant adverse effects on production. Whatever the calving interval, cows must be adequately fed to meet the demands placed on their metabolism.

Procedure

Data collected under the Rhodesian Milk Recording Scheme were examined for information on calving intervals over the past decade. With the help of the Dairy Branch of the Ministry of Agriculture a questionnaire was sent in 1970 to 130 farmers, and 91 (70%) replied. This provided information on some of the management practices in Rhodesian dairy herds.

Discussion of Results

Calving Intervals of Rhodesian Dairy Cows

Over the last decade the mean calving interval in Rhodesian milk-recorded herds has been approximately 400 days (Dairy Branch, Ministry of Agriculture 1972). (See Table 2). However, this average is deceptive. A sample of the calving intervals of one quarter of the cows that com-

pleted lactations in 1969 was grouped as shown in Figure 1. The distribution was positively skewed, and the mode was in the grouping of 350 to 374 days. This indicated that many cows had a satisfactory calving interval, but that a large number of cows was retained even though not in calf at a reasonable time *post partum*. The graph could be considered to be an underestimate of the true situation, as it did not include those cows which were culled (and therefore had an infinitely long calving interval).

Fig. 1: Distribution of calving intervals of a random sample of one quarter of the milk-recorded cows in Rhodesia completing lactations in 1969.

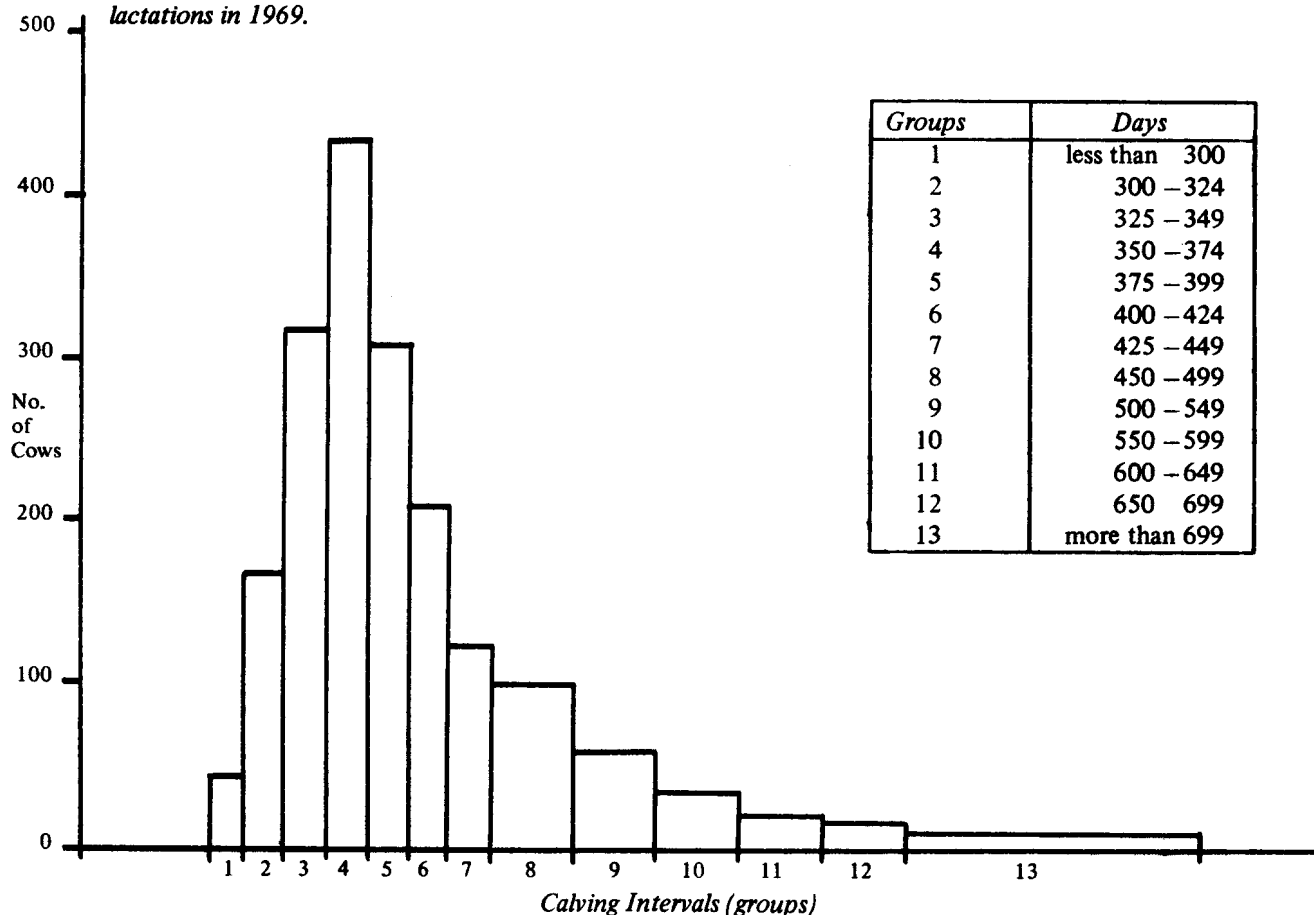


Table 2

Summary of data from Rhodesian milk records

Year	Mean milk yield per lactation (kg)	Mean lactation length (days)	Mean age at calving (months)	Mean calving interval (days)	Mean dry period (days)	Number of herds
1963	3123	—	62	406	—	172
1964	3251	280	63	404	—	148
1965	3277	277	65	404	93	148
1966	3313	276	66	399	90	143
1967	3465	277	67	402	87	140
1968	3644	278	69	402	85	141
1969	3648	279	68	402	85	142
1970	3695	278	70	405	87	142
1971	3806	281	68	414	94	138
1972	3837	282	66	406	91	135

Results of the Questionnaire

Artificial insemination (A.I.) alone was used by only 11% of the farmers, whereas 41% used both A.I. and bulls. Forty-eight percent did not use A.I. at all. For those who used both, the bull was used on heifers, or when the inseminator was not available, or when cows were difficult to get in calf. Most farmers took the cow to the bull, and only approximately 14% had the bull running with the cows.

Some farmers had their cows inseminated (naturally or artificially) at the second or third oestrus after calving (14%). The numbers who had their cows inseminated after a specified interval *post partum* were as follows:—

after 40 days	1
after 50 days	2
after 60 days	29
after 70 days	1
after 80 days	6
after 90 days	9

Thus at least 50% of the farmers who answered the questionnaire waited 60 days or more *post partum* before their cows were inseminated. Thirty-two percent of farmers using bulls put the cow to the bull immediately after the milking when oestrus was observed. Only 2% of farmers who used A.I. inseminated (or bulled) their cows at this milking

and most did so within twelve hr. A few indicated that they might wait until 24 hr. after oestrus was noticed.

Forty-three percent of the farmers considered a cow to be in oestrus when she mounted other cows or stood to be mounted by them (especially the latter sign). However, another 44% used other signs as well as this in reaching their conclusion. These included the secretion of mucus, changes in the vulva, a sudden drop in milk production and general restlessness and agitated behaviour. Cows in oestrus generally were detected and reported by the herdsman. Some farmers checked the day with records and a few attempted rectal examination. Some used teaser bulls.

Efficiency of Inseminations

Some farmers provided figures of the number of inseminations used and the number of calves that resulted from these. (Table 3). A sixty percent conception rate as indicated in the example in Table 1 would result in an "inseminations-per-calving" ratio of 1,67. The situation may have changed since 1968 and 1969, but these results indicate that such a change may not always be favourable. Perhaps a certain inefficiency is to be expected with "do-it-yourself" A.I., but he who uses more than four doses of semen per calf born for two years in succession needs to appraise his methods.

Table 3

Inseminations and resulting calves born in some Rhodesian dairy herds

1968			1969		
A.I.	Calved	Ratio of Inseminations to Calves Born	A.I.	Calved	Ratio of Inseminations to Calves Born
452	268	1,69	560	282	1,99
65	36	1,81	110	43	2,56
130	70	1,86	140	72	1,94
177	89	1,99	210	92	2,28
68	33	2,06	156	87	1,79
113	53	2,13	96	57	1,68
151	71	2,13	249	130	1,92
116	54	2,15	112	52	2,15
101	45	2,24	73	36	2,03
239	104	2,30	290	115	2,52
52	22	2,36	36	12	3,00
138	57	2,42	124	55	2,25
220	80	2,75	185	90	2,06
49	12	4,08	91	20	4,55
381	89	4,28	263	56	4,70
	Means	2,26			2,25

Conclusions

The questionnaire showed that for many farmers, the policies of management for fertility were satisfactory. However, although 90% of farmers questioned stated that they kept records of all inseminations, only 64% stated that they kept records of all heat periods. The keeping of accurate records is essential for efficient management.

Research has indicated that improvements in management can be rapid, and ideally should be comprehensive (Britt & Ulberg, 1970; Herschler, Miracle, Crowle, Dunlap & Judy, 1964; Morrow, 1970). Mean lactation yield of cows in milk-recorded herds has risen steadily over the years, but calving intervals have not improved (Table 2). The mean lactation length of these cows has been approximately

280 days. With a calving interval of 365 days, a lactation of 300 days would allow a dry period of 60 days, which should be adequate. The importance of production per cow per year needs to be stressed rather than the production per lactation.

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