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SYNCHRONISATION TREATMENT AND REPRODUCTION MANAGEMENT INFLUENCE PREGNANCY RATE AND AI TO CALVING INTERVAL IN FRENCH BEEF COWS

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Une enquête a été réalisée dans 25 troupeaux Charolais et Limousins pratiquant des vêlages d'automne. Cette étude avait pour but de comparer l'efficacité des traitements de synchronisation des chaleurs PRID et PMSG contre PRID et PMSG associés à une injection de PGF2α 48 h avant le retrait de la spirale, et de tester l'influence de facteurs de variation potentiels sur la réponse au traitement. Après analyse univariée, un modèle de régression logistique mixte a été réalisé pour quantifier l'effet de ces facteurs sur le taux de gestation à 36 j : celui-ci était amélioré chez les vaches traitées avec PGF2α (OR=1.83, p=0.02) ou venant d'élevages qui utilisent à la fois insémination (IA) et monte naturelle (OR=2.31, p=0.02), mais diminué pour les élevages ayant pratiqué la synchronisation en 1994. Un modèle de Cox a permis de tester l'effet des variables sur l'intervalle IA - vêlage : les vaches traitées avec PGF2α ont 1.5 fois plus de chance de vêler dans les 300 j après IA (p=0.03).

The delay between calving and conception can be shortened in suckled beef cows by using synchronisation treatments based on a progestagen releasing intravaginal device (PRID) associated with Pregnant Mare Serum Gonadotrophin (PMSG) (Roche et al., 1978). In autumn calving herds (characterised by high percentage of cyclic cows at 60 days postpartum), synchronisation treatment may result in lower fertility rates due to the presence of a functional corpus luteum at PRID removal in cyclic cows (Mialot et al., 1996). This study compared pregnancy rate after a treatment using PRID and PMSG (group 1) and the same treatment with a supplementary PGF2α injection (group 2), in addition it aimed to quantify the factors that cause variations in reproductive success.

MATERIAL AND METHODS

The sample included 124 Charolais and 130 Limousin cows, from 25 French farms, 3 to 9 years old, which calved between 01/07 and 15/11/1995 without complications. In each herd, cows were matched in groups 1 and 2 on parity, body condition and calving difficulty. All cows received a PRID for 12 d with an injection of 500 I.U. of PMSG at PRID removal and were inseminated 56 h afterwards. In group 2, 25 mg of PGF2α was in addition injected 48 h before PRID removal. Both herd and individual parameters were recorded. Pregnancy rate after first AI diagnosed at 36 d with serum PSPB concentrations and the AI to calving interval (AICI) were measured. Univariate analyses were used to screen the relationships between treatment, variation factors and reproductive events : only variables with $p \leq 0.20$ and matching variables were considered for multivariate analysis. The effects of these factors on pregnancy rate were studied using a logistic regression with a random effect model. A Cox model was performed to test the effects of variables on the AICI using a reference period of 300 d.

RESULTS AND DISCUSSION

Groups 1 and 2 were similar for matching variables, cyclicity before treatment (70 *vs* 75%, p>0.05) and ovulation after treatment (89 *vs* 95%, p>0.05). Pregnancy rate at 36 days was 13% higher in group 2 (68 *vs* 54%, p=0.03). In both multivariate models, no significant effect was found for matching variables. In the mixed model presented table I, group 2 cows had a greater odds of fertility than group 1. When reproduction management was based on the coupled use of AI and natural breeding, the odds of pregnancy was twice that of herds using only AI. When synchronisation was not used in 1994, the odds of pregnancy also increased.

In the multivariate Cox model, synchronisation treatment also influenced AICI, and cows with PGF2α had 1.5 more chance to calve 300 days after first AI than cows with classical treatment (p=0.03). When synchronisation was not used in 1994, the chance to calve within 300 d increased (RR=1.75, p=0.02).

Table I : Variables associated with pregnancy rate

Variables	p	OR
Treatment group (group 2 *vs* 1)	0.02	1.83
Reproduction management		
coupled use of AI and natural breeding *vs* AI	0.02	2.31
use of natural breeding *vs* AI	0.45	1.39
Synchronisation in 1994 (no *vs* yes)	0.02	2.23

In conclusion, an injection of PGF2α associated with PRID and PMSG gave the best results in terms of fertility and AI to calving interval, however results were also influenced by reproduction management.

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