AN EVALUATION OF THE BODMIN-NUPULSE MILKING MACHINE

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ABSTRACT

Two experiments were carried out to evaluate the milking characteristics of the Bodmin NuPulse milking machine. The first experiment describes the mode of operation of the NuPulse pulsation mechanism and establishes that the NuPulse has a distinctly different mode of action from the conventional type of milking machine.

The aim of the 2nd experiment was to determine if the liner movement characteristics of the NuPulse cluster had any advantage over the conventional type of pulsation and liner movement, in terms of milk production and mastitis over the period of a lactation.

Ten pairs of infection-free identical twins were allocated to the experiment; one member of each pair was milked by the NuPulse pulsation system and the other member was milked by the NuPulse cluster which had been modified for the conventional pulsation treatment by removal of the NuPulse pulsation mechanism. Because of this modification the experiment did not examine the difference between the NuPulse and a conventional machine but only the difference between the two pulsation mechanisms.

The Mark I NuPulse Cluster was used for both treatments in order to eliminate any possible effects of cluster weight, size and stability on the cow during milking.

The trial cows were grazed with a 100 cow, mixed aged herd. The herd was milked in an eight bail walk-through, high pipe-line dairy, equipped with four NuPulse clusters and four conventional (modified NuPulse) units.

The non-trial cows in the herd were milked by one machine or the other, at random, whereas the trial cows were milked by any one of the four machines appropriate to their treatment.

Before 'cups-on' the teats of all cows (including the trial cows) were squirted for five to ten seconds with water and only washed if they were dirty. At times during the summer months, cows with clean teats received no wash at all.

During the experiment (and including the first 3 months of the following lactation) no significant difference in mastitis or teat end condition developed between the two treatment groups. The one line NuPulse cluster, with the pulsator incorporated into the claw piece was associated with the same problem of frothing as other one line machines used with high lift pipeline machines.
However, the production data indicated that the pulsation mechanism of the NuPulse influenced the cows in some way during milking. The NuPulse group of twins recorded higher milk yields during the last 5 months of lactation and at the time of drying-off, were giving significantly ($P < 0.01$) higher yields than the group of twins milked by the conventional machine.

The group milked by the conventional machine (modified NuPulse) reached the drying off yield of the NuPulse group (5.9 ℓ/day) 12 days earlier.
When the lactation was ended for both groups at a yield of 5.9 ℓ/day and the total production for both groups compared, it was found that the NuPulse group achieved significantly higher yields ($P < 0.05$).
Compared to the conventional (or modified NuPulse) machine, the higher milk yields recorded with the NuPulse during the last 5 months of lactation suggests that the NuPulse was associated with a more positive stimulation effect during milking. However, in view of the small number of animals used in the experiment further studies should be made to verify the increased production effect of the NuPulse on a larger scale, as the efficiency of such increases in production has wider economic implications.
Possible stimulation mechanisms associated with the mode of action of the NuPulse are discussed.

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