

APPENDIX A

The terms related with the pulsator (www.omafra.gov.on.ca)

Pulsator Cycle

A cycle refers to the total time in seconds that a pulsator takes to complete one milk phase and one massage phase.

Pulsator Rate

The pulsation rate refers to the number of cycles that the pulsator makes in one minute. Pulsators on the market have pulsation rates ranging from 40 to 60 cycles per minute.

Pulsation Ratio

The pulsation ratio is the length of time in each cycle that the pulsator is in its milk phase compared to its massage phase. The pulsation ratio may be expressed as a simple ratio or it can be expressed as a percentage. Examples of pulsation ratios are as follows:

1:1 or 50:50

1 1/2:1 or 60:40

2 1/2:1 or 70:30

Therefore, a 60:40 pulsator means that within any given cycle the teat-cup liner will be open and milking 60% of the time and closed or massaging the teat 40% of the time.

Pulsation Phase

The pulsation phase refers to the method of pulsation known as simultaneous (4 x 0) or alternating pulsation (2 x 2).

Simultaneous Pulsation

Some milking machines are designed to operate with all four teat cups simultaneously milking and then all four teat cups massaging.

Alternating Pulsation

Some milking machine units are designed to operate with an alternating action; that is, while two teat-cup liners are milking the other two liners are massaging. Depending on the manufacturer, the alternating action may be from the left side to the right side or it can be from front quarters to back on an individual cow.

Limping

A number, in percentage units, indicating the unintentional difference between two pulsation ratio of an alternating pulsator. If one side of an alternating pulsator had a pulsation ratio of 63:37 and the other had ratio of 57:43, for example, then limping would be recorded as 6% or 6 units of percentage. Although, limping should not exceed 3% (www.cowtime.com.au).

APPENDIX B

The check list for collect the data

Farm.....

Date.....

1. Farm data

1.1 General data

number of milking cow.....head number of dry cow.....head

milk production per day.....Kg last BMSCC.....x 1000 cells/ml.

typing barns tied stall free stall free in limited

1.2 Milking process data

single cloth service Y N

disinfectant Y N

dry cloth Y N

strip milk test Y N

CMT test Y N

teat cup slipping Y N

teat cup fall off Y N

order to milking Y N

1.3 Milking Machine data

life time of machine.....number of milking unit.....

type of vacuum pumplubricatenon-lubricate

interceptor capacity.....liter

type of regulatorweightspring

vacuum level from gauge.....Kpa

vacuum pipeline circuitopenclose

vacuum pipeline diameter1 In1 ½ In

vacuum level in pipeline.....Kpa

life time of liner.....month

type of pulsatorpneumatichydromatic

1.4 Pulsator tester

Performance	Int.1	Int.2
Vacuum		
A%		
B%		
C%		
D%		
A+B%		
C+D%		
Pulsation rate		
limping %		

1.5 Cleaning time test

disinfectant after cleaning	.....Y	.....N
NaOH cleaning for liner	.....Y	.....N
acid cleaning for bucket	.....Y	.....N
vacuum pipeline cleaning	.....Y	.....N
pulsator cleaning	.....Y	.....N

2. **Milking cow data**

2.1 General cow data

ID.....

lactation number..... calving date.....

udder preparation time.....min. milking time.....min.

milk production per cow.....Kg milk flow
rate.....liter/min.

2.2 milk data

CMT score LF..... RF..... LR..... RR.....

QSCC (x1000 cells/ml) LF..... RF..... LR..... RR.....

BMSCC (x1000 cells/ml).....

2.3 teat structures data

Teat structures	Before milking				After milking			
	1 st scan		2 nd scan		1 st scan		2 nd scan	
Teat-canal length (A)								
Teat-diameter (B)								
Teat-cistern width (C)								
Teat-wall thickness (D)								
Teat end score								

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