

High Level of Labour Efficiency Possible With Rotary Sheds

With automatic equipment, rotary milking sheds could potentially achieve throughputs of up to 180 cows a man hour without a reduction in milking efficiency, Mr S. A. Ross, a Scottish farm advisory officer, told the 1971 Massey Dairyfarmers' Conference.

MR ROSS, who is working with the New Zealand Department of Agriculture under an exchange scheme, has surveyed the performance of rotary sheds available in this country.

"I can foresee a bright future for rotary sheds," he said. "Once they are completely equipped to give the necessary throughput, I shall be surprised if in time they do not oust the herringbone, as the herringbone has ousted the walk-through."

He listed as the basic essentials of an efficient shed: the complete extraction of milk from the cow within a reasonable time with the minimum discomfort to the cow and the operator; the minimum of mastitis infection or injury to the cow; and the best possible throughput of cows per man hour.

Throughput of cows per man hour was next in importance only after obtaining maximum production per cow and ensuring good udder health.

Sole factor

"In a well-planned rotary shed, cow throughput is determined by one thing only—the average work routine time of the busiest operator," Mr Ross said. "Normally that is the man who prepares the cow for milking and puts the cups on."

"In most rotary sheds the time spent preparing a cow for milking and attaching the teat cups is about 30 seconds. On this work routine time, the cow throughput per hour is 60 minutes divided by 30 seconds, equalling 120 cows an hour."

"This is calculated on the assumption that the platform is never stopped and that no cows are sent round a second time. Added to this, of course, is the time required for a platform to make one revolution to unload the last batch of cows."

"Throughput in excess of this can be achieved only by cutting down the time spent on preparing the cow."

Mr Ross said the length of time cows took to milk should

have no bearing on the cow throughput.

"To avoid cow throughput being restricted by the average milking time per cow, or by the number of bails on the platform, it is important that each installation be of adequate size to cope with cows when they are at maximum production."

Not justified

"If it is cows per man hour that matter, then the (basic) Turnstyle and Alfa Laval sheds are no more efficient in labour use than the herringbone. The Petersen two-man unit is the only one so far getting anywhere near the 100 cows per man hour necessary to justify the capital outlay on rotary sheds."

With no more than the basic structure, the only aspect in which rotary sheds were more efficient than herringbones was the correct timing of cup removal—hardly sufficient to justify their extra cost.

But in the very near future a number of accessories could be expected which would considerably increase milking efficiency.

Two very important accessories—automatic cup removal and mechanical udder washing

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THE THREE ROTARY SYSTEMS

SOME of the observations made at the 1971 Massey Dairyfarmers' Conference by Mr S. A. Ross on the three makes of rotary milkers operating in New Zealand were:

THE TURNSTYLE

1. The operator is working at a point where cow loading can be easily assisted when necessary.
2. It lends itself to a good work routine, enabling operators to concentrate on the cows.
3. It is well suited for one to two operators (100-300 cow herds). For large herds it can be doubled up with twin platforms or with one large platform and double cow entry.
4. In its present form it makes less than full use of the "cups off" operator and so cow throughput per man hour is similar to a herringbone.

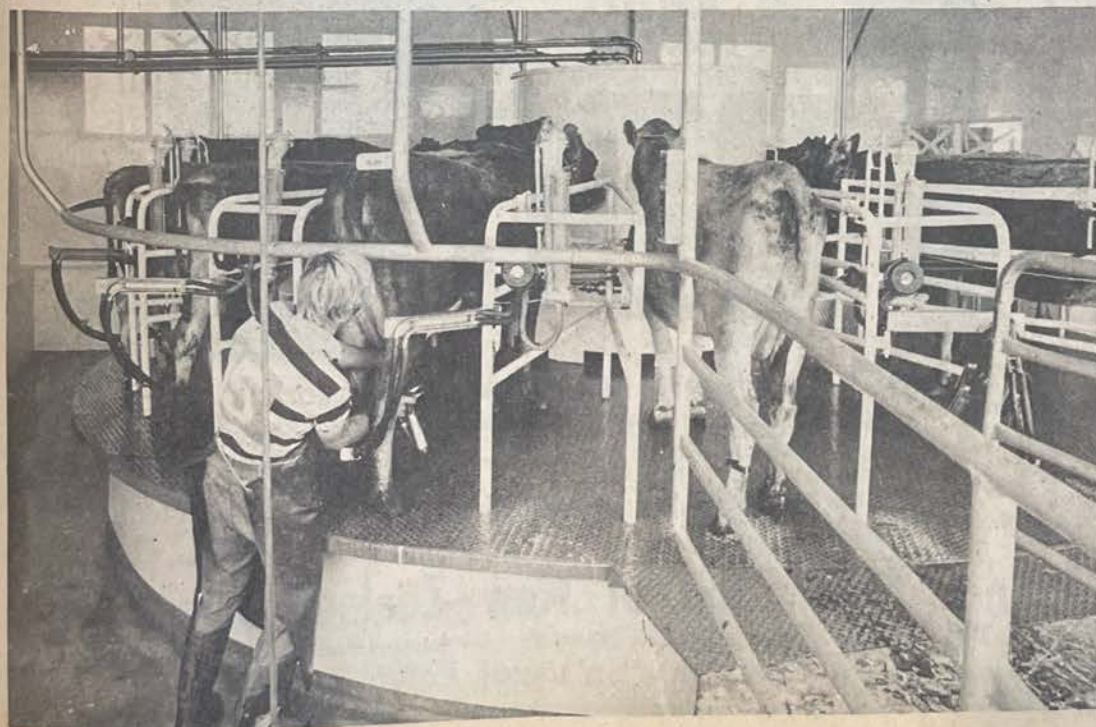
However, it is possible to increase cow throughput per man hour:

1. About 50 per cent by using it as a one-man unit with cows going round a second time.
2. About 50 per cent by fitting mechanical washing and stimulation and increasing the number of bails on the platform to 25.
3. Up to 100 per cent by fitting automatic cup removal.
4. Up to 200 per cent (180 cows per man hour) by fitting automatic cup removal and mechanical stimulation and increasing the number of bails to 25.

THE ALFA LAVAL

1. The operators are working in the central pit where it is difficult to assist or control cow loading. (It appears desirable to have a third operator or a good dog to assist with cow loading.)
2. Operators are conscious of the need to be constantly on the lookout for cows not coming on to the platform. This makes it difficult to concentrate on paying attention to the cow being attended to.
3. The average cow throughput per man hour is no higher than a herringbone. This is due to (a) the "cups off" operator being fully occupied

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High Labour Efficiency

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and stimulation—were more or less available now.

Automatic cup removal was an important development in that it would displace one operator—thus immediately doubling the throughput of cows per man hour on a two-man unit, bringing most sheds to well over 100.

Fortunately, this device could be fitted into an existing rotary shed without affecting the work routine of the "cups on" operator, without requiring any change in platform speed and without affecting the number of bails required.

One man operation

The Alfa Laval and Turnstyle sheds could be used as one operator units without automatic cup removal.

By slowing down the platform speed of the Alfa Laval shed, one operator could both put on and take off cups. Likewise with the Turnstyle, the cows could be sent round a second time by putting a chain behind them when the cups were attached; the operator removing the cups and unhooking the chain on the second time round. It was preferable to have an odd number of bails on the Turnstyle for use in this way.

Operating a unit by one person in this fashion reduced throughput of cows per hour by 25-30 per cent, but increased the throughput per man hour by 40-50 per cent.

"The most important new development to improve milking efficiency and the throughput of cows per man hour" was how Mr Ross described mechanical udder washing and stimulation.

"It means more efficient milking through better stimulation and better throughput per man hour, and I can safely say it won't cost more than \$60 a unit," he said. "Only two units are likely to be required for rotary shed milking and so it seems an excellent investment."

More bails needed

"Fitting this into an existing shed is going to cut down the cow preparing and 'cups on' operation time from about 30 seconds to not more than 20 seconds. This, of course, will result in a potential for a 50 per cent increase in cow throughput."

However, he pointed out that the number of bails available for milking would be reduced by two, which, combined with the possible increase in turntable speed, was going to considerably reduce the available milking time per cow.

With the 16-bail Turnstyle or 15-bail Alfa Laval sheds, the available milking time was reduced from 6½ minutes to 3½ minutes (which was quite insufficient).

"To keep available milking time per cow the same with speed increased from 30 seconds per bail station to 20 seconds per bail station, it is necessary to add nine bails to the 16-bail Turnstyle and 15-bail Alfa Laval sheds, making them 25 and 24-bail units respectively."

"This illustrates the importance of planning in advance."

"I repeat that I see a very bright future for rotary sheds, and the best future will be for those to which mechanical aids can be applied."

Better Milking In Rotary Sheds

The milking efficiency of rotary milking units—as gauged by the amount of over or under milking—appeared to be superior to that of herringbone units, Mr S. A. Ross, of Scotland, told the 1971 Massey Dairyfarmers' Conference.

HOWEVER, he said his survey of New Zealand rotary milkers showed that, on average, no more stimulation was being given in rotary sheds than in herringbones.

He said that, in Britain, a milker was considered to have done a good job if he got within 80 per cent of what theoretically should be the optimum milking time for a cow. A study of 21 New Zealand herringbone sheds had shown an attainment of only 63 per cent on average.

Observation of the types of rotary milkers available in New Zealand indicated averages in the vicinity of 90 per cent when properly manned.

With the Turnstyle rotary the "cups off" operator had lots of time to observe each cow as milking progressed and to give her individual attention at the end of her milking. The Alfa Laval was similar, except that the "cups off" operator had also to concern himself with helping the cows on. With two operators in the central pit, the "cups off" operator of the Petersen had nothing else to concern himself with except observing cows and removing cups.

Efficient milking—adequate stimulation and cup removal at the correct time—were dependent on good planning at the installation stage, the adoption of a good work routine and an observant cup removal operator (or an efficient automatic cup remover).

Absolutely no stress

Cows liked the movement of a rotary shed and, once settled to it, showed absolutely no stress. In fact, in most cases it almost rocked them off to sleep.

Provided the selection of the plant was right, the installation (including the yard) well planned and the work routine well organised, then a rotary shed could be operated in greater comfort and by a less skilled operator than was necessary in a herringbone.

Good cow loading was largely dependent on two things. One

was planning the collecting yard and approach race to permit a smooth flow of cows. The other was good cowmanship in the training period by encouraging cows to come on rather than forcing them to go on.

It was a case of combining cows and man with the right equipment in a shed which could be justified economically, which would milk efficiently, and which would give an acceptable level of cow throughput per man hour.

Mr Ross said a number of variable factors had resulted in a wide range in the cost of the sheds he had studied. However, it was sufficient to say that rotary sheds cost more than herringbones.

"If a farmer is in need of capital to purchase cows, fertilisers or other productive resources necessary for adequate farm output, then this is certainly not the time to be even thinking about a rotary shed," he said.

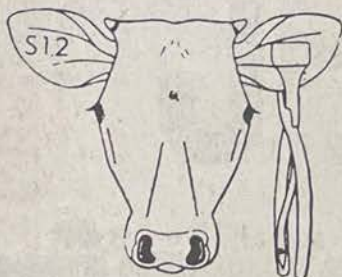
"If he has the necessary capital, or has proved to himself that he can economically justify borrowing and repaying it, then further consideration is certainly well warranted."

Installation

AFTER a decision on which make of shed to buy has been reached, points Mr Ross says would require much consideration include:

1. The available accessories and possible developments which will cut down work time per cow, or improve milking efficiency.
2. Planning the busiest operator's work routine carefully, including assessing the minimum time he requires per cow consistent with efficient milking.
3. Installing a unit able to cope with the cows when they are at maximum production.
4. Careful planning of the yarding system, including arrangements for pre-set drafting gate control.
5. Training the cows to voluntarily step on to the platform and minimising the use of force to get them there.
6. Remembering that it is cows per man hour that matter, combined, of course, with a system which gives optimum gallons of milk or pounds of butterfat per cow.

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THE THREE SYSTEMS

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taking cows off and assisting cows on, and (b) the need to occasionally stop the turntable to load cows.

It should be possible to increase cow throughput per man hour by:

1. Operating as a one-man unit with much slower platform speed.
2. Operating as a one-man unit with mechanical washing and stimulation. This unit seems ideally suited for use in this way.
3. Fitting mechanical washing and stimulation and increasing the number of bails on the platform to 24.
4. Fitting automatic cup removal.
5. Fitting automatic cup removal and mechanical washing and stimulation, and increasing the number of bails to 24.

THE PETERSEN

1. The udder-washing operator is situated at a good point to assist and control cow loading. (Due to the situation of the collecting yard and the entrance race being in the form of a loading ramp, considerable assistance is needed with cow loading. This is a fault of the yarding arrangement and not of the milking and platform unit.)
2. The operators in the central pit do not need to control the cows in any way and so are able to adopt a good work routine. Since they don't need to think about what they are doing, they are able to concentrate on paying attention to the cows themselves.
3. The unit is best suited to a large herd and two or three operators.
4. The shed had a very good throughput of cows per man hour.

Possible improvements would include:

1. Fitting mechanical udder washing and stimulation to reduce the work load on the outside operator.
2. Fitting automatic cup removal which would make it easier to operate as a two-man unit. However, cow throughput could not be increased very much without increasing the number of bails on the platform.

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