

SELF MUSTERING - PROGRESS AND DEVELOPMENTS

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**SUMMARY**

Conventional cattle mustering and handling methods are a major constraint to the adoption of improved cattle management practices in northern and central Australia. Self mustering is a proven, low cost alternative that can be used in areas where surface waters can be controlled. It removes the constraints of conventional mustering and permits adoption of improved management techniques. The development of spear gate accessories, that exploit natural animal behaviour to automatically carry out husbandry practices, have the potential to further reduce costs and increase profitability.

**INTRODUCTION**

Cattle control is the key to efficient and optimum productivity. In many parts of Australia, the adoption of improved husbandry practices is poor. This is the case particularly in extensively managed northern and central regions, where conventional 'search and drive' mustering systems are expensive, stressful to stock and can be inefficient. Many potentially useful cattle and pasture management techniques as well as disease control programmes become impractical, only partially successful and/or financially unsound if the herd cannot be collected effectively. In an effort to stem the rising costs of conventional mustering and improve recovery rates, innovative cattlemen developed the self mustering (SM) system from the old one-way cattle trap. The trap uses water as the lure to entice cattle through a one-way gate and has been used by huntsmen in many parts of the world for hundreds of years.

Self mustering uses natural animal behaviour to collect cattle at enclosed watering points, using a system of one-way spear gates. The basic difference between the trap and the SM system is that the mustering system also has a one-way exit gate. Because the cattle are free to enter and leave the watering enclosure they can be trained to use the system. After a short training period, they become very familiar with the use of the spear gates. To muster, the exit gates or 'out' spears are closed off. The cattle continue to come in to the watering point but are prevented from leaving by the closed exit gates.

More sophisticated designs have a small, spelled holding paddock in which the collected cattle can graze and rest while waiting the two to six days it may take for all the cattle to come in to water. The addition of some working facilities e.g. portable yards, increases convenience and further reduces stress and working costs (Cheffins 1988).

**THE BENEFITS OF SELF MUSTERING**

The benefits of self mustering are considerable but the most easily recognised is the saving in labour. The availability, competence and cost of labour are factors that most producers rank as major problems in running their properties.

Self mustering will reduce labour requirements. Producers using the SM system have found a one third to two thirds reduction in the man days required for working cattle, over conventional means.

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Producers using the system have found a general improvement in herd temperament. Eliminating difficult to muster cattle results in a more productive and tractable herd and a safer environment for the men that have to work them. Cattle that have grown up with the system have never been chased by horses, bikes or helicopters and as a result are quieter overall. Weaner training, a vital component of any well managed herd, can be properly carried out with some of the time and labour saved by self mustering.

In many parts of northern and central Australia a cattle recovery rate of 85-90% is considered very satisfactory. In extensive areas of rough terrain normal mustering recovery can be as low as 40%. By contrast, self mustering generally produces 100% recovery.

Self mustering removes the cost, labour and stress constraints of conventional mustering and gives the cattle producer the ability to astutely manage and manipulate his herd. Strategic weaning, the single most important management technique available to extensive cattle producers, becomes a simple procedure. Bull management, selection and culling strategies, disease and parasite control programmes and the segregation of animals for sale, supplementation or special treatment all become viable management options.

#### DEVELOPMENTS

##### *Short, off-set hinge, steel spear gates*

Because SM requires spear gates to be in constant use, there was a need for a more robust, dependable and maintenance free design than the conventional, long wooden spears. The use of steel pipe or rectangular hollow section (RHS) proved dependable and maintenance free and the development of the short arm spear cut costs dramatically by more than halving the amount of steel required.

The short, off-set hinge spear design was developed by two or three cattlemen in Queensland's Gulf Country and at "Wyloo" in Western Australia in the early 1980s and was first promoted by us in 1985. Since then the design has been further developed by cattlemen, manufacturers and the QDPI (the 'Hirst' spear). These short spear designs and in particular the Hirst design (Anon. 1987), have become the 'standard' design. Many thousands of the units have now been made on properties and sold by engineering works.

##### *Lures*

Self mustering works because cattle have a more or less daily requirement for water. It is the incentive for them to continually use the system. In areas where there is too much surface water to control, other lures have been tried. Various flavours have been added to water but have failed to entice the cattle sufficiently for them to continue coming to the water yard when temporary surface water is available to them (Hasker et al. 1988). Molasses 'dribblers' (Webber 1987) and phosphorus supplements (Murphy 1987) have both proved successful under certain conditions, in maintaining visits to controlled watering points.

Research is required to find more effective cattle attractants for use where surface water is readily available or a temporary problem. Research is also required into methods of making uncontrolled waters unpalatable. The use of cheap, biodegradable, environmentally safe substances added to nuisance water to render it temporarily unpalatable, needs evaluating.

##### *Chemical applicator for automatic parasite control*

With cattle having to regularly move through a precise and defined area (the spears), the opportunity arose to develop accessory equipment to automatically

carry out various husbandry practices. Several prototype chemical applicators have been developed but the most efficient has been a backline roller system which delivers medicament in proportion to backline length. This device is attached to a standard short, off-set hinge spear gate so that the animal lifts the roller with its head and as it moves forward the roller is turned as it rolls along the animal's back. The turning roller drives a small pump which meters pour-on medicament on to the animal's back through a spray nozzle (Hirst 1989). When fully developed the equipment will automatically treat cattle with any of the pour-on medicaments available for internal and external parasite control. It will give the cattle manager a practical method of treating his stock efficiently, when they need it, without stress and at minimal cost.

#### *The cow/calf separator*

Several prototype electronically driven drafting gates have been developed, primarily as an aid to weaning. However, none stood up satisfactorily to field testing. Studies of animal behaviour clearly demonstrate that cattle can easily learn to operate mechanical devices but they are extremely fearful of devices that seem to move by themselves, as with electric motor driven gates.' These studies prompted the development of the 'animal operated' cow/calf separator.

The separator is designed to be permanently installed in place of either the inlet or exit spear gate of a SM water enclosure. This allows the cattle to become familiar with its operation through constant use. The separator has one inlet opening and two exits. It uses the principle of 'preferred clear vision passage', with mature animals using the gate they can see over and calves and weaners using the gate they can see under (Hirst 1989). In this way calves can be drafted into a separate yard. When used for weaning, the separator saves holding and then manually drafting the whole mob. Only the calves require handling - suitable calves can be trucked to the main yards for weaning and training while smaller calves are let back to their mothers. The system also provides the opportunity to creep feed calves - a technique that has yet to be fully evaluated in the extensive situation.

#### *Automatic weighing and drafting*

Several prototype weighing and drafting devices have been designed and tested experimentally both in Australia and overseas (J. Lapworth pers. comm.). Although some devices are showing promise, none as yet are suitable for commercial or experimental use. When a weighing and drafting system becomes available it will be possible to segregate lighter animals for a special feeding or supplement programme or to improve marketing strategies by automatically drafting weight lines for specific market requirements.

Electronic identification will become a viable option in the future. Several commercial firms and research institutions are working to develop an electronic animal identification device suitable for grazing animals in extensive areas. When these devices are commercially available it will enable automatic weighing, drafting and supplementing of individual animals in the paddock situation. They will also greatly benefit cattle research in extensive areas.

#### **ACCEPTANCE BY THE BEEF INDUSTRY**

Although interest in self mustering and its developments has been and remains high, implementation was initially slow. A possible reason for this is that the concept is so simple and unconventional that it generates a great deal of interest, but at the same time producers do not really believe it could work for them. The initial cost of installing self mustering complexes is also a barrier to implementation.

Demonstration of the system is markedly influencing adoption. As some of the more progressive producers convert to self mustering, friends and neighbours are able to evaluate the system in operation. At least 80% of properties in the Alice Springs (NT) district use some self mustering. This has developed from one property trialing the system in the late seventies (J. Bertram, pers comm). Adoption in Queensland is being facilitated by producer demonstration sites (an AMLRDC project) incorporating SM systems. Producers have free access to these SM sites which are situated in eleven districts throughout central, northern and western Queensland.

#### RELEVANCE TO THE BEEF INDUSTRY

Beef producers in Australia's extensive regions are facing a decline in the availability of competent stockmen and increasing cost pressures. They are actively seeking ways of improving stock management for the significant rise in productivity that it will bring. Self mustering can improve productivity and profitability through increased reproduction and breeder survival together with savings in, or more efficient use of, labour.

Hirst (1989) and Wicksteed (1989) estimated that on a 'typical' northern cattle property improved productivity due to the introduction of SM and its accessory equipment, together with the implementation of some improved basic management practices (strategic weaning, disease control), would result in a 25% increase in gross margins. Wicksteed further estimates that the net benefit to the north Australian beef industry, if there was a 25% adoption of the system, would be \$46 million per year after a fifteen year build up period.

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