

## **DESIGN FEATURES OF MIMIC FEMALES FOR USE IN SEMEN COLLECTION FROM RAMS AND BULLS FOR ARTIFICIAL INSEMINATION AND SERVICE TESTING**

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There is nothing new about the artificial “mimic” cow. Millar and Ras (1952) described a model with artificial vagina (AV) of advanced design with pneumatic legs, for multiple semen collections. A French design, housing an operator to hold the AV, and with battery-electric propulsion, was used by Victorian Artificial Breeders Society at Bacchus Marsh in 1973 (*Power Farming Magazine*, September 1973). Until recently, its only use has been for artificial insemination (AI), but the growing importance of service capacity testing offers a much wider use in that field.

The writer’s first models were built over 30 years ago, from farm scrap, and many designs have been tried since. The present design was built in 1991 and has since been used for semen collection and bull testing. Ten bulls have been tried with it, of which 8 mounted and served. One mature bull mounted some 50 times and served 20 times, producing from 4 mL to 8 mL semen per service, over an extended period without accident. The younger bulls totalled 14 services, with 2 to 3 mL per serve.

The greatest difficulty is in attracting bulls to the mimic, oestrus cow scents and urine being the only attractants available, results are very variable.

One mimic has been built commercially with new materials, it is at present being assessed for cost and performance. Mimic sheep have been made and work well.

With the many advantages a mimic female carrying the AV has over standard collection methods, it is surprising it has not been adopted more widely. The advantages include: no live decoy animal required; the operator and the working animal do not come into close proximity; there is no manipulative interference with the working animal; and the operator is not placed in an awkward or dangerous position. Semen is collected cleanly, and collection may be done on any firm level site. The mimic may be moved to tease the animal but stands firm when the front is lowered.

Perhaps the failure lies in the design of earlier models not meeting the needs of the working animal.

Both rams and bulls clasp the female and locate themselves correctly by placing their forelegs in the muscular groove between the wing of the pelvis and femur region of the female. It is necessary that the mimic conform in size and contour to the pelvic regions of the live female, or the male will be unable to locate correctly.

For the ram, the back region of the mimic may be made in 1 piece, as the pelvis slopes steeply down and does not impede dismounting. For cattle, with their level back, if the mimic is made rigid dismounting is greatly impeded, as the shape of the bull’s brisket locks him in place. It has been found necessary to pivot the pelvis of the mimic at the natural hip joint position to allow it to tip back as the bull dismounts. A hinge is provided to allow the back to fold at the front of the pelvis.

To summarise, essential features include: a resilient frame to ease the shock of mounting and give a “live” feel; the horizontal length from front feet to rear end must be at least 1.25 times the height; the front must have rubber feet to hold it securely; the rear needs to have wheels to allow it to be moved; all joints are to be rubber bushed to give silent movement; and a carrier in an appropriate position, for the artificial vagina. For cattle the carrier should be guarded by a tail which may be moved sideways but is capable of being locked in several positions. Rams are easy to train to the device, but for cattle there is still the need to develop a more satisfactory pheromone more attractive than those currently available.

MILLAR, P.G. and RAS, N.P. (1952). “Manual of Infertility and Artificial Insemination”, (Bailliere, Tindal and Cox: London).