

TECHNICAL NOTES

A Feces-Urine Separator for Making Total Fecal Collections from the Female Bovine

R.J. KARTCHNER AND L.R. RITTENHOUSE

Abstract

A simple, effective urine deflector is described for use in making total fecal collections in female cattle. A standard fecal bag is used with only slight modifications.

Total fecal collection bags have been used in many grazing and confinement trials to determine feed digestibility and intake in cattle (Harris et al. 1967). Male cattle have generally been used in studies of intake and digestibility because separation of urine and feces is not the problem that it is in female cattle. However, some intake and digestibility information, particularly that relating nutrition to female physiological processes, must be obtained from the female.

A bag designed by Garrigus and Rusk (1939) has been widely used to collect feces and has worked well, having the advantage of distributing the weight over the back of the study animal. Without modification, however, this bag is not suitable for use on female cattle because the flap between the legs would deflect urine directly into the bag.

Gorski et al. (1957) described a bag that provided for separate collection of urine and feces. Harness adjustment is critical with this bag because any shift in separator alignment will result in mixing or loss of urine or feces, or both.

This paper describes a simple feces-urine separator for use with a modified Garrigus-Rusk bag in collecting the total fecal output from female cattle.

Materials and Methods

The urine deflector was constructed of a piece of burlap sewed between two 12-inch × 18-inch layers of waterproof material (12-oz plastic laminated nylon fabric). The burlap was cut in a circular strip to fit over the tail head (Fig. 1). The deflector was attached to the animal with a hypoallergenic biological adhesive such as that used in tagging livestock in saleyards (Fig. 2).

Proper adjustment of the deflector was important. The top edge of the deflector should be set as low as possible and still deflect the urine. Cement was applied across the vulva to insure proper positioning of the deflector. The deflector does not, however, remain glued in the region of the vulva. This will not affect the effectiveness of the deflector if properly positioned.

The bag described by Garrigus and Rusk (1939) was modified by

When the initial work was done, authors were graduate assistant, Animal Science Department, and associate professor, Rangeland Resources Program, Oregon Agricultural Experiment Station, Burns, Oregon 97720. (Oregon Agricultural Experiment Station Technical Paper No. 465). Currently, Kartchner is research animal scientist-nutrition, Livestock and Range Research Station, Route 1, Box 3, Miles City, Montana 59301. Rittenhouse is assistant professor, Department of Range Science, Colorado State University, Fort Collins 80522.

bringing the flap, which is normally positioned between the hind legs, into an upright position and holding it there by a small triangular "snap-out" piece on each side (Fig. 3). These served the dual role of keeping the flap in place and preventing loss of feces on each side, particularly when the animal lies down. When the fecal bag was placed on the animal, the upright flap was positioned between the two deflector layers. In this way, the fecal material was directed into the bag and urine was deflected to the ground.

Discussion

The urine-feces separator described by Gorski et al. (1957) has the disadvantage of having bag and separator connected. Consequently,



Fig. 1. Dual-flap urine deflector showing attachment to burlap strip.

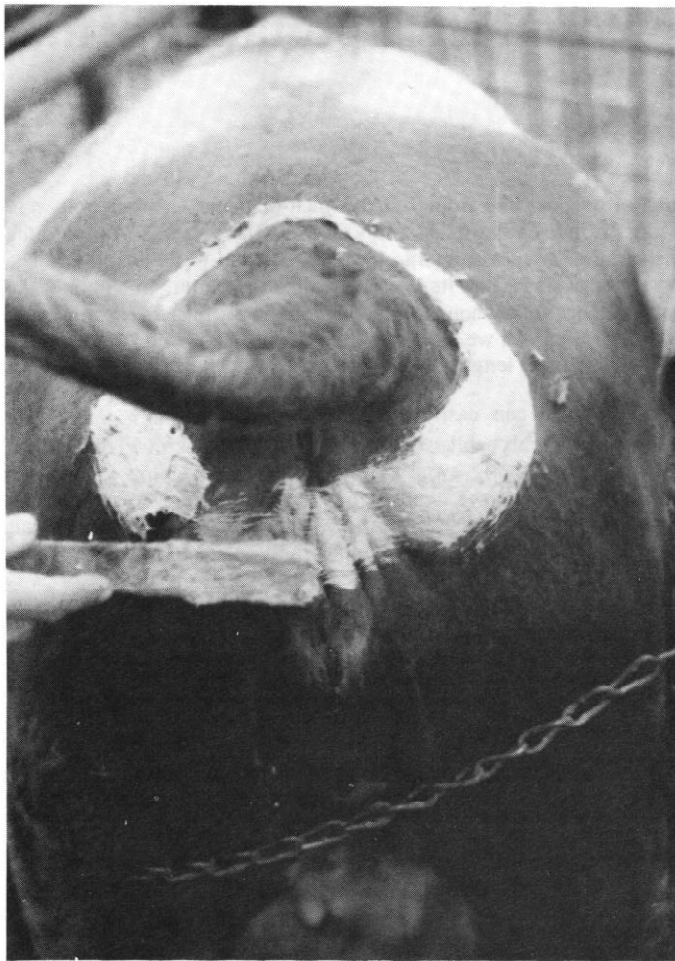


Fig. 2. Application of tag cement around tail head and across vulva.

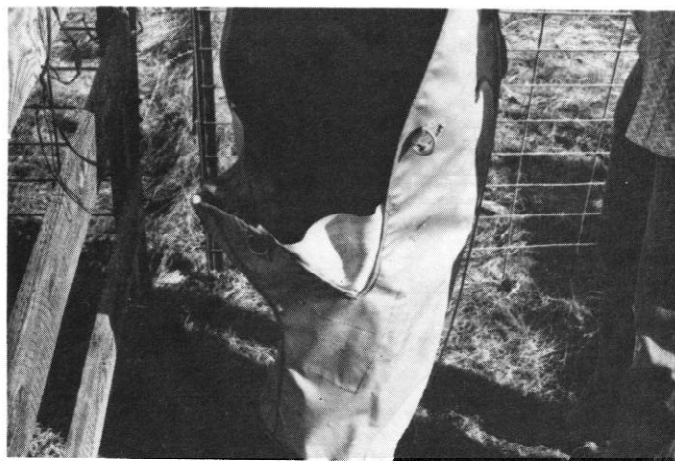


Fig. 3. Fecal bag showing upright flap with "snap-out" attachments.

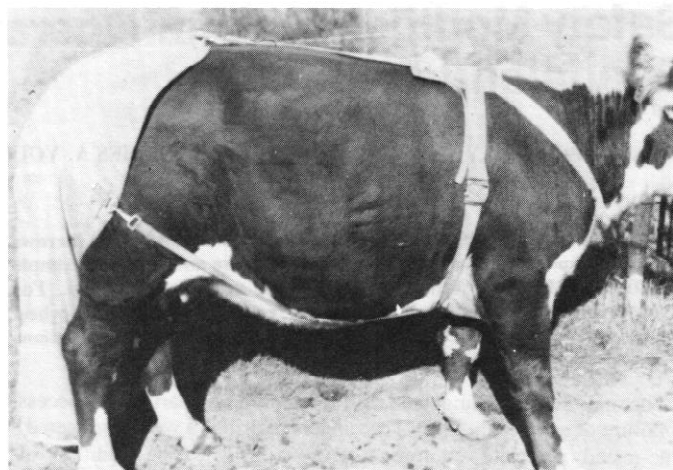


Fig. 4. Position of attached bag with mid-ventral snap attachment.

any shift in bag position as a result of accumulating fecal matter will also cause a shift in separator position. In contrast, the deflector described herein is attached directly to the animal and is suspended independently of the bag. Therefore, a shift in bag position has no effect on the position of the deflector, and fecal collection and urine deflection can be effective even with a substantial downward shift in bag position. The deflector, as described here, is not suitable for urine collection.

The deflector and bag described have been used successfully with heifers and dry and lactating cows for intake trials at Burns, Oregon; Vernon, Texas; and Miles City, Montana. In the upright position, the flap did not interfere with suckling by the calf. Fecal collections were satisfactory. Although actual fecal loss was not measured, observed losses from test animals in field trials were negligible when the deflector was properly positioned. Urine contamination of feces was also minimal.

It is possible, in the event the animal becomes frightened and begins bucking, that the bag can be thrown over the tail head. This problem can be minimized by relocating the buckles attached to the side of the harness to a position on the girth strap near the midventral line of the animal (Fig. 4).

Literature Cited

- Garrigus, W.P., and H.P. Rusk.** 1939. Some effects of the species and stage of maturity of plants on the forage consumption of grazing steers of various weights. Univ. of Illinois Agr. Exp. Sta. Bull. 454.
- Gorski, J., T.H. Blosser, F.R. Murdock, A.S. Hodgson, B.K. Sone, and R.E. Erb.** 1957. A urine and feces collecting apparatus for heifers and cows. J. Anim. Sci. 16:100.
- Harris, L.E., G.P. Lofgreen, C.J. Kercher, R.J. Raleigh, and V.R. Bohman,** 1967. Techniques of research in range livestock nutrition. Utah Agr. Exp. Sta. Bull. 471.