

developed which will make possible the accurate detection of very, very small amounts.

Conclusions

On the basis of the research work completed, there would appear to be limited danger to the human population in the consumption of milk from dairy cows. In a well-run commercial dairy operation it is unlikely that tansy ragwort or other plants of this type would be consumed by animals receiving high-quality roughage. Since dairy goats are somewhat more resistant to the alkaloids, it would be possible for a significant concentration of these alkaloids to be passed on to the human population, particularly in view of the fact that goat dairies are often small in size and cater to a small number of customers. In theory, there could be a human public health hazard; however, the research work does not indicate that the alkaloids were damaging to the young animals receiving the milk and that conclusion could be extrapolated to the human population as well.

Of greater danger to the human population is the marketing of a number of herbal teas throughout the United States, particularly in Southwestern United States. Deaths have been reported from the consumption of these teas, and as long as there is no viable control on the sale of these products, that the threat remains to the human population. The concentrations consumed under these circumstances would be many times that possibly received from contaminated milk. Therefore, at the present time, conclusions are that there is little public health danger in the consumption of milk from either dairy goats or dairy cattle. As was noted above, the blossoms of plants contain high pyrrolizidine alkaloid content and contamination of honey has been well established by several workers. The danger to the human population from this product is yet to be assessed.

Tansy ragwort toxicity will continue to be a problem to cattle and horses in the Pacific Northwest. The losses are significant particularly with beef cattle and horses and will continue to be so until more stringent weed control measures are implemented. Field diagnosis continues to be a problem. The use of histopathologic examination plus serum levels of alkaline phosphatase and gamma glutamyl transpeptidase appear to be most efficient tools for confirmation of diagnosis. Use of only one enzyme assay or only histopathologic examination tends to leave areas of doubt as to actual cause of pathologic condition.

References

Bull, L.B., Culvenor, C.C.J., and Dick A.T., "The Pyrrolizidine Alkaloids," John Wiley and Sons, New York 1968. — Dickinson, J.O., Cooke, M.P., P.A. Mohamed and R.R. King: Milk Transfer of Pyrrolizidine Alkaloids in Cattle, *JAVMA* 169: 1192-96, 1976. — Dickinson, J.O.: Pyrrolizidine Alkaloids in Honey. *Western Vet.* 14:11-13, 1976. — Dickinson, J.O. and R.R. King: The Transfer of Pyrrolizidine Alkaloids from *Senecio jacobaea* Into the Milk of Lactating Cows and Goats. *The Effects of Poisonous Plants on Livestock*, Academic Press, New York 1978.

Spaying of Western Range Heifers:

Dr. Jim Curtis, Malta, Montana

There is considerable controversy regarding the spaying of heifers, their efficiency, conversion, rate of gain and so forth. But let's review the positive side.

- 1) A spayed heifer will not breed.
- 2) The range man need not supply bulls for her
- 3) The feed lot man need not worry about calving her
- 4) Very importantly she is removed from the nation's cow herd as a number builder.

There has been much written and discussed about keeping heifers "open", their management and keeping bulls out and so forth but much of this criticism comes from the Midwest and I can assure you, it is a very different problem in the Midwest where you can run 50 or 100 yearlings on 40 to 50 acres and count them through the gate each night than it is in western range country where you run 300 to 400 yearlings on several *sections* of land, not acres, and no one can physically cover that much ground even in a few weeks and keep fences up, gates closed and cattle sorted.

Spayed heifers can be run with steers, breeding heifers or even stock cows without causing the least disturbance to the herd because of cycling. Bulls need not be provided for them and the cost of spaying is much less than the cost of breeding.

And again, the feeder need not worry about calving her when she reaches 900 or 1000 lbs. next spring when she is about finished. The feed conversion and gain ability is reportedly reduced in spayed heifers. But let me remind you, that you are never spaying your best heifers: the big growthy ones. It is always the tail enders, the poor ones that are selected for spaying.

A movie was made with several motives in mind:

- 1) To demonstrate a method of spaying large numbers of yearling heifers.
- 2) To demonstrate that large numbers of cattle can be worked in fairly simple corrals at a properly equipped veterinary clinic. Herd work need not necessarily be done in the country away from the clinic.
- 3) The movie was made after I realized that my efforts to achieve any fortune were futile and perhaps I should try for fame as a movie star instead.

One particular client has spayed 3 to 400 heifers at our clinic for the past three years. He moves them by truck from his wintering lot in the valley to the clinic some 20 miles away. The heifers are unloaded, spayed, immediately reloaded and delivered to his range land 20 miles farther on. We have never had a death loss, any illness, wound dehiscence or any problems whatsoever with this system. In the average spring we usually spay around 2000 head.

The Phillips County Veterinary Clinic, Malta, is situated in the eastern range country of Montana. It is a steel construction building, 35x60 ft. square, serving both large and small animals in a 6,000 sq. mile area. Of course for an

operation that deals with in-patients loads like this, you need ample driving and parking space so that semi trucks can manipulate to load and unload. Heifers are unloaded into the clinic corrals. These heifers are 12 to 14 months old and have been wintered in a feed lot situation for moderate gain so they can be turned out on summer range for grazing. They have been held off feed and water for 24 hours prior to surgery and will go from the clinic back on to another semi for a 20 mile trip to where they will be turned out for summer grazing and really not seen again, except for an occasional rider, until fall. They will then be sold to go to fatlots in the midwest.

The corrals are not elaborate but can hold 350 yearling heifers. The two squeeze chutes are placed end to end, the first one for preping the heifer, the second one for doing the surgery. Two chutes are an absolute necessity when you are doing a large number of animals in a day's time. The instruments needed are: sunbeam clipper with a regular shearing head, an electric 'S' brand to identify the heifers as spayed, surgical soap diluted 50-50 with water and placed in a color-coded squeeze bottle for easy identification and a triple sulfa solution diluted 50-50 in another color-coded squeeze bottle and a disinfectant placed in a bucket of water for cleansing the hands and instruments. This water should be kept clean and replaced with clean water often. 5cc's penicillin are given to each heifer. I feel a growth stimulating implant is very important for spayed heifers to achieve maximum gains. The scalpel, 9 inch curved spaying scissors for removing the ovaries and #1 pig rings on a card available from *Seymour Mfg., or *Nasco Supply, for using in the automatic hog ringer or wound closing device. Several clips can be applied rapidly without reloading the device thus saving valuable time. I have found the retention of the clips to be less than one percent and of no objection to the owner or buyer come fall.

The heifers are moved into the crowding pens. Two men are usually quite sufficient to move the heifers up the alley and into the chutes. Because these heifers have been off feed and water for 24 hours and because it is spring time and our weather can be unstable I feel it's important to be sure you are fairly certain that you will have good weather for the day scheduled for spaying as well as for the next 3 or 4 days. This gives the heifers time to get back on feed and feeling good again. Spaying heifers is one of the hardest things we do to an animal in the way of elective surgery, but if rapidly and

properly done they rebound amazingly and are back on feed within a day or two.

The heifer is placed in the first chute where the paralumbar fossa is clipped. The important thing here is to see that all the loose hair clipped off the animal is removed and not carried into the second chute where the surgery will take place. The heifer is also branded in the first chute so she can be identified as a spayed heifer. After clipping and branding, the heifer is moved into the second chute where surgery will take place. As the surgeon is scrubbing the surgery site, the heifer receives an implant by the man that's running the head gate. At the same time the heifer is placed in the chute a bar is placed behind her so she won't be moving back and forth and the penicillin is given. By this time the incision has been made. The surgeon rapidly makes an incision through the skin, external oblique and internal oblique then forces his hand through the transversus and peritoneum. The scissors enter the peritoneal cavity and are pressed against the wound edge, gapping it open to allow air to enter, thus allows the viscera to drop forward. The left ovary is located and removed, the right ovary is located and removed, tri-sulfa G is applied into the peritoneal cavity and around the wound edge. The wound is closed. Because it is late in the season and there is a fly problem the wound is sprayed with a little fly spray and out she goes. I believe its important to keep your hand near the incision at all times to prevent the animal from eviscerating her rumen when she struggles. The wound is closed, sprayed, and the animal released. If you are timing this it takes approximately 60 seconds for the actual surgical procedure from the time the heifer enters the chute until she is gone.

The man running the surgeon's squeeze chute is really your key man. As soon as the heifer hits the chute he must apply maximum squeeze until you have made your incision and forced your way into the peritoneal cavity. He must then release the squeeze to allow the viscera to drop forward so you can rapidly locate and remove the ovaries. If the heifer struggles at all he must immediately apply squeeze to control her and then instantly release it so you can continue your surgery. As soon as you're done he must re-apply the squeeze while you close the wound. This man must be alert and in concert with you at all times so you don't have to tell him 400 times a day to apply or release the squeeze. We expect to routinely get 35 to 40 some heifers a hour with this technique. In an eight to ten hour day, we can easily do 400 heifers.

*Seymour Mfg.
Box 248 500 N. Broadway
Seymour, Indiana 47274
Ph. 812-522-2900

*Nasco
1524 Princeton Avenue
Modesto, California 95352
Ph. 209-529-6957

Research Summary of Factors Affecting Conception To First Service in Dairy Cows. Part III

Clinical Factors—Cystic Ovaries, Retained Placenta, Uterine Infections and Milk Fever:

Dr. R. L. Darlington, Snohomish, Washington

The objective of this analysis is to evaluate the effects of various health disorders on the reproductive and productive performance of dairy cattle.