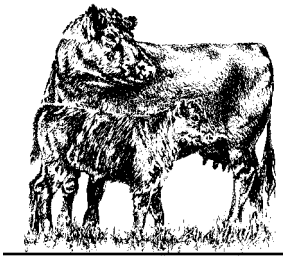

Western Beef Resource Committee *Fourth Edition*

Cattle Producer's Handbook

Management Section 752

Spaying Heifers

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Spaying (ovariectomizing) female cattle is the surgical removal of the ovaries, or female castration. This removes the primary source of estrogen, the hormone that causes estrus. It also removes the source of ova, which combine with sperm cells after mating to initiate pregnancy and the production of the progesterone hormone.

Heifer spaying is a management tool with several advantages that outweigh the few disadvantages.

Advantages

1. Maintaining stocker and feeder heifers in an "open" or neutered status.
2. Early detection of pregnant stocker heifers accidentally bred at a young age.
3. Prevention of pregnant heifers in a feedlot situation with all the associated complications, such as cesarean surgeries, vaginal/uterine prolapses, down and dying heifers, and frustrated feedlot personnel.
4. Elimination of feeding estrous suppression feed additives (for example, MGA), saving $2.00 to $4.00/head during the feedlot phase of production.
5. Elimination of the need to pregnancy check (palpate) heifers upon arrival at feedlots, saving $1.50 to $2.00/head plus labor costs.
6. Elimination of the need to test stocker heifers for brucellosis and/or tuberculosis when marketed to out-of-state feedlots, saving $1.50 to $3.00/head plus labor costs.
7. Improved average daily gain and feed conversion when spayed heifers are implanted vs. intact implanted heifers.
8. Ability to graze or feed heifers and steers together.
9. Ability to graze spayed heifers near cow-calf herds with bulls present.

Disadvantages

1. Surgery is irreversible, therefore, spayed heifers are no longer candidates for being breeding replacement heifers.
2. Typical cost is $5.00 or $6.00/head depending on the number being spayed at a particular location.
3. Minimal risk of death loss related to the surgery, depending on expertise of surgeon.

Spaying Techniques

Flank Spaying—Once a common technique it is now rarely used in the U.S. An incision is made in the left flank of the heifer, and the two ovaries are surgically removed through the incision.

Flank spaying is much more labor intensive and costly than the modern vaginal methods now used. Flank spaying also incurs occasional incision site infections. Scarring at the incision site is common, which interferes with the hide pulling process at harvest. This results in excess carcass trimming.

Vaginal Spaying Techniques—Two instruments are commercially available: the Kimberling-Rupp (K-R) and the Ovarian-Drop. With the K-R instrument, which is a tube within a tube mechanism, the ovaries are excised and removed from the heifer. With the Ovarian-Drop method, a small diameter stainless steel rod with an arrowhead shaped end open in the middle is used. The ovaries are excised and allowed to drop in the abdominal cavity where they are absorbed by the body. Harvest examination of numerous groups of heifers has revealed no re-attachment of excised ovaries within the abdominal cavity.

Vaginal spaying is a much faster and less stressful technique for the heifers and lessens the likelihood of

infections or other complications associated with flank spaying. Many more heifers can be safely spayed in a day's time using the vaginal technique, which lowers overall labor costs for producers. As with any surgery, the experience and proficiency of the surgeon are critical.

Heifer Performance

Early research showed that spayed heifers had a performance disadvantage compared to intact heifers. However, the studies all involved heifers spayed with the flank method and without the use of growth promoting implants.

This is not the case when comparing implanted spayed and implanted intact heifers. For spayed heifers the source of progesterone and most of the estrogen source have been removed. Therefore, it is important to implant spayed heifers. Studies have shown that spayed heifers respond more positively to implants than do intact heifers (Garber et al. 1990). Spayed (neutered) heifers can be grazed, fed, and implanted in a manner similar to steers.

Garber's study showed the average daily gain response to implantation was four-fold greater in spayed heifers than in intact heifers. Heifers that were spayed and implanted tended to deposit more lean tissue and less fat during this experiment (Table 1).

Other grazing/growing studies have shown an overall 5.5 percent gain advantage (0.12 lb/day) for spayed implanted heifers vs. implanted intact heifers (Table 2). Finishing studies have shown a 2.5 to 3 percent gain advantage for spayed implanted heifers. Feedlot surveys have indicated a 0.10 to 0.30 lb/day advantage for spayed implanted heifers (Table 3).

Table 1. Effect of spaying and anabolic implants on growth of beef heifers.[1]

	Intact		Spayed		
	No implant	Synovex H	No implant	Synovex H	Synovex S
Initial wt (lb)	607	600	605	596	585
Final wt (lb)	946	970	902	990	1,001
Daily gain (lb)					
Growing	2.20	2.51	1.96	2.77	2.64
Finishing	2.53	2.66	2.20	2.66	3.10
Overall	2.40	2.60	2.09	2.75	2.93
Feed/gain					
Growing	7.28	6.49	7.67	5.75	5.71
Finishing	6.36	6.24	6.59	6.10	5.62
Overall	6.70	6.35	7.04	5.97	5.65
Adjusted hot carcass wt (lb)	592	616	559	620	640

[1]Garber et al. 1990

Table 2. Gain data summary of six trials comparing implanted spayed and nonspayed heifers grazing or on growing rations.

Number spayed/ Number intact	Feed or ration	Spayed average daily gain (lb)	Intact average daily gain (lb)	Percentage difference average daily gain	Year
32/33	Grazing	1.98	1.89	4.55	1981[1]
35/35	Grazing	1.98	1.85	6.57	1981
54/27	Grazing	1.71	1.62	5.26	1983[2]
54/27	Grazing	1.74	1.62	6.90	1983
398/73	Growing	1.47	1.48	-0.67	1986[3]
18/17	Growing	2.77	2.51	10.36	1990[4]
Average		1.90	1.83	5.50%	

[1]Rush and Reece 1981.
[2]Shoop et al. 1984.
[3]Cain et al. 1986.
[4]Garber et al. 1990.

Feedlot/Harvest Economic Losses Due to Pregnant Heifers

The pregnant heifer that calves in the feedlot costs the feeder approximately $150 to $200 due to calving problems, infection, decreased gain, decreased carcass quality, and yield.

Without pregnancy examination and abortion, pregnancy results in a cost of $19 per head for every heifer in the pen (based on 1984 cattle prices and data) (Bennett et al. 1984).

Bennett's survey of feedlots and packers found almost 15.5 percent of the feeder heifers coming in to feedlots were pregnant. The total cost to pregnancy test and abort, or to inject all heifers to abort those pregnant, averaged 5.29 percent of the purchase price of the heifer. This includes added charges of observing the injected heifers, managing dystocia, retained placentas, and treatment. The open heifer was worth from $30 to $50 more than the pregnant heifer entering the feedlot (based on 1986 cattle prices and data) (Edwards 1986).

Packers estimated the average loss in carcass yield for pregnant heifers was 3.3 percent. Data on over 10,000 heifers showed an average carcass yield decrease of 5.6 percent on pregnant heifers. Based on carcass weight gain, pregnant heifers gained 12.6 percent less and had a 13.3 percent higher feed conversion rate than non-pregnant heifers.

Research trials indicate that spayed heifers in the feedlot, implanted and marketed at the correct time, have about a 2 percent gain advantage compared to the implanted intact heifer.

Table 3. Gain data summary of seven trials comparing implanted spayed heifers and implanted nonspayed heifers on finishing rations.

Number spayed/ Number intact	Feed or ration	Spayed average daily gain (lb)	Intact average daily gain (lb)	Percentage difference average daily gain	Year
101/117	Finishing	4.14	3.82	7.73	1987[1]
37/44	Finishing	4.01	3.96	1.25	1987
35/38	Finishing	4.25	4.01	5.65	1987
39/38	Finishing	4.06	3.91	3.69	1987
32/33	Finishing	2.39	2.26	5.44	1981[2]
35/35	Finishing	2.25	2.39	-5.86	1981
17/18	Finishing	2.66	2.66	0.00	1990[3]
Average		3.39	3.29	2.56%	

[1]Rupp 1987.

[2]Rush and Reece 1981.

[3]Garber et al. 1990.

The 2 percent advantage is based on a combined average of studies conducted over a 6- to 7-year period on spayed yearling heifers shipped to feedlots (Bennett and Rupp 1983). Good quality spayed heifers finish and grade at 90 to 110 days on feed and yield a quality carcass. The spayed heifer will reach optimum grade sooner than her intact counterpart. In conclusion, the spayed heifer implanted and marketed at the proper time will outperform her intact counterpart.

Feedlot operators realize that these figures, coupled with the potential problems of abortion, calving/dystocia problems, and increased labor costs of pregnant heifers, make pregnant heifers a definite liability in the feedlot. Spaying also eliminates the visual exposure of the public and customers to heifers calving in a feedlot setting, which can lead to poor public perception of the individual feedlot and the industry regarding animal welfare and care.

Identification of Spayed Heifers

Some veterinarians use a blue metal tag, similar to the familiar orange brucellosis vaccination tag, to identify vaginally spayed heifers. This allows spayed heifers to be individually identified. This tag number can also be used for health certification purposes when spayed heifers are transported across state lines.

Results from this study indicate it is necessary to implant spayed heifers to maximize growth performance. The spayed implanted heifers tended to gain more rapidly and efficiently than the intact implanted heifers. Because gonadectomy of the heifer renders her nearly the endocrine equivalent of a steer by eliminating ovarian estradiol and progesterone, the estradiol-progesterone implant may be the more appropriate combination for the spayed heifer.

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