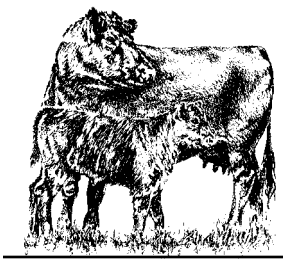

Western Beef Resource Committee *Fourth Edition*

Cattle Producer's Handbook

Management Section 710

Cattle Identification

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Establishing a permanent form of identification for cattle is important for two primary reasons: (1) To provide permanent identification that facilitates keeping records of individual cattle and (2) to serve as a method to determine legal ownership.

Identifying cattle as the property of an individual has been an accepted practice for cattle producers for hundreds of years, although the means of identification have often varied. The importance of proof of ownership is still relevant today. As agriculture and cattle production have changed, so has the need and means of securing permanent identification for individual cattle in each herd.

The importance of individual animal identification is becoming increasingly necessary in order for producers to optimize production and profit potential. Increasing emphasis on beef quality and the need to ensure point source verification indicates the potential for mandated, permanent, individual animal identification. Identification systems need to include the following:

- Permanent (life-long) individual identification.
- Easily read at a short distance.
- Important information about the individual.
- Part of a system to allow tracking of cattle and information.

It is important for producers to stay current with technology to ensure they are spending time and money wisely. It is also important to make sure that the current means of animal identification are meeting existing needs as well as being useful for future changes.

Methods of Identification

Hot Iron Branding

Hot iron branding has long been considered the standard for proof of ownership. When properly applied, these brands are recognizable and permanent. Most western states require that individual brands be registered with the State Department of Agriculture. Although these brands are permanent they can be difficult to read when the hair of an animal's coat becomes long and may obscure the view of the brand.

Hot iron brands permanently damage the skin. This identifcation method decreases hide value for the tanning industry. The 1999 National Beef Quality Audit stated that hide damage from poorly located brands or multiple brands cost producers on average $3.10 per head.

Hot brands can also be used as a means of individual animal identification. These brands most often are a number brand located on the hip or shoulder. A numbering system will be discussed later in this publication.

Hot Iron Branding Procedures and Considerations—Hot iron brands have been the long running standard for owner identification. Some producers also implement an individual numbering system for their cattle using hot iron brands. When hot branding, cattle producers should remember these points:

1. Proper restraint of animals is essential for quality brands.
2. The branding iron must be correctly heated. When using traditional branding irons they need to be hot enough to glow red in the dark but not so hot to burn through the hide. Many producers are now using electric branding irons that have their own temperature control.
3. For quality hot iron brands, the construction of the iron is also important. Surfaces of the branding irons need to be 1/4 to 1/2 inch wide. Corners and circles on the branding iron need to be vented (have open spaces) to prevent scarring and leaving hard-to-read brands.
4. When branding, irons need to be held in place firmly until the branded area is a rich tan color that looks like new leather. The color of smoke is a good indicator of sufficient iron application.

Freeze Branding

Freeze branding is a process of permanently identifying animals with a super cold iron rather than the traditional hot iron. When done properly, the extremely cold iron destroys the pigment-producing hair color follicles. When hair growth returns after freeze branding, it is white. The white hair is permanent and remains easily readable even when hair coats are long.

Freeze branding is less painful to the animal than the traditional hot iron branding system. Another advantage to freeze branding is that it does not cause damage to the hide.

Freeze branding also has some disadvantages. It is more time consuming than hot iron branding, and freeze brands are not immediately legible. Some states do not recognize them for legal ownership. Freeze brands may not show up as well on lighter colored cattle, and results may vary from year to year or between technicians.

tank and extra liquid nitrogen, clippers, curry comb, brush, 99% alcohol, squirt or spray bottle to deliver alcohol, safety glasses, Styrofoam® container that is narrow and deep, towel or rags, copper or brass irons, table to work from, electrical cord for clippers, stopwatch, and optional pencil and paper for records. If branding with dry ice and alcohol rather than liquid nitrogen, you will need more alcohol and an ample supply of dry ice. Place equipment in a location where it will not be disturbed by cattle.

Freeze Branding Procedures and Considerations—Freeze branding may be a good option for individual animal identification but is not accepted as a legal proof of ownership in many states. The following are considerations in the freeze branding procedure (see Figs. 1-5).

1. The animal must be well restrained.
2. Hair must be clipped and intended brand area must be clean.
3. Special copper or bronze irons are required to get consistent results.
4. Irons must be super cooled using either liquid nitrogen or a combination of dry ice and alcohol (greater than 95% pure). It is important that the iron be well chilled before branding (15 to 20 minutes) and be placed immediately back in coolant after use.
5. The alcohol must be liberally applied to the brand area to ensure adequate contact for freezing, and irons need to be applied with 35 to 45 pounds of steady pressure. Time of actual application will vary depending on coolant and age (see Table 1 on page 710-5).

Fig. 2. Place iron in deep, narrow Styrofoam® container for cooling. Make sure the iron is submersed in coolant for at least 15 to 20 minutes before branding the first animal. Cover the container to reduce the amount of coolant lost to the atmosphere.

Combination Tattoo and Tags

Similar to the tattooing procedure for humans, ink is put into the skin of the inner ear using special tattoo pliers that will leave a per-

Fig. 3. (a) Clip the hair as close as possible in the brand area. (b) Clean and scrub the clipped and brand area with alcohol and a rag or towel. (c) Liberally apply more alcohol to the cleaned brand site just before applying the irons. (d) Apply iron for the desired amount of time slowly rocking and applying pressure during the process. If multiple irons are to be used repeat the process with each iron.

Fig. 4. (a) Brand area will be hard and frozen immediately after applying irons. (b) Brand area will welt within hours of branding and (c) peel within weeks.

Fig. 5. After hair regrowth and depending upon the time of year branding occurred, the fin ished brand should be legible within 5 to 6 months.

Table 1. Freeze branding time recommendations for coolant type for different species.

Animal	Coolant	Application time
Calf	Liquid nitrogen	21 to 24 seconds
	Dry ice and alcohol	40 to 50 seconds
Cow	Liquid nitrogen	25 to 30 seconds
	Dry ice and alcohol	50 to 60 seconds
Colt	Liquid nitrogen	6 to 12 seconds
	Dry ice and alcohol	16 to 24 seconds
Horse	Liquid nitrogen	8 to 12 seconds
	Dry ice and alcohol	20 to 24 seconds

manent number readable through the skin as a means of identification. Tattoos are a good permanent means of identification. However, because tattoos are inside the animal's ear, the animal must be restrained to read the tattoo. The combination of permanent tattoos with large and easily read ear tags may be a practical option for some producers.

Tattooing Procedures and Considerations—Tattoos have been used for many years in registered cattle herds as permanent identification (Fig. 6). The tattooing process is somewhat time consuming, and an adequate head catch is essential. For good tattoos these steps need to be followed:

1. Thoroughly clean the inside of the ear with rubbing alcohol.
2. Set tattoo pliers and then test on cardboard to make sure it is correct.
3. Firmly clamp the ear with tattoo pliers. Avoid cartilage ribs of the ear.
4. Rub tattoo ink in punctures until bleeding ceases. A toothbrush works well to ensure that ink is worked well into the tattoo.

It is nearly impossible to perform this procedure without getting ink on your hands. Use of gloves is advised.

Tags, Neck Chains, and Straps

Numerous brands and types of tags, neck chains, and straps are on the market. Ear tags are the most popular, although dewlap tags, neck chains, and neck straps are still in use. In areas with brush or trees, neck straps and chains may tangle and get caught resulting in the loss of the neck chain or strap. Ear tags also have limitations in brushy areas, however, more flexible tags have seemed to aid in retention.

Retention and being readable are the most important considerations for all tags. A producer may purchase preprinted tags or choose to write his or her own numbers on the tags. Some tags have special markers for writing on them, and others are designed to have numbers inscribed in them. It is important to make sure tags are large enough to be read at a distance and that numbers remain legible.

Ear tags can be purchased in different colors and types. When applying ear tags it is important to avoid the cartilaginous ribs of the ear as well as to choose a flexible portion of the ear. Some producers find it helpful to tag steers and heifers in opposite ears or with different colored tags, which aids in sorting.

Neck chains and straps may be good choices for some operations. They are most commonly used in closely monitored herds. These forms of identification are more costly and will require adjustment as animals grow.

Dewlap tags are not popular but do have a history of good retention and being easily installed. These tags are attached to a metal loop that pierces the dewlap midway between the throat and the brisket. One drawback to dewlap tags is the challenge of reading these tags as cattle are moving through a working chute.

Tag and Neck Strap Procedures and Considerations—None of these forms of identification are permanent, however, each can offer a readable and practical form of identification when combined with other forms of identification.

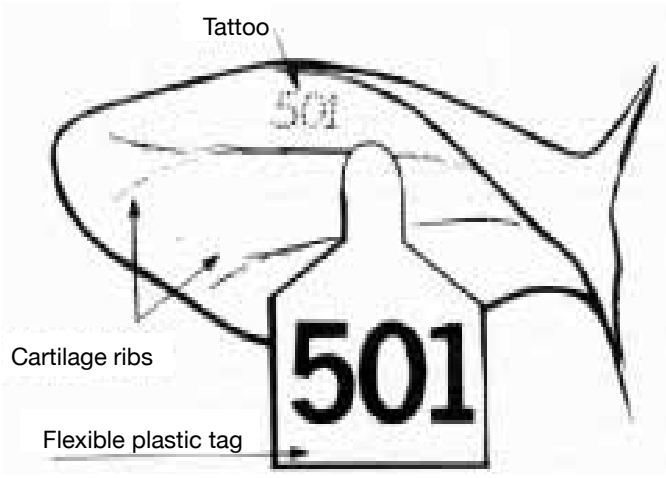

Fig. 6. Front view of the right ear showing recommended location of tattoo and flexible plastic tag. Number "501" indicates the first calf born in this herd in 1995.

1. Choose tags and straps that are large, and use numbers that are easily read and not complicated.
2. When not using pre-numbered tags or straps, use the correct markers or etcher and allow adequate drying time to prevent smearing during application.
3. Apply tags and straps according to manufacturer recommendations using their prescribed applicators. Take care to keep neck straps loosened on growing animals, and avoid the ribs of the ear when installing ear tags. Ensure tags are facing the correct direction.
4. Use proper animal restraint when installing identification to prevent causing damage to the ears.

Brucellosis Tags or Other Self-Locking Metal Tags

Brucellosis tags or other metal clip-type tags are durable and easily applied. They are usually well retained but may infrequently be lost. These metal tags may be used in combination with plastic ear tags to provide reasonably permanent identification along with an easily read tag. Each of these metal tags has an individual number and is readable once an animal is restrained in a head-catch. Although these tags are durable, they are not always permanent.

Self-Locking Metal Tag Procedures and Considerations:

1. A veterinarian must always install Brucellosis tags.
2. Use adequate animal restraint to ensure that ears are not torn during installation.
3. Maintain a permanent record of ear tag to corresponding Brucellosis or metal tag number.
4. Metal tags are applied to the outer edge of the ear, relatively close to the head of the animal. Space must be left so that the ear can grow and must not be closed too tightly.
5. Where metal tags are too tight, ticks tend to collect under the tag, which can cause abscesses.

Electronic Identification

Electronic identification (EID) is still an emerging technology. Already these devices show great promise for many operations. Numerous quality products are now available. EID is in use on cow-calf, feed yard, and stocker operations. With the need and strong demand for source verification and birth to finish tracking, plus continuing technical advances in EID, these forms of identification are quite promising.

Among the several types of EID available, the most basic uses a barcode system on plastic ear tags similar to what you see on items at a grocery store. These tags work in some conditions, however, dirt and oil from the skin of the animal often combine to form a dirty build-up on the tags, which makes them impossible to scan without spending considerable time cleaning the tags so they can be scanned.

Another type of EID is radio frequency identification. This system uses low frequency radio transmission to send a signal between the EID device and an antenna, which is called a reader. The signal from this type of EID passes through most materials including mud and body tissue. This makes the reading of the tags much quicker and more efficient.

This radio frequency identification EID is most commonly molded into an ear tag or button and requires no battery or maintenance and is the most commonly used form of EID. The disadvantage to this type of identification is the same as with traditional ear tags. Because they can be torn from the ear, they cannot be considered a permanent identification.

The third type of EID is a small device that can be implanted under the skin and be read with a reader similar to the radio frequency identification. The implant EID has potential for permanent identification, but it also faces many challenges. Several obstacles still need to be addressed. These include a means of easily and quickly locating and removing implants at slaughter (which is currently required by law). It is nearly impossible to determine if animals have received an EID implant by visual observation. They are also more expensive than traditional ear tags.

The final type of EID is an implant that can be placed in the rumen in a non-regurgitation bolus. This form of EID has disadvantages similar to the implant and is more costly. These boluses are often difficult to read with a reader and are costly to retrieve at slaughter.

Electronic Identification Procedures and Considerations—Electronic identification tags are only part of the system required to achieve the maximum benefit from this technology. Other items that will be necessary to receive the benefits from EID include a reader, a computer, and the required computer software. It is important to understand that there are numerous options, and we will likely continue to see advances in this area of technology. Include the following points when considering the implementation of an EID system.

1. EID offers the advantage of being more easily adapted to computerized tracking and scanning systems.
2. The EID systems need special reading devices and may have limited range.
3. Cost of an EID system and the necessary equipment needs to be considered in implementing an EID program.
4. Follow the manufacturer's instructions for installing and using EID to ensure the best results.

Regardless of the identification method used, a tracking or record system facilitates the use of the information. The use of EID can greatly enhance the use of computerized record keeping systems for herd management. With this technology, the potential exists to implement large-scale national databases for source verification

in quality assurance programs (see 285, Individual Animal Identification: Quality Assurance, Verification, and Value-added Marketing), animal health monitoring and control, and improved management.

Numbering Systems

Numbering systems for individual identity of cattle are a real challenge and must be carefully thought out. A number should not be duplicated for a 10-year period and should not be more than four digits so as to be read easily, therefore, use of this system is even more challenging for large herds. It is essential that producers eliminate any duplicate numbers in their computerized record keeping systems.

The best numbering system is one that is simple and easily read. It needs to be well thought out to ensure it will work for the next 10 years with proper planning.

Be advised to include all the digits in a numbering system on each tag, tattoo, or brand. For example, in a three-digit system, cow number 3 should be identified as 003. This decreases the chance of her being miss identified as cow number 30 or some other number. The numbers system you use should not be difficult to read.

A common numbering system involves including the last digit of the year (e.g., 3 in the year of 2003) as the first digit of the animal identification. If producers intend to keep less than 100 replacement heifers each year, they could be identified with a three-digit number that would begin with the last digit of the year they were born. If more than 100 and less than 1,000 replacements are retained, a four-digit number would be used. For example: If a ranch operation keeps 125 head of replacement heifers, it would use a four-digit tagging system. The first heifer in the 2003 crop could be tagged 3001. The last heifer for that year could be 3125, which indicates the year of birth and cow number.

Some breeds and record systems are using a letter code to represent a given year (Table 2). In this program, instead of including a 1 or 01 to represent the birth year of 2001, producers would include the appropriate letter code "L" in the numbering system.

Calves are often given the same number as their mother. This makes management with the calves easier and can simplify record keeping for calving data. If these calves remain in the herd they will receive their own individual number according to the prescribed system.

Table 2. Cattle identification letter code and corresponding year.

Letter code	Year
K	2000
L	2001
M	2002
N	2003
P	2004
R	2005
S	2006
T	2007
U	2008
V	2009

Earmarks

Earmarks are a commonly used means of cattle identification. They are often used in conjunction with brands as an indication of ownership when brands are not easily visible. Earmarks may be recorded with brands. These marks may also identify animals within a herd for the operator's own specific purpose. No earmark may be used that involves cutting off more than one-half the ear or that cuts an ear on both sides to a point.

Following are instructions for making some of the more common earmarks. Most earmarks are made with a knife.

Underslope—This cut is in the under portion of the ear (see right ear in Fig. 7). Make the first cut in an upward direction. The second cut is practically the same as in an overslope.

Fig. 7. Underslope in animal's right ear and overslope in left.

Overslope—Make an incision toward the head a fraction of an inch from the point where the upper surface of the ear turns up. Cut down in a rounding manner, approximately 1/2 inch, then cut parallel to a line that would halve the ear lengthwise. A little upward slope given to the last cut results in a graceful curve (see left ear in Fig. 7).

Crop—Grasp the end of the ear in the left hand and cut off about one-half of the ear at right angle to head (see right ear in Fig. 8).

Split—Insert the knife blade and draw it to the outer edge of the ear (see left ear in Fig. 8).

Shallow Fork—Fold the ear lengthwise. From a point about 1 1/3 inches from the tip (depending on the size of the ear), cut toward the outer edges so that you remove a triangular section with 1/2-inch or 1/4-inch base (see right ear in Fig. 9).

Fig. 8. Crop in animal's right ear and split in left.

Fig. 10. Underbit in animal's right ear and upperbit in left.

Fig. 9. Shallow fork in animal's right ear and steeple fork in left.

Fig. 11. Under half crop in animal's right ear and upper half crop in left.

Steeple Fork—Fold the ear lengthwise. Make the first cut at right angles to the fold and the second cut parallel to the fold. Remove a rectangular section (see left ear of Fig. 9).

Bit (Under or Upper)—Fold the ear crosswise at the point where the bit is to be made. Remove a triangular section as in making a swallow fork. Make the cut in a wide U manner since a V-shaped cut occasionally grows together (Fig. 10).

Half Crop (Under)—Begin the cuts as in an underslope. Cut upward in straight line to the midpoint of the ear. Then cut at right angles outward, removing the under one-half of the ear (see right ear of Fig. 11).

Half Crop (Upper)—Begin cut at the same point as for an over slope, but make the cut downward in a straight line to a midpoint of the ear. Then cut at right angles outward, removing the upper one-half of the ear, as in left ear on Fig. 11.

Shoestring—Starting close to the head, slit about 1/2 inch of the lower part of the ear to the outside. This part of the ear hangs down, as on the right ear of Fig. 12.

Jingle Bob—Make a slit in the ear above the main cord and then cut the cord off close to the base of the ear to hang down as in the left ear of Fig. 12. This ugly mark, made famous by Jess Chisholm, is interesting but not necessarily recommended.

A registered earmark does not have to be the same for both ears. For example, you could register a left ear crop and a right ear split.

Waddles

Waddles have been used as a form of owner identification for many years. However, because of animal welfare concerns, producers need to carefully consider the continued use of waddles.

Fig. 12. Shoestring in animal's right ear and jingle bob in left.

Summary

Permanent, simple, and easily readable forms of cattle identification will continue to be important to the beef industry. In many states, the hot iron brand is the only legal means to establish ownership. Individual animal identification is also important for management purposes. Brands, tags, tattoos, electronic devices, and other equipment are available for identification. Numbering schemes and tracking systems are additional components of cattle identification. We will continue to see technological advances in identification systems.

Fourth edition; December 2016 Reprint