

Short Term Swine Identification for Market Hogs

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PURPOSE: Identification of swine from the producer's farm to the slaughter plant is important to the consumer of pork products and to the swine industry of North Dakota and of USA. By identification through slaughter, dangerous drug residues that are found in meats and meat products can be traced to their source and the causes corrected. Also, identification helps to locate foci of serious diseases such as brucellosis, tuberculosis, and pseudorabies **so that these diseases can be managed better or eradicated**, thus reducing the cost of production and assuring that pork products continue to be a safe, economical source of animal protein for human consumption.

A good swine identification device must be easy to apply, easy to remove at slaughter, low in cost, have a high degree of retention, and be readable when it reaches the kill floor. The identifier must not leave any residue in the meat, or adulterate the finished pork product in any way.

The regulations permit the use of swine identification devices approved by the Administrator of the Animal and Plant Health Inspection Service (APHIS). At this time the Administrator approves back tags and ear tags for sows and boars tattoos for butchers. Those responsible for identification include every person who handles swine in interstate commerce.

In North Dakota only back tags are used on sows and boars and tattoos are used on butchers. Experience in North Dakota and elsewhere has shown that a high percentage of the back tags placed on sows and boars are lost before they reach the slaughter plant kill floor where they are retrieved . Slaughter trace back then is difficult and often impossible on animals that have lost their tags or have been retagged in market channels.

North Dakota swine producers have asked the Dickinson Research Center to help solve the tag retention problems, in cooperation with Dr. Irwin Huff, AVIC, USDA, APHIS, Bismarck, N.D.

This project compares several methods of short term swine identification and notes the problems and advantages of each, since the major problem with the slaughter check program has been the lack of good, consistent identification.

PROCEDURE: STUDY NUMBER ONE. On January 17, 1990, two groups of Hampshire females weighing approximately 300 pounds were combined and moved into a 9' X 60' holding pen. Twenty-three gilts and two second litter sows were used in the trial, and each animal received five tags. These included a paper back tag applied to the pig's forehead and to the top of the shoulder area. Each paper tag was coated with approximately a 1/8" thick layer of cattle back-tag cement. The tags were applied using firm hand pressure to insure good contact with the animal's hair and skin.

Each pig also received three plastic tags applied with a Tag-Fast III applicator. One tag was inserted in the muscular area of the neck approximately 8-10 inches above the base of the ear. A second tag was applied through the ear from the back or shoulder side. The initial tagging process started at 9:00 A.M. and was completed by 9:20 A.M. A third plastic tag was inserted into the loose skin located at the base of the ear at 11:45 A.M., after it was discovered that a high percentage of the neck tags had already been lost. During actual tagging, the pigs were not restrained in any way other than crowding them together in order to simulate conditions found at most livestock marketing facilities. It required about twenty minutes to apply the four tags to the twenty five pigs. After tagging was finished, the pigs were confined to the holding area for approximately seven hours before being returned to their outside pens.

Tag retention was monitored by checking each pig for missing tags according to the following schedule: five readings were made on day one, two readings on days 2 and 3, and one on days 4 and 5. Results of the observations are shown in Table 1.

OBSERVATIONS: It was obvious by the end of the first day that none of the tagging systems or tag locations were satisfactory. The easiest a tag to apply was the paper tag applied to the top of the shoulder. Application of a paper tag to the pig's forehead was harder to accomplish than was application to the shoulder since the pig's head was constantly moving. Application of glue to the tag required considerable time and would best be accomplished while wearing gloves since invariably, the glue managed to get on the fingers. Inserting a plastic tag into the neck area was the simplest of the plastic tagging methods. Application of the tags into the base of the ear or through the ear itself required more skill and patience. One injection needle was broken and two were bent during the tagging operation. There did not seem to be any difference between the two needle types (one a pin type, the other a hypodermic needle type) provided by the Hantover Corporation. They both allowed easy insertion of the tags.

DISCUSSION: In this initial trial, the paper back tag applied to the top of the shoulder had the best overall retention, **with 12 of the 25 tags applied (52%) remaining after 5 days.** Twenty-three of the paper tags applied to the forehead area were missing after the first seven hours.

The Tag-Fast III plastic tags applied to the neck area were simple to install, but they had very poor retention. **Twenty-two of the 25 installed were missing by the end of the first two hours.** Apparently the "T"-locking device on the end of the tag failed to "lock" under the skin or in the tissue, and therefore, the tags were easily removed by rubbing or biting by other pigs. Of the 25 plastic tags applied to the base of the ear, 19 were missing by three hours after application. The plastic tags inserted through the ear were lost at the rate of 15 of 25 (60%) by five hours after tagging.

It appears that the plastic tags need to have a different or an additional locking device to insure retention, especially when the tags are inserted into the neck region. Perhaps a "porcupine quill" or "fish hook" design could be incorporated into the tag design. Also, it seemed that the plastic tag should have a shorter, stronger "stalk" for attachment. The installed tags seemed to stick out from the skin or ear and attract attention. This allowed tags to catch on fences and buildings or to be bitten by other herd mates.

The paper tags that remained on the shoulder were easy to read, even after five days. If the cement used on the paper tags had a chance to set up, most of the tags stayed on for the duration of the trial. Perhaps if the hair had been clipped before the tag was installed, the tag would have had a better chance of adhering to the skin and been less subject to loss. **By the end of the trial there were not enough of the paper tags remaining on the forehead to make a valid conclusion.** A number of the forehead tags were badly defaced prior to their actual loss, due to their having been chewed and rooted on by other pigs.

We need to go back to the drawing board and improve the design of the plastic tag if it is to be successful. The paper tag applied to the shoulder has good potential if it's retention can be improved, perhaps by using greater care during application.

Type of Tag	Paper Tag	Tag-Fast III
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Location	Forehead		Shoulder		Neck		Ear		Base of ear		
	Tags lost		Tags lost		Tags lost		Tags lost		Tags lost		
	No.	%	No.	%	No.	%	No.	%	No.	%	
Date : Jan 17											
Time:											
9:10-9:30 AM	-----25 Tags Installed-----										
9:30 AM	2	(8%)									
10:15 AM	9	(36%)	2	(8%)	11	(44%)	1	(4%)			
11:20 AM	14	(56%)	2	(8%)	22	(88%)	3	(12%)			
11:45 - Noon									25 Tags Installed		
1:15 PM	20	(20%)	4	(16%)	23	(92%)	6	(24%)	12	(48%)	
3:20 PM	23	(92%)	6	(24%)	24	(96%)	15	(60%)	19	(76%)	
Date: Jan 18											
Time:											
8:15 AM	23	(92%)	6	(24%)	24	(96%)	15	(60%)	19	(76%)	
3:15 AM	23	(92%)	6	(24%)	24	(96%)	15	(60%)	19	(76%)	
Date: Jan 19											
Time:											
8:30 AM	24	(96%)	6	(24%)	24	(96%)	15	(60%)	20	(80%)	
3:20 PM	24	(96%)	6	(24%)	25	(100%)	15	(60%)	20	(80%)	
Date: Jan 20											
Time:											
7:00 AM	24	(96%)	6	(24%)	25	(100%)	15	(60%)	20	(80%)	
Date: Jan 22											

Time:										
8:00 AM	24	(96%)	12	(48%)	25	(100%)	18	(72%)	20	(80%)
Percent retention after 119 hours		4%		52%		0%		28%		20%

PROCEDURE: STUDY NUMBER TWO. On March 21, 1990, twenty-three Hampshire gilts weighing approximately 350 pounds were moved from pasture lots into adjoining swine handling pens. Starting at 9:15 AM, each pig was sorted into a 2' wide working alley and blocked with a piece of plywood so they could not move forward or backup. Each pig was then tagged with a rubber Bangle tag, a round metal tag and two paper "back" tags.

The Bangle tags were provided by Dr. James P. Davis, Senior Staff Veterinarian, APHIS, Federal Building, Room 729, Hyattsville, Md 20782. They were prototype tags having rubber like consistency and were approximately 1.5 inches in diameter. They were attached to the upper right ear using a #3 hog ring and application pliers (Decker Mfg. CO., Keokuk, Iowa). While not important to the trial, the tags used came in several colors including: black, red, green, blue and orange.

A round (approximately 1" diameter) metal tag was placed in the top of the left ear using a #3 hog ring. These tags were obtained from Stockmen's Livestock in Dickinson, N.D.. However, they are available through several livestock supply catalogs.

Each pig also received 2 paper "back tags", one applied to the forehead and one applied to the top of the shoulder. Each tag was covered with "back tag" cement approximately 1/8 inch thick, and an effort was made to press them firmly into the hair and skin.

Note: In a separate trial, we checked on the amount of glue applied to each tag by weighing, adding cement and reweighing twenty-one tags. The average amount of glue applied averaged .86 gms. (.57 - 1.22 gms.).

After the tags were installed, the pigs were held in a 9' x 60' holding pen until 4:30 PM when they were returned to

their original pens. The pigs were individually checked for tag retention at 10:30 AM, 1 PM and 4 PM on day one, at 8:00 AM and 4 PM on day two, and once a day at 8: AM on days three, four, and five.

RESULTS: Trial results of the second study are shown in table 2.

Table 2. Swine Identification and Tag Retention Study-Number 2.				
	Location			
	Paper Backtag		Ear Tag	
			Metal	Bangle
	Forehead	Back	Left ear	Right ear
Date	[Number Lost]		[Number Lost]	
3-21-90				
1 PM	15	6		1
4 PM	19	6	1	
3-22-90				
8 AM	20	6	1	1
4 PM	20	8	1	1
3-23-90				
8 AM	20	8	1	1
3-24-90				
8 AM	20	8	1	2
3-25-90				

8 AM	20	8	1	2
Number Lost	20/23	8/23	1/23	2/23
Percent Lost	87%	36%	4%	9%

DISCUSSION: As in our first trial, the back tags applied to the forehead area proved to be a disappointment. Fifteen of 23 (65%) were missing by 1:00 PM of the first day. By 8:00 AM on day two, 20 of 23 (87%) were missing. The back tags applied to the top of the shoulder had better retention but still left much to be desired. At the end of five days. Eight of the 23 (35%) were missing.

Both of the ear tags (metal or rubber bangle) had a retention rate of over 90%. The one metal tag that was lost, evidently had not been securely fastened because both the ear tag and the hog ring were missing and yet the ear was not torn or damaged. In the bangle tag treatment group, one bangle tag was missing even though the hog ring was still intact, while in the other case, everything was lost, indicating poor fastening procedure.

We found that neither of the ear tags correctly fitted the hog ring application pliers we used. To accommodate the No. 3 hog rings and the round tags, the pliers needed to have wider, deeper jaws. Having the correct size and shape of application pliers would have made the tagging operation much simpler.

The pigs did not like to be confined and were not anxious to have their ears pierced with the hog rings and tags. However, we were able to tag them all without resorting to a pig (snout) holder for restraint. Application of any tag to a pig's ear requires patient and careful technique along with some form of confinement or restraint. Naturally, this adds to the amount of labor, time and expense required to identify the pigs. It appears that both a metal tag or a "bangle" tag applied to the top of a pig's ear with a #3 hog ring, will provide good, short term identification of boars and sows being shipped to market. However, this trial did not address removal problems, once the pigs reached the slaughter plant.

The paper back tag applied to the top of the shoulder was the easiest tag to apply and had a fair to average retention. We felt that retention could be improved by using a glue with a faster drying time, since most tag losses occurred during the first few hours post application.

SUMMARY: Neither the plastic tags applied with the Tag-Fast III applicator or the paper tags glued to the pig's forehead were satisfactory for short term swine identification because of poor retention.

Paper back tags applied to the top of the shoulder were the easiest to apply and had better than a 60% retention rate. The paper tags applied to the shoulder would provide an easy and satisfactory method of identification if the glue used had a rapid set up time. Both the round metal tags or the "bangle" tags provided good, short term identification although application was more difficult and time consuming than with the paper tags. This trial did not address tag removal problems at the slaughter plant.