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Michigan State University

Cooperative Extension Service

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pork industry handbook

COOPERATIVE EXTENSION SERVICE • MICHIGAN STATE UNIVERSITY

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Introduction

If the sow is considered a pig manufacturing unit, then improved management at farrowing and on through weaning will result in more pigs weaned per sow per year. On the average, producers lose more than 25% of the live pigs farrowed before they are weaned. Many of these deaths occur in the first few days after birth. Table 1 summarizes the causes of baby pig losses from 58 litters. More than 42% of the live pigs lost before weaning died from starvation or crushing, and if one includes the pigs that weighed under 1.8 lb. at birth, 55% of the losses were from these three causes. Good management can reduce these deaths and result in weaning 2 or more additional pigs per sow per year.

This fact sheet describes various management practices that should result in a greater number of pigs weaned per litter. Age divisions of birth to 3 days, 3 days to 3 weeks, and 3 weeks to weaning are considered.

Birth to 3 Days

Research summaries report that 65% of all post-farrowing deaths occur by the time the litter is 4 days old. Therefore, extra time and management spent on a newborn litter can pay big dividends in more pigs saved per litter. The producer attempting to minimize labor input to the hog enterprise should be careful about reducing labor in the farrowing house. Many pigs die that could be saved with a little tender loving care.

One management factor that will save pigs is to be present at farrowing. This is especially true if the farrowing quarters are not warm enough to prevent chilling the newborn pigs. The baby pig should have assistance in removing mucus from its mouth, and in starting to breathe. It should be wiped dry, be placed under the supplemental heat source, and be assisted in nursing for the first time. The attendant can assist with a difficult or prolonged birth that might otherwise result in stillborn pigs.

In many large hog operations with multiple farrowing programs, it may not be possible or practical to attend the sow at farrowing. In these cases the single most important factor in saving more pigs is to raise air temperature in the farrowing house to prevent chilling of the newborn pigs, especially in slotted floor houses. A room air temperature of 70-75 F. will allow the newborn pig to seek the extra warmth of the creep area before chilling. The creep area needs to be zone heated (heat lamps, gas brooders, and/or heat in floor) to a temperature of 85-95 F. Make sure zone heat is provided before the sow starts farrowing. Ventilation rates also must be controlled to remove moisture without causing drafts on the pigs. Precise control of air movement and temperature is very important in a slotted floor house

Table 1. Causes of baby pig losses in 58 litters.*

Causes of death	Number	% total deaths
Stillbirths	81	37.9
Crushing or injury	29	13.6
Starvation	26	12.1
Killed†	19	8.9
Navel hemorrhage	15	7.0
Enteritis	15	7.0
Myoclonia congenita (shakers)	6	2.8
Intestinal impaction	5	2.3
Iron toxicosis	3	1.4
Hernia following castration	3	1.4
No diagnosis	12	5.6
	214	100.0

*Preston and Mayrose, *Modern Veterinary Practice*, 44 (1963):48.

†Pigs weighing 1.8 lb. or less at birth were killed.

because air is moving below as well as above the pig. Slotted floors also eliminate the use of bedding and its insulating properties that would otherwise enable the pig to retain more of its own body heat. Properly controlled ventilation rates as low as 20 C.F.M. (cubic feet per minute) per sow during winter months and 200-450 C.F.M. per sow during summer months should adequately remove moisture, odors, and excess animal heat in most farrowing houses.

Baby pigs will indicate when to reduce the zone heat, usually at about 1 week of age. If the pigs are too warm they will not sleep under the heat source; if they are cold, they will pile up under the heat source and shiver. The baby pig's ability to regulate its own body temperature increases slowly from birth to 2 weeks. Management of environmental temperature is critical during this period.

Soon after birth the navel cord should be cut 3-4 in. from the body and, if still wet, treated with iodine tincture, U.S.P., 2% solution. The navel is a good avenue for bacteria to enter the body, which could result in joint problems and other abscesses; treating the navel cord will reduce these problems. If excessive bleeding occurs from the navel, tie the navel cord off with a piece of string about an inch from the body.

The producer also should clip the 8 sharp needle teeth to prevent injuries to the sow's udder and facial lacerations to the pigs from fighting one another. A pair of small side-cutting pliers or toenail clippers works very well. Remove about 1/2 of each tooth, taking care not to injure the gums. Clean and disinfect the clippers after working with each individual pig. A good disinfectant may be any of the quaternary ammonia or chlorine products. Most dairy utensil disinfectants, 70% alcohol or lysol are also satisfactory disinfectants.

Many producers are confronted with what to do with the so-called runt pigs at birth. Observation shows that survival rate of baby pigs improves as weight increases. Table 2 illustrates the relationship of birth weight to survival as summarized by Iowa researchers. Nearly 60% of the newborn pigs weighing under 2 lb. at birth can be expected to perish under normal conditions. In the past, many producers have sacrificed these "runt" pigs rather than trying to save them; however, with today's high costs of raising hogs, a little extra effort is worthwhile in trying to raise these pigs. Good results (Table 3) have been obtained by supplemental feeding of underweight newborn pigs with a commercial milk replacer or a mixture of 1 qt. milk, 1/2 pt. "half and half" and 1 raw egg. To the smaller pigs in the litter, administer 15-20 ml. once or twice daily with a soft plastic tube attached to a syringe. This method is time-consuming but can reduce the mortality of these small pigs by one-half.

Good records are important to the producer interested in obtaining maximum production efficiency. The heart of good production records is pig identification. Ear-notching the pig at 1-3 days of age provides a positive identification for the rest of the pig's life. This enables the producer to identify problem pigs in the finishing house and to trace their age, littermates, and dam. Identification is basic to a good program of selection based on animal productivity, requiring so little time yet enabling the producer to answer many questions. Many producers make their initial replacement gilt selection at birth and give them a special ear mark. Figure 1 illustrates an ear-notching system used by many producers.

The last management factor to be discussed here is equalizing litter size. When necessary and possible, adjust litter size for the number of functioning teats or milking ability of the sow by moving larger pigs to a litter where a teat order has not been established. Move pigs before they are 3 days old; however, be sure they have received colostrum before you transfer them.

Table 2. Relationship of birth weight and survival.*

Weight range lb.	No. pigs	Weight distribution of population	Survival
		%	%
Under 2.0	1,035	6	42
2.0-2.4	2,367	13	68
2.5-2.9	4,197	24	75
3.0-3.4	5,012	28	82
3.5-3.9	3,268	19	86
4.0 and over	1,734	10	88
Total	17,613	100	(Avg.) 77

*1948 litters. Average birth weight of live pigs farrowed, 3.0 lb. Iowa Swine Nutrition Herd Performance Data, 1970, unpublished mimeographed data from V. C. Speer.

Table 3. Survival of nursing pigs dosed with milk replacers.*

Treatment	Control	Supplemented†
No. pigs	69	69
No. survived	34	51
% survived‡	49	74

*Moody et al., *Journal of Animal Science* 25(1966): 1250.

†Nursing pigs under 2.0 lb. orally dosed once or twice daily from the day born to 7 days with 15 ml. reconstituted milk replacers, 3:2 water: solids ratio.

‡Significant difference ($P < .05$).

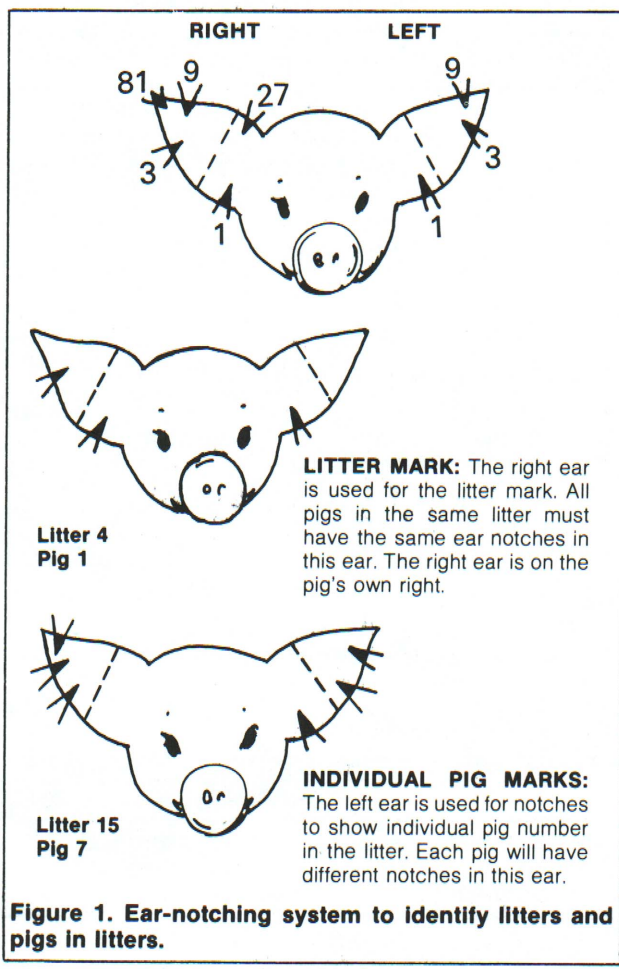
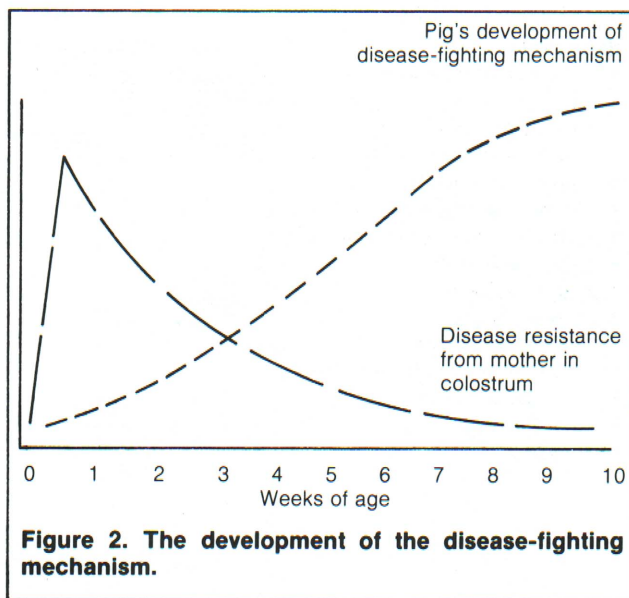


Figure 1. Ear-notching system to identify litters and pigs in litters.



Three Days to 3 Weeks

By 3 days the litter is generally nursing well and is apparently off to a good start. Management in this period includes anemia and scour control, castration, and tail docking.

Sow's milk is adequate to meet the nutritional requirements of the young pig in everything but iron. Iron is essential for formation of hemoglobin in the blood which transports oxygen to various parts of the body. Iron deficiency causes anemia, but this can be prevented by injections of 100-150 mg. of iron dextran on day 3 or 4, and again at 2 weeks of age if supplemental iron is not available.

Iron injection in the neck or ham muscle is the most reliable prevention method, because every pig is treated. The neck muscle is preferred since iron may cause objectionable residual staining of the ham muscle especially if pigs are older than 4 weeks when treated. Other satisfactory methods for anemia prevention include several orally administered compounds or the placing of clean sod in the farrowing pen. These treatments are particularly effective as supplements to an initial iron injection. Pigs should begin to consume sufficient creep ration at 3-4 weeks of age to prevent recurring anemia.

Baby pig scours are major ongoing problems for swine producers. Most common diarrheas are caused by various strains of *Escherichia coli*, a gram-negative bacteria common to the intestinal tract of all mammals. The symptom of *E. coli*-induced diarrhea is a watery, yellowish stool. Pigs are most susceptible from 1-4 days of age, at 3 weeks of age, and at weaning.

Figure 2 shows the development of the natural disease-fighting mechanism of the baby pig. Although the pig is born with very little disease resistance, this resistance increases as he absorbs antibodies from his mother's colostrum. Because the pig's ability to absorb antibodies decreases rapidly from birth, it becomes very important that he feed on colostrum soon after birth. Colostrum provides the only natural disease protection he will have until his own mechanism for antibody production begins to function effectively at age 4-5 weeks. Figure 2 shows that disease resistance is lowest at 3 weeks. It is wise to avoid unnecessary stress (castration, vaccination, worming) at this time.

In treating common scours, orally administered drugs are usually more effective than injections. You should use a drug effective against the bacterial strain on your farm. If the product you normally use for scour control is no longer effective, have your veterinarian conduct a sensitivity test

to determine which drugs are most effective for your farm. Water medication through the use of a proportioner or individual waterers may be an effective method for administering the antibiotic to large numbers of pigs for a long period.

A dry, warm, draft-free environment is of primary importance in reducing scours. Sanitation is also very important in reducing the incidence of baby pig scours. Thorough cleaning and disinfecting of the farrowing house after every group of sows aids in prevention. Remember that $\frac{1}{4}$ in. of filth can withstand fumigation and provide an active strain of bacteria to infect the next batch of pigs.

Other diseases such as transmissible gastroenteritis (TGE) and swine dysentery may cause more serious diarrhea problems. Contact your local veterinarian if diarrhea persists or does not respond to treatment.

Tail docking has become a common management practice to prevent subsequent tail biting of pigs in confinement. It should be done by all producers of feeder pigs. Cut tails $\frac{1}{4}$ - $\frac{1}{2}$ in. from the body with side-cutting pliers or another blunt instrument. The crushing action helps to stop bleeding. Some producers use a chicken debeaker for docking; this also cauterizes the cut surface. Disinfect the tail stump with a good antiseptic, and disinfect the instrument between docking each pig.

Castration also must be done sometime during the early life of a male market hog. To minimize stress, good managers castrate boar pigs before they are 2 weeks old. Pigs at this time are easier to handle, heal faster, and suffer less. Use a clean, sharp instrument, make the incision low to promote good drainage, and use antiseptic procedures. Commercial pig holders are available and can make castration a simple one-man operation.

Three Weeks to Weaning

As the baby pig grows older, he becomes tougher and better able to cope with his environment. By the time most nursing pigs reach 3-4 weeks of age, they have started on feed and are growing rapidly. These early gains are efficient gains, so the producer should try to minimize stress that reduces performance.

One way to maximize performance is to get the pigs started on feed as soon as possible. Generally, the sow's milk production has peaked at 3-4 weeks and begins to decrease. The pig is beginning to grow rapidly at this age and must obtain supplemental feed if he is to grow at his genetic potential. Pigs should be offered feed at 1-2 weeks; place a small amount of starter feed on the floor or in a shallow pan. Starter rations can be formulated on the farm; however, producers may wish to purchase a commercial pig starter. Consult with your Extension specialist or nutritionist if you wish to formulate pig starter rations.

Internal parasites are a problem on most swine farms, and the damage caused by these unwanted organisms may begin in the very young pig. According to U.S.D.A. estimates, the annual loss to internal parasites may average \$3 per pig marketed. The most common internal parasites of swine are roundworms, nodular worms, whip worms, strongyloides, and lung worms. A good control program begins with deworming the sow before farrowing and washing her, especially the udder, before bringing her into the farrowing house. If parasites continue to be a problem, you may need to treat young pigs before 7-8 weeks of age. Use a compound effective in removing the parasites common to your herd.

The last major management factor covered here is weaning. Age of the pig at weaning varies from herd to herd, according to facilities available, intensity of operation, and managerial skills of the producer. Generally, pigs can be weaned at any time; however, the younger the pig, the

more management is required to do it successfully. For the average producer, the following tips might be helpful in reducing the stress of weaning:

- Wean only pigs weighing over 12 lb.
- Wean over a 2- or 3-day period, weaning the larger pigs in a litter first.
- For 3-week-old pigs, provide an environmental temperature of 80-85 F. Avoid drastic temperature changes, and prevent drafts, even on older pigs.
- Group pigs according to size.
- Limit numbers in a pen to 30 or less, if possible.
- Limit feed intake for 48 hours if post-weaning scours are a problem.
- Provide 1 feeder hole for 4-5 pigs and 1 waterer for each 20-25 pigs.
- Medicate drinking water if scours develop.

Summary

The following management practices are suggested:

- Be present at farrowing.
- Keep baby pigs warm and dry.
- Treat navel with tincture of iodine.
- Clip needle teeth.
- Dose small pigs with supplemental milk.
- Eartotch pigs for identification.
- Equalize litters.
- Prevent anemia.
- Prevent scours.
- Dock tails.
- Castrate boar pigs by age 2 weeks.
- Feed good starter ration.
- Deworm pigs.
- Minimize stress of weaning.



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