



pork industry handbook

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Guidelines for the Development of a Swine Herd Health Calendar

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The goal for every farm should be to keep out new diseases. However, should disease enter a farm, a well-managed, predetermined swine herd health plan should be in place to control disease by limiting exposure to specific disease organisms and by increasing herd immunity against common diseases. Management that promotes maximum growth of pigs will likely reduce risk to infections and minimize dependence on subsequent drug treatment, vaccines, and other costly disease control practices.

To keep out new diseases, incoming herd replacements should be isolated and treated for potential pathogens. A strict sanitation and traffic control program minimizes opportunities for new disease organisms to enter the herd, while systematic vaccination of sows and pigs reduces the likelihood of routine diseases. A comprehensive herd health program also includes optimum nutrition, comfortable housing, excellent ventilation, and vigorous parasite control. All-in, all-out from farrowing through finishing, segregated early weaning, and two- or three-site production schemes are excellent management technologies that should be considered when developing a herd health plan.

The following herd health program lists most vaccination and parasite control options available. **Not all the procedures are applicable, desirable, or economically feasible for every farm. Table 1 should serve only as a guide.** Immunizing agents, anti-parasite products, feed additives, and injectables are direct-cost items for the producer. Producers should consult with their veterinarian, study the cost/benefit ratio of each procedure, and decide

which are necessary for the individual farm. Problems peculiar to a given farm need to be taken into consideration, including prevalence of diseases in the area or on the farm. Locale, type and size of operation, biosecurity practices, and government regulations will influence health management decisions.

Vaccinations

As previously stated, not all vaccinations listed are required or even desired on every farm. Vaccinations to consider in breeding swine are leptospirosis, erysipelas, parvovirus, *E. coli*, TGE, *Mycoplasma*, *Clostridium*, and *Pasteurella/Bordetella* for atrophic rhinitis (AR). It is common to vaccinate breeding females (gilts) and young boars for leptospirosis, erysipelas, and parvovirus at or soon after 6 1/2 months of age and again 2 to 4 weeks later. Booster vaccinations are given to sows at weaning and to boars every 6 months. Combination vaccines are commonly used to accomplish these immunizations. Although the prevalence for leptospirosis, parvovirus, and erysipelas is low, the cost of the vaccine against these diseases is also low. According to the 1995 NAHMS survey, over 90 percent of the sows and gilts in herds with over 500 sows are vaccinated against leptospirosis and parvovirus. Pseudorabies (PRV) vaccines may be included in areas where PRV is a threat.

E. coli, *Mycoplasma*, AR, TGE, and *Clostridium* vaccines may be administered to breeding females prior to farrowing. For example, *E. coli* bacterins are given twice (5 to 6 weeks pre-farrowing and 2 weeks pre-farrowing)

the first time a pregnant female is immunized. That same female receives only one vaccination 2 to 3 weeks pre-farrowing before subsequent litters. *E. coli*, *Mycoplasma*, AR, TGE, and *Clostridium* vaccines are best utilized after a veterinarian has determined they are necessary. For example, AR exists in almost every commercial herd to some degree. However, AR vaccination may only be necessary when increased days to market, decreased feed efficiency, decreased average market weight, and percentage of "poor-doers" start to cause economic loss. Records are important to measure such economically important performance traits. Even without obvious economic loss, feeder pig producers may use AR vaccinations as insurance against price discrimination. When AR bacterins are used in sows, the litters are usually vaccinated twice, at 7 to 10 days and again at 3 to 4 weeks of age, or once at 3 to 4 weeks of age, depending on the type of vaccine. One manufacturer recommends vaccination of sows only. A slaughter check will help determine the AR status of the herd and provide insight into the effectiveness of the AR vaccination program.

TGE vaccine used without determination of need becomes relatively expensive. Conversely, TGE vaccination of sows and pigs in "chronic" TGE herds can be helpful and cost-effective. A veterinarian may recommend TGE vaccination of unweaned pigs if TGE is diagnosed as a cause of a chronic scouring problem.

Vaccines are available for the Porcine Reproductive and Respiratory Syndrome (PRRS). The modified live vaccine can be administered to sows and gilts prior to breeding and to pigs between the ages of 3 weeks and 18 weeks of age. PRRS is an unusually complicated disease and protective immunity can be accomplished only when the vaccination is timed properly. Veterinary consultation is especially important for good results when using PRRS vaccines.

Erysipelas bacterins may be given at 7 to 10 weeks of age and repeated 3 to 4 weeks later. The use of live erysipelas vaccines in growing pigs is not advisable if vaccinated pigs are located near the main breeding herd (especially if breeding herd is unvaccinated for erysipelas).

If *Actinobacillus (Haemophilus) pleuropneumoniae* is causing either a farrow-to-finish herd problem or a feeder pig finisher potential problem, vaccination will be necessary at least twice and up to three times in growing-finishing pigs (about 7 to 10 weeks, 12 to 14 weeks, and possibly, 16 to 17 weeks).

Other vaccines to consider are *Salmonella choleraesuis*, *Haemophilus parasuis* and *Streptococcus suis*.

One of the *Salmonella choleraesuis* vaccine directions includes intranasal or oral administration at 3 weeks of age or older. Since this vaccine is an avirulent inactivated modified live vaccine, it should be used in the absence of medications. The pigs should be taken off all feed or water medication 2 to 3 days prior to and 3 to 5 days after administration to prevent destruction of the vaccine.

Label directions including withdrawal times before slaughter should be read before any vaccination program is finalized. Some vaccines that contain oil adjuvants advise 60-day withdrawal times.

Vaccine products vary considerably, and manufacturers' recommendations for time of administration

differ. All of the various conditions could not be included in the timetable. **The producer's veterinarian should be consulted for specific vaccination recommendations for each situation.** For example, veterinary assistance should be used to determine which species, strain, or serotype should be included in the selected bacterins. Vaccinations that offer several choices include *Pasteurella*, *E. coli*, *Actinobacillus*, *Mycoplasma*, and leptospirosis. Immunization is a complex process and many unforeseen circumstances can interfere with the planned protection against the specific disease. These include maternal antibody interference, stress at the time of vaccination, poor nutrition, and inappropriate vaccine or faulty vaccine due to poor handling or lack of refrigeration. Administration techniques using improper needle length and size or wrong deposition site also can contribute to insufficient antibody development and protection. **Vaccination does not necessarily mean immunization.**

Some operations use no vaccines yet have excellent herd performance. These herds rely on strict sanitation and herd exposure control methods, such as exposing young gilts to the adult herd at least one month prior to breeding to prevent parvovirus and perhaps other unidentified viruses that cause reproductive failure problems. In a well-managed herd, growing pigs may require no vaccinations.

Segregated Early Weaning

Segregated early weaning (SEW) is a production management technique designed to control or eliminate specific swine diseases with minimal use of vaccines and antibiotics. Pigs are weaned at less than 21 days of age and benefit from the protective colostral antibodies from their highly immune dams. Pigs (usually no more than 7 days age variation) are separated at weaning from the rest of the swine herd and reared all-in, all-out by room, building or site. Strict biosecurity measures are enforced. SEW decreases the low-level disease in the herd and growth rate improves in these high health status pigs. However, these high health pigs are more susceptible to disease if exposure to infectious agents occurs.

Control of Parasites

Before proceeding with an active deworming program, fecal examinations from at least five pigs, each at 10 to 15 weeks and 16 to 26 weeks of age and from at least five sows or boars should be made to determine the species of worms present. Samples should be collected from several different pens. Slaughter health checks also can be helpful in determining the presence and extent of a parasite problem. The dewormer effective against the parasite(s) diagnosed should be used as recommended by the manufacturer. Frequently in slotted-floor systems, no worm eggs are found, and a dewormer may not be required. The importance of fecal exams representative of the entire herd and slaughter health checks are stressed.

Diagnosis of mange may require skin scrapings of young pigs or older sows and microscopic examination by a veterinarian. If mange and/or lice are present, an intensive program for external parasite elimination is possible with a single product or a combination of products. Injectable endectocides (products that remove internal

and external parasites), pour-ons and sprays are effective products for use against mange. Manufacturers' recommendations should be followed including amount applied and pressure if a spray is used. External applications should be repeated within 7 to 10 days. Caution should be exercised against the indiscriminate simultaneous use of different products. Lice and mange can be eliminated from the herd with a well-designed, veterinarian-assisted program.

Records

Records are important to the success of a herd health program. They enable the producer and herd health team to identify problems in the operation and to measure the progress of the program. Farrowing records should denote the sow number, sire(s), date of farrowing, number born, number alive, number mummies, litter weight, weaning age and weight, and number weaned. Any abnormalities, disease problems, and treatments of pigs or sows should be recorded. Using a computer program to retrieve and compare data enhances the value of records.

With the exception of newborn pigs, hogs that die should generally be necropsied by the attending veterinarian or taken to a state diagnostic laboratory. Follow the attending veterinarian's guidelines. Routine postmortem examination, regardless of cause of death, detects chronic, slow-moving but costly diseases before they become established in a herd. Moreover, a devastating disease may be prevented by vaccination or treatment before serious losses occur.

Slaughter Checks

Routine slaughter checks of at least 20 percent of a production group or up to 30 market-sized hogs by a

veterinarian will provide considerable herd health information. Slaughter checks need to be included in the calendar to allow the producer and veterinarian to monitor the health status of the herd and the effectiveness of the herd health program. The veterinarian should inspect the lungs for bacterial and mycoplasmal pneumonia, the liver for parasite damage, and the snout for evidence of atrophic rhinitis. Mange, arthritis, foot injuries, and abscesses also can be detected. With the exception of the veterinary inspection fee, the producer incurs no financial costs from a slaughter check because the carcasses are processed normally.

When the producer does not have a cooperative packer nearby, two or three market hogs can be slaughtered at a local plant, and arrangements can be made with a veterinarian to inspect the slaughter. If this alternative is not practical, the lungs, liver, snout, and intestines can be collected and taken to the veterinarian's office for examination.

Summary

The need for any disease control program should be carefully scrutinized based on the presence of the disease and its effect on production. Post-mortem examinations, slaughter-checks, farm visits by the veterinarian, and blood testing should be routine on all farms. Pork producers cannot afford to be without a comprehensive herd health plan. Working in conjunction with their veterinarians, producers should develop a basic disease prevention schedule. This schedule is an integral part of an overall management plan or calendar that should be developed with the help of a hog management team (producer, veterinarian, nutritionist, agricultural engineer, and financial consultant) that minimizes disease and maximizes economic return.



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Table 1. Herd-health management timetable for the swine breeding herd.

Time (age)	Vaccines and Parasite Control	Management and Breeding
GILTS/SOWS		
6 1/2 months	Deworm; treat for lice and mange; feed fresh manure from boars and sows. Repeat in one week. Commingle with cull sows, and initiate fence line contact with boars. Vaccinate for leptospirosis, erysipelas, parvovirus, PRRS, and PRV.	Isolate purchased gilts for 60 days. Blood test for important disease(s) not already present in the herd.
7 1/2 months	Repeat vaccinations, except PRRS.	_____
3 weeks post-breeding	_____	Pregnancy check non-returns to heat.
35 to 60 days post breeding	_____	Pregnancy check (35 to 60 days post-breeding).
6 weeks prior to farrowing	<i>Clostridium</i> toxoid.	_____
4 to 6 weeks prior to farrowing	<i>E. coli</i> bacterin, <i>Pasteurella</i> (AR), <i>Mycoplasma</i> , TGE, PRV. Treat for lice and mange.	_____
2 weeks prior to farrowing	<i>E. coli</i> bacterin, <i>Clostridium</i> , <i>Mycoplasma</i> , TGE, AR.	May include feed additives through lactation to prevent <i>Clostridium</i> .
7 to 10 days prior to farrowing	Deworm; treat for lice and mange.	May include feed additives to prevent constipation. Wash sows thoroughly with detergent before entering farrowing house.
Farrowing	_____	Record litter and sow information.
2 to 5 weeks post-farrow	Lepto, parvovirus, and erysipelas, PRRS, PRV for sows. Treat for lice and mange.	Wean pigs. Provide comfort, sanitation, and adequate diet.
Boars		
4 to 6 months	_____	Select and bring to farm at least 60 days prior to breeding. (Boars are ready for limited use at 8 months of age.) Isolate purchased boars for 60 days. Blood sample for important diseases not already present in the herd.
1st 30 days following purchase in isolation	Test for brucellosis, leptospirosis, PRRS, parvovirus, <i>Actinobacillus</i> , TGE, and PRV. Treat for lice and mange and deworm.	Feed unmedicated feed, and observe for diarrhea, lameness, pneumonia, and ulcers.
2nd 30 days following purchase in isolation	Vaccinate for erysipelas, leptospirosis, and parvovirus.	Feed manure from other boars and sows. Commingle with cull gilts, and observe desire and ability to breed. Provide fence line contact with gilts and sows to be bred.
Every 6 months	Revaccinate PRV, leptospirosis, erysipelas, and parvovirus; then, deworm. Treat for lice and mange.	Detusk.
PIGS		
1 day	<i>Clostridium</i> antitoxin.	_____
1 to 3 days	Iron injection (200 mg).	Clip needle teeth. Dock tails. Ear notch. Castrate.
3 to 7 days	Vaccinate for AR, TGE.	_____
10 to 14 days	_____	Start creep feed ; wean if SEW.
3 to 4 weeks	Vaccinate for AR, PRRS, <i>Mycoplasma</i> , and <i>Salmonella choleraesuis</i> .	Wean.
Weaning + 10 days	Treat for lice, mange; then deworm.	_____
Weaning + 20 days	Vaccinate with erysipelas and <i>Actinobacillus pleuropneumoniae</i> bacterins.	_____
10 to 12 weeks	Vaccinate for PRV and revaccinate with erysipelas and <i>Actinobacillus pleuropneumoniae</i> bacterins.	Fecal exam.
5 to 6 months	Follow all vaccination withdrawal times prior to slaughter.	Health check 20% or up to 30 hogs from a market group. Follow all feed and injectable antibiotic withdrawal times prior to slaughter.