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Promoting

Swine Health

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A good swine health program is one that prevents diseases instead of treating them after they have occurred. Work closely with your veterinarian to develop a good health program to tie in with sound management and nutrition practices.



Extension Service, Oregon State University, Corvallis, Joseph R. Cox, director. This publication was produced and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Extension work is a cooperative program of Oregon State University, the U. S. Department of Agriculture, and Oregon counties.

Prepared by Guy E. Reynolds, Extension veterinarian, Oregon State University.

Promoting Swine Health

MANY SWINE DISEASES and parasites can be prevented by good management and sanitation. Both disease-causing organisms and parasites usually come from other animals. Most disease organisms will die or lose their vigor outside the diseased animal's body. They can sometimes live outside the body, however, especially in unsanitary conditions.

DISEASES

To develop a disease-prevention program you must first increase your pigs' resistance to disease-causing organisms; and second, you must limit the chances for these organisms to get to your pigs.

Baby Pig Scours

Baby pig scours, or diarrhea, has many causes. At least 4 percent of all farrowed pigs die from scours.

Today's swine production practices have increased problems with baby pig scours. Methods of shipping livestock and buying and selling feeder pigs help spread the disease. Overcrowding and continuous production often cause bacterial buildup and make it possible for diseases to be carried over. In this age of antibiotics, chemotherapy, and labor shortage, too much emphasis has been placed on treatment and too little on good sanitation and management.

Colibacillosis (white scours or diarrhea of baby pigs) is an acute, sometimes highly fatal bacterial disease of suckling pigs. Infected pigs are listless, lose weight, and become weak and dehydrated, even though they may continue to nurse well. Sometimes a blood infection (septicemia) develops. There is a profuse yellowish-white diarrhea with a marked fetid or musty odor. Tails often become coated with fluid feces; and if pigs live, their tails may slough off. In young pigs, the death loss may reach 100 percent; but in older pigs it is usually quite low. The number of runts and slow-doers resulting from this disease adds its economic importance.

The coliform group of bacteria, particularly *E. coli*, is probably the cause. *E. coli* is usually present in the lower digestive tract, even under normal conditions. It is only when certain strains of this organism multiply and take over the intestinal tract that problems arise. Many factors can make the problem worse, such as chilling, nutritional deficiencies of the sow causing lowered viability of the pigs, genetic weakness of pigs, wet and filthy farrowing pens which support large numbers of coliform organisms, and failure of gilts or sows to be immune to these organisms. Some swine producers do not understand the relationship of these conditions and white scours.

Under certain conditions, colibacillosis is highly contagious. In severe outbreaks, begin treatment promptly. Oral medication usually is most effective; neomycin polymyxin, streptomycin, nitrofurans, or sulfas are preferred. The coliforms quickly become resistant to many antibiotics, especially the tetracyclines and streptomycin. Your veterinarian can select the proper drug through antibiotic sensitivity tests performed on cultures of intestinal contents. Feeding antibiotics to sows just before farrowing sometimes helps, but not always.

To prevent scours, bacterial buildup must be held to a minimum. This can be done only by strict sanitation. Coliform organisms usually settle in the farrowing houses. Good management between farrowings, as well as when the house is in use, is quite important.

The use of mixed bacterins has not always been effective. Timing of vaccination seems to be quite important. Get help from a veterinarian if scours affects your herd, because treatment and prevention often are difficult.

Metritis-Mastitis-Agalactia Syndrome (MMA)

MMA has become a widespread problem. It seems to have increased with the trend to farrow larger numbers of sows in confinement units, with fewer breaks in the farrowing cycle. Sows and gilts with MMA syndrome have one or more of the following signs:

- Metritis-inflammation or infection of the uterus.
- Mastitis-inflammation or infection of the mammary glands.
- Agalactia-failure or lack of milk production.

You can usually spot MMA within the first three days after farrowing, although the signs may be seen just before farrowing or at any time before the pigs are weaned. A white to yellow pus usually is discharged from the vagina, but in different amounts and consistency and sometimes it does not occur. The affected sow usually has a 2- to 3-degree rise in temperature, goes off feed, and stops producing milk. The udder often becomes hot and painful. Even though this is a disease of the sow, it affects the pigs most because milk production stops.

Pigs nursing sows with MMA often develop a diarrhea that worsens the dehydration already caused by lack of milk consumption. Although few sows die from this condition, pig losses may range from 50 to 100 percent. Many of the pigs that do not die become runts.

The specific causes of MMA are not yet known. Research has shown bacteria, fungi, and viruses may be involved. It seems the uterus becomes infected at farrowing time with bacteria from the vagina and from contaminated farrowing facilities. Infection may also occur at breeding time when infected boars transmit the organisms. Stress may also be a causative factor.

Metritis seems to be the primary lesion in MMA. Mastitis and agalactia may result from either infectious agents or intoxication from the uterine infection. An imbalance of hormones caused by uterine infection also may affect milk production.

Nutrition plays an important part in the MMA syndrome. Overfat sows are more susceptible to the disease than average size ones.

The many possible causes of MMA make specific treatment or prevention measures difficult. Strict sanitation of the sow and boar herd and the farrowing units is a must. The proper use of antibiotics and chemotherapeutic agents may help to prevent and control MMA. As in any disease, accurate diagnosis and determination of the causes make treatment and prevention much easier.

The best times to use preventive medication for MMA appear to be during breeding and farrowing. Feed a high level of antibiotic (100 to 200 grams per ton of feed) to the sows and boars beginning one week before breeding, and continue for two weeks. Use the same medication schedule at farrowing. Individual cases of MMA may be treated with hormones for milk let-down or with injectable antibiotics, uterine infusions, and vitamins.

The milk from sows with MMA, whether the glands are obviously affected or not, is more alkaline than normal. This milk may be distasteful to the baby pigs; many pigs will not nurse, even though milk is present and nursing is allowed.

Make every effort to give pigs the first milk (colostrum). If the sow does not respond to treatment, shift the pigs to another sow with a litter of the same age. If a nurse sow is not available, feed a sow-milk replacer at body temperature in a shallow pan.

Feed baby pigs six times daily during the first and second days of life, four times daily during the third and fourth days, and three times daily from the fifth to seventh day. Feed as much milk as the pigs will finish in ten minutes. You can gradually substitute a dry commercial pig starter and then creep ration.

Mycoplasma Pneumonia (Virus Pig Pneumonia)

The most common pneumonia in swine is chronic in nature. It has been called many names but is commonly referred to as virus pig pneumonia. The causative agent was thought to be a virus; but current research shows that it is caused by a bacteria-like organism, a mycoplasma (PPLO).

Coughing is the first sign and generally begins a week after exposure to infected animals. It is most severe in the morning when the pigs are roused. Diarrhea usually occurs when the affected pigs first begin to cough. The diarrhea lasts only a few days, but the coughing persists. Temperature is only slightly higher than normal. Even when it reaches 105° F., the pigs do not look sick; and they continue to eat, although gains may be slow and feed utilization poor. Severe illness occurs only when the disease is complicated by secondary bacterial infection or heavy parasitic infection.

Good management plays an important role in producing healthy pigs free of mycoplasma pneumonia. This disease is not so severe in well-fed pigs in a warm, dry, draft-free environment. Roundworm and lungworm control also are important because migration of the larvae through the lungs intensifies pig pneumonia problems.

SMEDI Viruses

The letters SMEDI describe the symptoms of this disease—stillbirth, mummification, embryonic death, and infertility.

Stillbirth refers to a fully developed fetus that is born dead. Mummification refers to fetuses that have some calcium in the

skeletons but have died after 35 or more days pregnancy and are being dehydrated by absorption. Embryonic death involves embryos under 35 days gestation, before detectable amounts of calcium occur in the skeletal frame. When these embryos die, they are completely absorbed. Infertility for varying lengths of time often occurs. Sows infected early in pregnancy may absorb the fetuses and return to estrus in the normal time of 21 days. Sows infected later in pregnancy will usually carry pigs to maturity, with part of the litter being mummified, some stillborn, and others born alive. Pigs born alive are often weak and die from other causes due to their lowered resistance. Usually there are no abortions.

Currently, no adequate control measures exist. The following management practices are suggested to minimize losses. The critical period for virus infections of breeding stock is from one month before breeding to about weaning time. Keep a closed herd. Consider all possible sources of outside infections. Restrict delivery trucks, visitors, birds, rodents, cats, and dogs. Require workers who come in contact with swine on other farms to change clothes. Have the breeding herd run together during the critical period to gain a common immunity to the existing viral and bacterial flora. Isolate new additions to the herd for at least 30 days; never add to the breeding herd during the 30-day period before breeding or farrowing.

Atrophic Rhinitis

Atrophic rhinitis affects the turbinate bones and sometimes the nasal septum, often causing distortion of the snout. Atrophic rhinitis usually does not cause significant death losses by itself but reduces feed efficiency and rate of gain. It can reduce growth rates by 4 to 6 percent. Complications following atrophic rhinitis are common and include pneumonia, with resulting unthriftiness and death. When the nasal turbinate is damaged, the air-filtering ability of the pig's nose is greatly impaired. This condition causes discomfort and contributes to pneumonia.

The usual cause of this disease is a bacterial infection of the nasal cavity by an organism called *Bordetella bronchiseptica*.

There are three conditions required by *B. bronchiseptica* to cause atrophic rhinitis.

1. Pigs must become infected while young, usually during the first two weeks of life. Pigs several months of age may become infected, but they don't develop lesions.

2. Pigs must be infected with a virulent strain.
3. The infection must last at least three to five weeks.

There is no satisfactory treatment for atrophic rhinitis. However, you can eliminate infection from herds with one of the following methods:

1. Get rid of your present herd and start again with primary laboratory pigs or with pigs from an infection-free herd, as proved by nasal swab culture.
2. Use the nasal swab culture to identify and get rid of infected breeding stock.
3. Try to clear up the infection with sulfonamide medication. This does not always work.

Swine Erysipelas

Erysipelas is an infectious disease mainly affecting young swine. Probably the greatest economic loss comes from the unthriftiness caused by the mild and chronic forms of the disease rather than from the fatal acute septicemic form.

The clinical symptoms of swine erysipelas are classed as acute, subacute, and chronic. Usually, in the acute form, the first sign of the disease in a herd is to find one or two dead pigs. A few animals may show such general symptoms as sleepiness, lack of appetite, and a marked rise in body temperature. Some animals have a stiff gait, and they may occasionally vomit and have diarrhea. On the second or third day of illness, skin lesions, similar to those seen in the diamond-skin disease, may develop on various parts of the body, especially on the ears, belly, and between the legs. Mortality from the acute form may run from 50 to 100 percent.

The subacute form is less severe. The pigs are not so sick, the temperature may not be high, and the pigs show more interest in food. Some skin lesions may appear. The pigs are not sick for a long time and fewer deaths occur. Pigs that survive the acute and subacute forms of the disease do not always make a complete recovery and quite often become chronic cases.

The chronic form of swine erysipelas is caused by the organism settling in the joints, causing arthritis. The joints of the legs are most frequently affected. The chronic infection may occur on its own or may follow the acute disease. When the joints become large and painful, the animals become unthrift.

To prevent erysipelas keep a closed herd, practice strict sanitation in and around buildings and facilities used by the animals;

and keep visitors out. Get breeding herd replacements from farms where a complete herd history is available. Isolate replacement animals for at least 30 days.

There are several types of vaccines available to help control or prevent erysipelas. Consult your veterinarian to decide if vaccination is advisable and which product to use.

Transmissible Gastroenteritis

TGE is an infectious, transmissible disease causing a high death rate in pigs less than ten days of age. It affects swine of all ages, but seldom causes death in older swine.

The clinical signs are suggested by the name, gastroenteritis. The disease usually spreads quickly, affecting the whole herd within a few days. In older swine, particularly brood sows, the symptoms vary. Some sows with affected litters do not show any noticeable signs while others have a poor appetite, vomit, scour profusely, cease giving milk, and lose weight rapidly; occasionally, a few die.

In young pigs diarrhea is a constant sign. The bowel discharge may be whitish, yellowish, or greenish in color. Ingested milk often passes from the bowel only slightly changed. There is usually rapid dehydration and weight loss. Vomiting and excessive thirst occur frequently. Most pigs less than a week old die; death occurs less often in older pigs.

No specific effective treatment has been found. Many different substances have been tried. Replacement fluid therapy to limit dehydration is helpful.

The disease is very contagious and spreads rapidly through the herd. Natural infection will establish immunity for six to nine months. Since the highly susceptible young pigs probably are the main carriers of the infection, alter the breeding cycle of the sows to allow a two-month break before the next farrowing. The short-lived virus will die out, which helps control the disease.

There is evidence that sows affected with TGE during pregnancy transmit some degree of immunity to their pigs through the milk. Pregnant sows have been deliberately infected by feeding them TGE-infected material to help control an outbreak.

Leptospirosis

Leptospirosis is a common bacterial disease of Oregon swine. The organism has a wide host range which includes domestic and

pet animals, man, and most wildlife species. This diversity of hosts makes control of outbreaks quite difficult.

Infected swine may act as carriers for up to 12 months. *Leptospira* often localize in the kidney. The usual method of exposure is contact with urine-contaminated surface water or by direct splashing of urine from carrier animals. Leptospirae have the ability to penetrate intact mucous membranes or broken skin and cause infection. Contaminated streams, ponds, and solid waste lagoons are known to be a source of infection for as long as five months.

The most common clinical signs of disease are abortions, stillbirths, and febrile infection of baby pigs. Less severe disease signs include: listlessness, diarrhea, conjunctivitis, jaundice, and convulsions. Death can occur but is not common in pigs over two months of age.

Several serotypes of *leptospira* are capable of causing infection. The disease is similar for each type. *Leptospira pomona* was the first type to be identified as a cause of leptospirosis in swine. Recent research indicates *L. icterohaemorrhagiae*, *L. grippotyphosa*, and *L. canicola* also cause disease in swine and man.

Bacterins have been developed to prevent clinical losses in swine herds and give an effective immunity for about one year. The bacterin for one serotype does not protect against other serotypes of *leptospira*.

Diagnosis is usually established by submitting blood samples to a laboratory. Testing procedures can determine which serotype is causing problems in a given herd. The owner can then vaccinate against the specific organism involved. Repeated vaccination over several years has eliminated leptospirosis from some herds. Widespread vaccination without a confirmed diagnosis is not recommended. Antibiotics may limit losses during an outbreak.

The following management practices help prevent the introduction of leptospirosis:

1. Control rodent populations; rats are the most common carrier host.
2. Don't allow the farm dog to urinate in the pig barn.
3. Isolate and test replacement brood stock prior to adding them to the herd.

PARASITES

Internal Parasites

The problems caused by internal parasites are as old as the swine industry. There is no reason or excuse for internal parasites to be the problem they are today. Proper sanitation and the correct use of the wormers now available can bring effective control.

A good, preventive parasite program is the same as it was 30 years ago. It is simply (1) a clean sow, (2) a clean farrowing house, and (3) clean pastures.

A clean sow means clean both inside and out (skin and intestines). Before putting sows in a clean, disinfected farrowing house, wash them with a mild soap solution or disinfectant. Worm them three to five weeks before farrowing. Worming the sow keeps newborn pigs from getting eggs from the sow's manure. Pigs should be wormed when they are 8 to 12 weeks old.

The most common internal parasites in swine are roundworms, nodular worms, whipworms, and threadworms. Roundworms cause more losses to the swine producer than any of the other internal parasites. Diarrhea, unthriftiness, rough hair coat, coughing, and poor growth are signs of internal parasites.

Recommended Treatment for Internal Parasites

<i>Parasites</i>	<i>Medication</i>	<i>Dosage</i>	<i>Comments</i>
Roundworms, nodular worms, whipworms	Dichlorvos (Atgard)	Follow directions on container.	Do not apply insecticides to swine at time of treatment.
Roundworms, nodular worms	Piperazine	Follow directions on container.	Can be put in wet or dry feed or water.
Roundworms, nodular worms, whipworms, lungworms	Levamisole HCl (Tramisole)	Follow directions on container.	Can be put in feed or water.
Threadworms	Thiabendazole (Thibenzole)	Follow directions on container.	Individual animal treatment.

External Parasites

Lice, ticks, and mange mites retard growth and provide a constant source of irritation and may transmit disease to susceptible pigs. Intense itching and rubbing usually are noted and should be controlled as quickly as possible. Young pigs are sus-

ceptible to toxicity from sprays and dips; but past four weeks of age, their sensitivity is greatly reduced. External parasites can be controlled by the use of various commercial products. Consult your veterinarian or county Extension agent for approved, recommended treatments.

If the young pigs are badly infested and very young, these conditions can be controlled by the use of non-toxic sulfurized mineral oil.

SANITATION

Many people think of sanitation as just disinfection. Disinfecting agents have their place, but they cannot destroy disease-producing organisms unless they come in direct contact and are allowed enough time to work. You must remove dirt and filth before a disinfectant can be effective. A good wash job with plenty of soap and elbow grease is the major factor in sanitizing any farm building or feeding equipment. Then use one of the following disinfectants:

- *Hot lye solution.* Use one pound of lye to ten gallons of water. Concentrated lye is a caustic poison; don't get it on your skin or mucous membranes. It will not damage wood, enamel, or any of the common metals except aluminum. Lye solutions are most effective when used hot.

- *Creosol dip.* Use Creosol in a 2 to 3 percent solution. It does not mix well with hard water.

- *Steam.* Steam is very effective in sanitizing buildings and equipment, especially when you put one of the recommended disinfectants into the steam.

Things to Remember about Disinfectants

Thorough cleaning is needed first because organic matter protects disease germs and interferes with the disinfecting action. Using high-pressure water is a good cleaning method.

Cold disinfectants are not as effective as warm or hot disinfectants. Heat causes greater penetration and, therefore, better coverage.

Allow plenty of time for disinfectants to act. None of them act immediately.

Use a disinfectant that can be depended on to destroy disease-producing organisms on contact. Apply it in a way that will assure the most thorough contact with those organisms.