PREVENTING SWINE DISEASE BUILDUP
CONTENTS

Preventing the Introduction of New Diseases .................. 3
Vacating Facilities ........................................... 4
Cleaning and Disinfecting ..................................... 5
Disinfectants .................................................. 6
Fumigation With Formaldehyde .................................. 7
Special Sanitation Problems .................................... 9
Maintaining Good Management Practices ....................... 10

This circular was prepared by J. R. Pickard, G. W. Meyerholz, and H. Neil Becker, Extension Specialists in Veterinary Medicine.

Urbana, Illinois

May, 1965

Cooperative Extension Work in Agriculture and Home Economics: University of Illinois, College of Agriculture, and the United States Department of Agriculture cooperating.

JOHN B. CLAAR, Director. Acts approved by Congress May 8 and June 30, 1914.
HEALTHY HERDS MEAN HEALTHY HOG PROFITS. Yet, in this age of high-volume hog production, the possibility of costly swine disease outbreaks is a constant threat to the farmer. Each year millions of dollars are lost due to swine diseases. It is estimated that one-fourth to one-third of all pigs die before they reach market weight.

Swine disease outbreaks are frequently related to the emphasis on volume production. Modern hog production schedules often require overcrowding and the continuous use of hog facilities. The result is a rapid buildup of disease-producing organisms which are able to infect the herd under opportune conditions. In addition, the movement of hogs from farm to farm can introduce new disease-producing organisms into the herd.

There is no easy cure-all for preventing disease outbreaks imposed by high-volume hog production schedules. However, the possibility of an outbreak can be greatly reduced by lowering the number of disease-causing agents. Listed below are four important methods of removing the causes of disease:

1. Preventing the introduction of new diseases.
2. Vacating facilities to break the disease cycle.
3. Cleaning and disinfecting to reduce the number of disease organisms.
4. Practicing good management to lessen the effect of stress and to eliminate carrier animals.

PREVENTING THE INTRODUCTION OF NEW DISEASES

A farmer may purchase swine that look perfectly healthy, but shortly afterward find an outbreak of disease on his hands. This can be prevented by following these simple rules:

1. Do not purchase animals with an unknown history. Buy directly from producers or reputable dealers and sales agencies.
2. Vaccinate all swine against hog cholera. Test breeding swine for brucellosis and leptospirosis. A health certificate showing all tests or vaccinations should be furnished at the time of purchase.
3. Make sure that swine are properly identified and delivered in clean, disinfected trucks.

4. Isolate newly purchased animals and swine returning from exhibition for 3 or 4 weeks before adding them to the herd. Keep visitors out of hog lots.

Remember it is much cheaper to keep disease out of a swine herd than to eliminate it after it has entered. For this reason it may be desirable to repopulate with SPF swine and maintain swine herds free of virus pig pneumonia and rhinitis.

VACATING FACILITIES

Most of the disease-causing organisms found in a farrowing house or on a finishing floor cannot live for a long time outside the body of the swine. By removing the animals, these organisms will be without their source of survival and will greatly reduce in number. The facilities should be kept empty for three to four weeks for best results, but even a few days is helpful. Rotation of pastures, feeding floors, and farrowing pens will also help in reducing the number of parasite eggs and infectious agents, and will reduce the possibility of reinfection.
CLEANING AND DISINFECTING

Disease-causing organisms build up to dangerous levels in farrowing houses and on finishing floors where large numbers of swine are handled and where the facilities are used for long periods of time. If swine diseases are to be kept to a minimum under a system in which facilities are in almost continuous use, disinfectants should be used, and sanitation must be practiced. Effective disinfection includes cleanliness because disinfectants cannot properly perform on dirty surfaces.

Cleaning can be done with a shovel and a brush or speeded up by use of high-pressure pumps and detergents. Also, the more expensive steam cleaners may be used. When there is an excessive amount of manure or dirt present, sanitation can be made more effective by first using a detergent followed by a disinfectant applied in a high-velocity stream of hot water. The detergent hastens the job of removing the dirt by increasing the wetting speed, while a layer of water containing the disinfectant will remain on the surface to destroy the bacteria left after cleaning.

Steam is an efficient method of sanitizing buildings and equipment, especially when a good disinfectant is introduced into it.
When used alone, steam is effective only when applied directly through a nozzle at close range with the nozzle held not more than 6 to 8 inches from the object.

**DISINFECTANTS**

**Sodium orthophenylphenate.** A coal-tar derivative, this disinfectant has a wide range of antimicrobial activity, is soluble in water, is not highly poisonous, and has no objectionable odor. It is sold commercially as a light gray powder or in flake form by Dow Chemical Company (Dowicide-A), by Natriphenate Company (Natriphene), by Imperial Chemical Industries (Topane WS), and by the Reichhold Chemical Company.

Because sodium orthophenylphenate is stable in the presence of organic matter and active in the presence of detergents and soap, it is ideally suited for disinfecting swine buildings. Its one limitation is that it must be applied at a temperature of 60° F. or over. If the temperature of the building is below 60°, the water used for the solution should be heated to 120°. It is usually applied as a 1-percent solution.

**Hot lye solution.** For general use, 1 pound of lye to 10 gallons of water is recommended. Lye contains about 94 percent sodium hydroxide which will kill most germs and viruses, but it is
not effective against the tuberculosis organism. Concentrated lye is a caustic poison and it should not be allowed to contact skin and mucous membranes, particularly the eyes, but it will not damage bare wood, earthenware, enamelware, or any of the common metals with the exception of aluminum. It is injurious to painted and varnished surfaces. Lye solutions are most effective when used hot.

Saponated solution of cresol. Cresol is almost insoluble, especially in hard water. Compounds of cresol with soap are normally used to increase its solubility. These compounds are commonly applied in a 2- or 3-percent solution. They are considered to be more effective than carbolic acid in disinfection.

Quaternary ammonium compounds. These compounds are not recommended for general use in cleaning buildings since they are neutralized by soaps and ineffective in the presence of organic material. Surfaces must be thoroughly rinsed before applying. These compounds are highly effective for disinfecting instruments, such as those used for castration.

FUMIGATION WITH FORMALDEHYDE

Formaldehyde is a powerful germicide which has the additional advantage of not being greatly hindered by organic matter. It leaves no residual or toxic effects in the building. Because the gas tends to condense in cold weather, it is unreliable when the temperature is below 65°F. It also has a penetrating odor and the gas is irritating to the eyes and nose. Human exposure must be avoided.

There are two systems of fumigating with formaldehyde: the Formaldegen method and the potassium permanganate method. Both depend on long periods of exposure and thorough cleaning of the house for effective disinfection. The house must be thoroughly sealed prior to fumigation and then aired for 12 to 24 hours before being used. Sheets of plastic film are often used to seal windows, doors, cracks, and crevices.

Initially designed for large poultry houses, the Formaldegen method is now being applied to swine units. Formaldegen is a patented product of Vineland Poultry Laboratories, Vineland, New Jersey. It is a white powder, a solid form of the gas, containing 91 percent formaldehyde.
The gas is generated with an electric heating unit, called a generator or generette. These generators are placed 100 feet apart and have a capacity of 10 pounds of Formaldegen. Each pound fumigates approximately 5,000 cubic feet of air space, and a single generator is capable of disinfecting 50,000 cubic feet (length $\times$ width $\times$ height). The floor must be moistened 15 minutes before turning on the generator. After 4 to 6 hours, the doors and windows are opened to allow the gas to escape. A regular electric frying pan can be used in place of a generator at about the same cost.

The potassium permanganate system uses wide-bottom buckets or basins on bricks or concrete placed approximately every 10 feet throughout the length of the building. In each receptacle 16 ounces of potassium permanganate is placed, and then 20 ounces of a 40-percent solution of formaldehyde (formalin) is poured over it. This mixture will disinfect 1,000 cubic feet. The building must be tightly closed for at least 8 hours. As in the Formaldegen method, the floor must be moistened about 15 minutes before fumigating.
SPECIAL SANITATION PROBLEMS

Dead animals can be a source of disease for other swine or may further contaminate the premises. They should either be removed immediately by a licensed rendering truck, completely burned, or buried at least six feet deep, well away and downgrade from any source of drinking water, and covered with a generous supply of quicklime before the fill dirt is added. For small pigs a large drainage tile can be sunk in a high sandy area supplying good bottom drainage. A tightly fitting lid should be made so that children, dogs, insects, and predatory animals can be kept out. Dead pigs may then be dropped in and covered with quicklime.

Sanitation at farrowing time is extremely important. Farrowing pens should be cleaned and disinfected. Before the sow is placed in the farrowing pen, she should be washed with a germicidal soap and water. Particular attention should be paid to the udder, but no part of her should be overlooked. The dirt on the sow’s body, udder, and feet is likely to contain numerous worm eggs and disease germs, and the newborn pigs would be likely to swallow infective material with the first milk. Make farrowing pens off limits to all visitors. When sows and litters or weanling pigs are moved, use a
pig taxi, such as a small truck or trailer, so that disease germs are not picked up along the way.

For disinfecting the navel of newborn pigs, a 2-percent iodine tincture (in a 44- to 50-percent alcoholic solution) or 2 percent iodine in a 70-percent alcohol solution is recommended. Stronger tinctures are better bacteriologically, but they dry too quickly and unevenly, leaving streaks of concentrated iodine that will cause burns of the tissues. Aqueous or water solutions of iodine can be purchased, but these are more caustic and will freeze in winter.

Discharges of sick animals that accumulate on bedding and floors are a potential source of infection. To destroy the disease germs, all bedding, manure, and other waste materials should be burned or spread thinly on ground not used for animals. Buildings should be thoroughly cleaned and disinfected.

Wallow, shallow ponds, slow moving streams, and other wet places breed disease. Drain or keep swine away from such areas. The development of wallows can be avoided by frequently moving the troughs and waterers, and by providing temporary shade.

Airborne disease germs present a hazard in the central farrowing and finishing houses. Properly ventilated pens separated by solid partitions and used alternately reduce this hazard considerably. Reducing humidity also reduces airborne disease transmission. Individual farrowing houses should be kept 6 to 8 feet apart.

MAINTAINING GOOD MANAGEMENT PRACTICES

Depending on feed additives to control swine diseases is a poor substitute for balanced rations, sanitation, and management aimed at disease prevention. Good husbandry and management also eliminate many contributing stress factors.

Good management practices include:

1. Protecting feed and water from being contaminated with manure and urine from other swine and from the droppings of birds and rodents.
2. Regular worming of the swine herd.
3. Spraying for lice and mange.
4. Segregating young pigs from older pigs.
5. Isolating sick animals.
6. Keeping animals comfortable.
7. Providing iron for baby pigs.
8. Vaccinating for cholera and other diseases.

Animals should be observed frequently and given extra care at weaning, castration, and vaccination. In certain diseases, carrier animals should be identified by testing and then removed from the herd. In such cases, seek the advice of your veterinarian.
Modern veterinary science makes it possible to effectively treat or prevent many swine diseases through vaccination, and it is constantly performing research to discover treatment methods and immunizing agents for other diseases. But even where treatment is possible, it is often a costly salvage procedure which only minimizes losses. Disease prevention is the key to increasing production, feeding efficiency, and profits.

Each year one-sixth of the farm value of all livestock is lost because of disease, parasites, and insects. While there is no simple cure-all for swine diseases, there are ways of reducing the risk of losses from disease. A practicing veterinarian can help to outline a swine herd health program that can benefit the swine producer. Regular supervision of the herd by a veterinarian plus the active cooperation of the owner constitutes good swine health insurance.