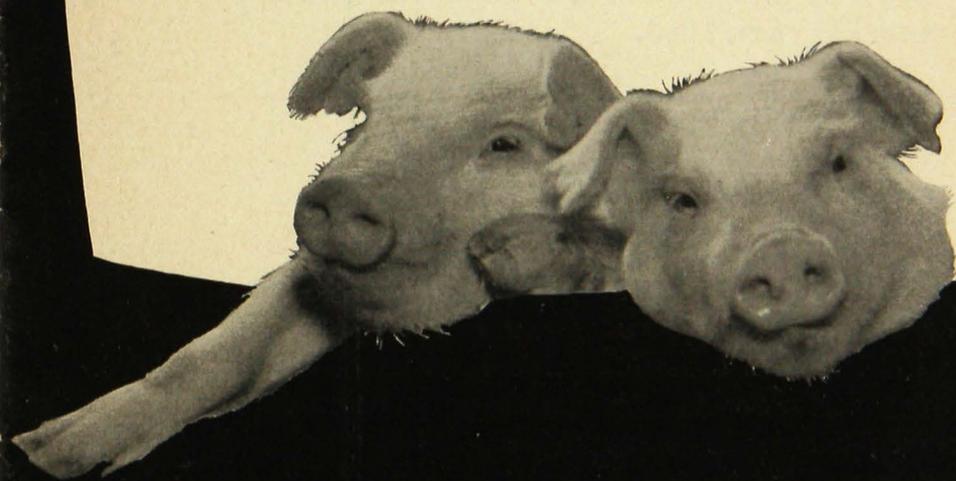


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# Hog Health *makes* Wealth

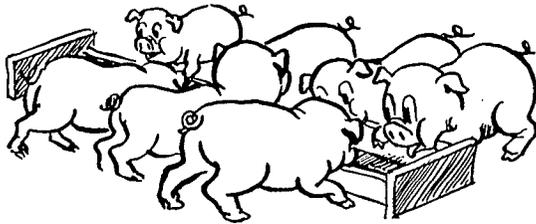


By H. C. Zavoral

UNIVERSITY OF MINNESOTA  
*Agricultural Extension Service*  
U. S. DEPARTMENT OF AGRICULTURE

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## *The Pig Picture*



**HOGS** are the leading source of cash income to Minnesota farmers. In fact, hogs contribute about one-fifth of the total cash sales (as high as 28 per cent in 1943). This has meant an average of six million hogs produced yearly by Minnesota farmers in the past 10 years. The largest pig crop on record was 8½ million head back in that big year, 1943.

## Hog Hints

**MAKING THE MOST PROFIT** from hogs requires raising the most pigs per sow and getting them to market in the shortest time. Pigs that have diseases or parasites need more feed to make gains than do healthy pigs. The margin between feed and hog prices is usually small, so that only healthy hogs make a profit. Unhealthy hogs do not return market prices for grain.

Follow swine sanitation to—

1. Save more pigs per sow.
2. Raise more pork from fewer sows.
3. Avoid runty pigs.
4. Save feed.
5. Speed up gains and catch the early market.

# Hog Health Makes Wealth

**Henry G. Zavoral**

**M**INNESOTA FARMERS are losing millions of dollars annually by raising pigs under unsanitary conditions. A careful study shows that a third of the pigs farrowed die before they are weaned and another third are stunted and unprofitable, leaving only a third that are profitably grown to maturity.

Unthriftiness in pigs may be caused by one or all of these factors: poor breeding, poor nutrition, diseases, or parasites. If you are sure that you can rule out the first two factors the trouble is due to the last two, and these filth-borne ailments cannot be easily controlled under ordinary methods of hog management.

Unthriftiness of pigs is the first indication of these troubles. Proper treatment has some value, but by the time the symptoms appear the damage has already been done. Pigs that survive are stunted and runted and require too long a feeding period and more pounds of feed to produce a pound of pork. The only way to solve the problem is to



Fig. 1. Alfalfa pastures cut the cost of gains.

concentrate on prevention rather than cure.

It has been proved that pigs from properly fed, healthy sows should be raised in clean pens and on clean ground in order to prevent the damage from worms and common filth-borne diseases. You will find this system of raising pigs simple, practical, and effective, and you can raise 20 to 30 per cent more pigs from the same number of sows. You can also raise thriftier and more uniform pigs that produce larger gains on less feed in a shorter time. This system, which is adaptable to any farm, is explained in this bulletin.

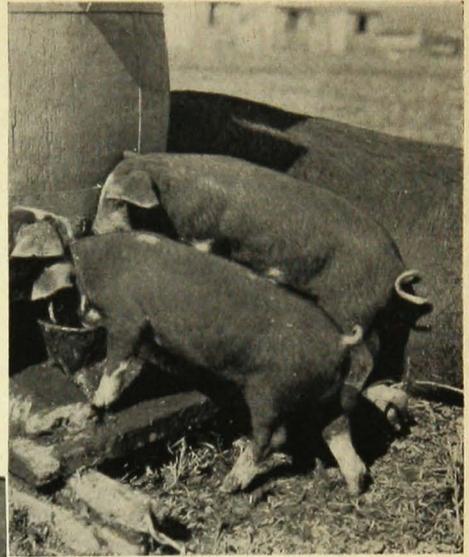
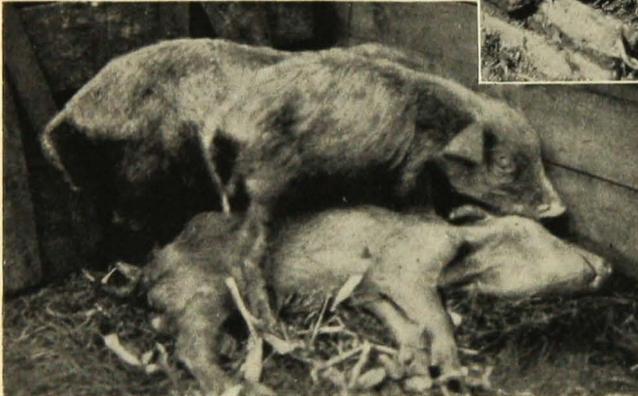


Fig. 2. Above: these healthy pigs are the result of swine sanitation. Left: these pigs are being kept in the old permanent hog lot.

### FILTH BREEDS PARASITES AND DISEASE

The old permanent hog lot is the greatest source of trouble for pigs. Raising large numbers of hogs year after year on the same lot makes it a breeding ground for diseases and parasites. Necro disease—also known as bull nose and sore mouth—and the common roundworm are responsible for the greatest losses. Pigs are most susceptible to disease and parasites during the first few weeks of their lives.

These troubles are not inherited and they are not contagious. They are transmitted only when the worm eggs or

disease germs from infected animals are picked up by the young pigs in rooting or feeding. This traces the cause directly to unclean surroundings such as the old permanent hog lots, filthy hog houses, and unsanitary feeding places. Therefore you should keep little pigs away from such places. Keep pigs on clean pasture or on clean concrete to avoid contamination.

### WORMS CAUSE HEAVY LOSSES

The common intestinal roundworm or ascarid is an injurious parasite that infests pigs on Minnesota farms. If it

## LIFE HISTORY OF THE ROUNDWORM

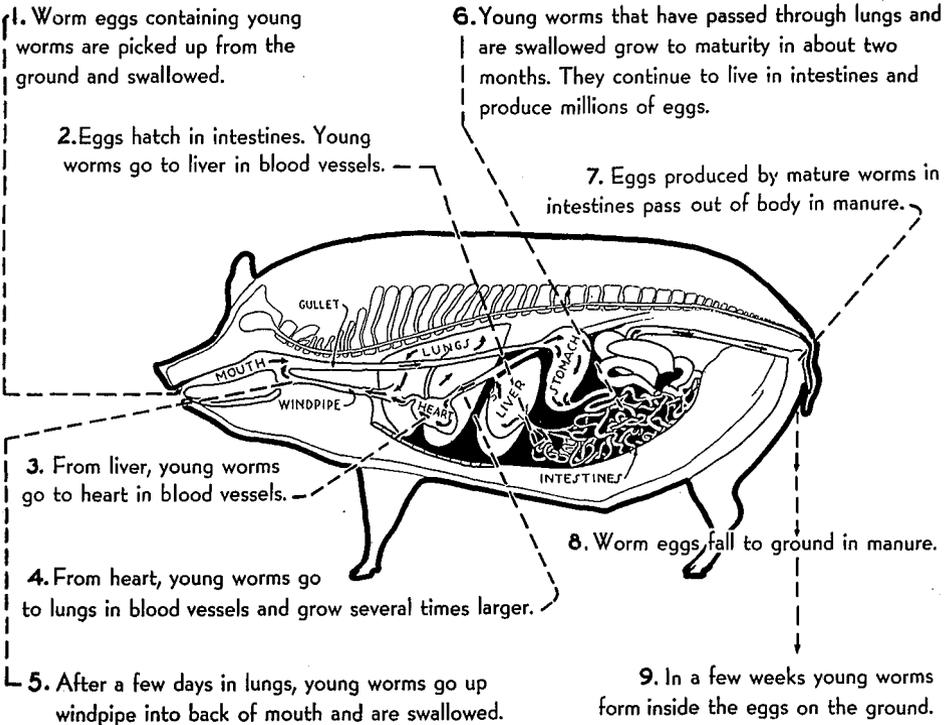


Fig. 3. Since roundworms do their greatest damage in the lungs, treatment is of little help after they have reached that point.

were possible to estimate the extra feed required to get wormy pigs to marketable weights, it would amount to millions of dollars. Worms weaken young pigs and slow up their growth, making them more susceptible to other troubles.

Worms sometimes become so numerous that they eat most of the feed a pig eats. It is not uncommon to find worms obstructing the bowel. They also crawl into the bile ducts of the liver and undermine the vitality of the pigs. Pigs infested with worms often become anemic, suffer from colic, and may have convulsions.

The worms remain in the lungs for a few days while they are developing,

and this is where the greatest damage is done. No medicine can kill the worms in the lungs without also killing the pig.

## LIFE HISTORY OF ROUNDWORMS

The life history of roundworms is shown in figure 3. Little pigs may pick up worm eggs from the sow's udder, from the dust in the pens, or from contaminated ground. If brood sows have worms, fresh worm eggs are passed with the droppings on the floor.

Newly passed eggs are harmless—they must go through a period of in-

incubation while they are on the ground. But with favorable temperature and moisture conditions, they become infective three to four weeks after they are passed from the worms.

It is best, therefore, to clean the pens daily and haul the manure away so the eggs will not be allowed to develop. Even so, if sows harbor worms, pigs get infected in the farrowing pens. Help prevent this by weaning early.

If worms that are about ready to hatch are eaten, they leave the shell in the intestines. At this stage they are so small they can not be seen with the naked eye.

They do not stay in the intestines but burrow through the intestinal wall and enter the blood stream, which carries them to the liver and lungs. Here they grow for a few days and crawl into the air spaces. From here they find their way into the branches of the windpipe. They are then coughed up into the mouth and then swallowed, thus reaching the intestines again.

Scientists tell us this curious journey takes about 10 days. After that the worms develop into adult worms and start laying eggs for a new generation.

Each female worm may produce 40-80 million eggs. These pass out of the body with the droppings and are again picked up by the pigs. It is a continuous cycle. All worms must go through the lungs before reaching maturity, and it is while they are in the lungs that the

damage is done. If there are enough of them, they may cause pneumonia or thumps and may retard growth. Worms cause pigs to cough and sneeze and usually weaken them so they are more susceptible to infection. A dry hacking cough beginning at three or four weeks is usually a good indication of worms.

It is at this stage that most farmers begin to treat the pigs for worms, but by this time the damage has been done. Most treatments at this time are of little help. You may use worm medicines to kill and expel the adult worms, and this will temporarily stop the production of the new eggs. Repeat this treatment at frequent intervals, as new worms are continually coming into the intestines from the lungs.

Do not keep using the drugs to kill the worms though or you may harm the pigs. It is better to concentrate all your efforts on prevention. Strict cleanliness will control these parasites.

### **NECRO (SORE MOUTH OR BULL NOSE)**

Necro, which may appear as sore mouth, bull nose, or some form of intestinal trouble, is not uncommon in pigs heavily infested with worms. This disease is caused by germs. The germs thrive in filth, and they are picked up by pigs rooting or eating off contaminated ground. Sows may be carriers of this disease, too. Necro spreads through

A Cottonwood County farmer says: "We divided our herd of sows, raising twelve in the old hog lots and eleven under the sanitation system. When we vaccinated in June we had 72 pigs from the 12 sows and 87 from the 11 sows, an advantage of over 30 per cent in favor of sanitation. The pigs raised under the sanitation plan are bigger, more thrifty, and more uniform and are free from necro and worms."

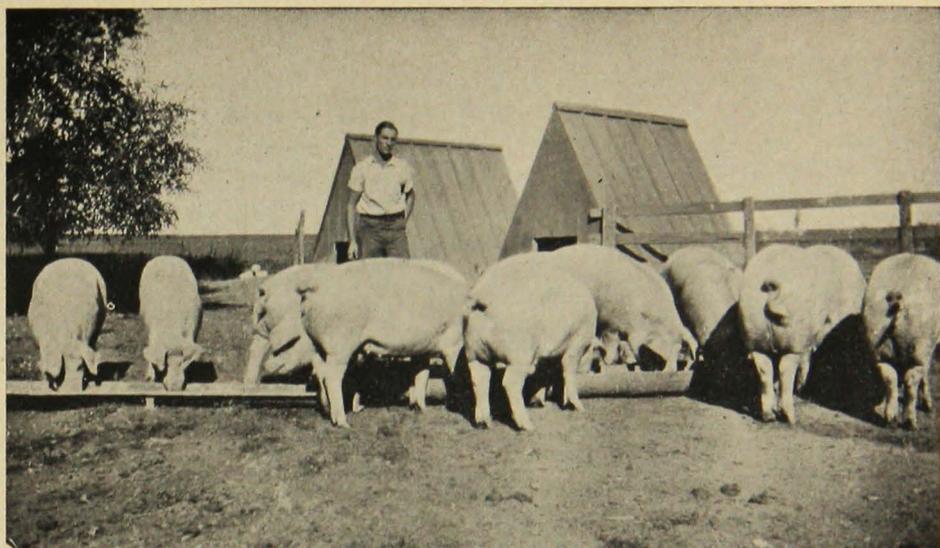


Fig. 4. Ton litters raised the sanitary way win prizes for 4-H Club boys.

a herd of pigs, making them unthrifty and often causing death.

Swollen or enlarged snouts are usually the result of necro. Necrotic enteritis (inflammation of the stomach and intestines) is the most severe form of necro, and outbreaks may occur in herds in which there has been no bull nose. In this disease diarrhea and constipation often cause heavy losses.

Atrophic rhinitis is another disease that causes large or swollen noses. This highly infectious disease, which is spreading among Minnesota herds, causes considerable trouble in pigs.

Some simple precautions can help you avoid disease in your herd. For example, when you clip the needle teeth of newborn pigs, be careful not to cut the gums. Any open wound might

let disease enter the pig's system. Use special pig nippers or wire cutters.

Maintaining good sanitation is the best way to avoid necro. Some treatments will greatly aid in controlling this disease, but most treatments in the past have not been too satisfactory. Pigs that survive necro require too much feed and too much time to reach marketable weights. Some of the newer drugs and antibiotics show great promise in helping this condition, but drugs are no substitutes for sanitation.

### **SANITATION PREVENTS WORMS AND FILTH- BORNE DISEASES**

Pigs are born free from disease and parasites, but sanitary methods are nec-

**A Jackson County farmer says: "Eighteen sows farrowed this spring raised 133 pigs, or more than seven to the litter. Every one of the pigs is thrifty and free from worms and necro. This success is the result of following your sanitation plan."**

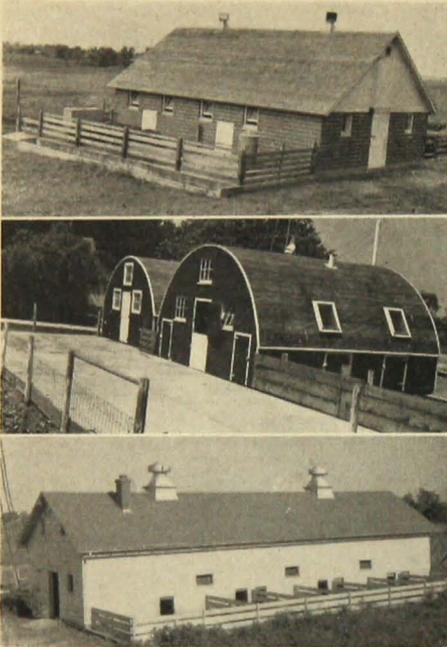


Fig. 5. Many different types of permanent hog houses are acceptable.

essary to keep them that way. Pigs suffer most seriously from infection and worms during the first few weeks of their lives.

The sanitation system of raising pigs will reduce infection so that little or no damage will result from parasites or filth-borne diseases. This system has been tested on many farms and is now well established as a successful practice. It consists simply of keeping your pigs entirely away from old hog lots and other contaminated places. The system prevents losses not only from worms but also from soil-borne diseases such as bull nose, sore mouth, intestinal necro, and some forms of diarrhea.

### MOVABLE HOUSES POPULAR

Because movable colony and individual hog houses are helpful in solving the sanitation problem, they are popular on many farms. Several types of movable, heated farrowing houses have proved satisfactory. These are cleaned

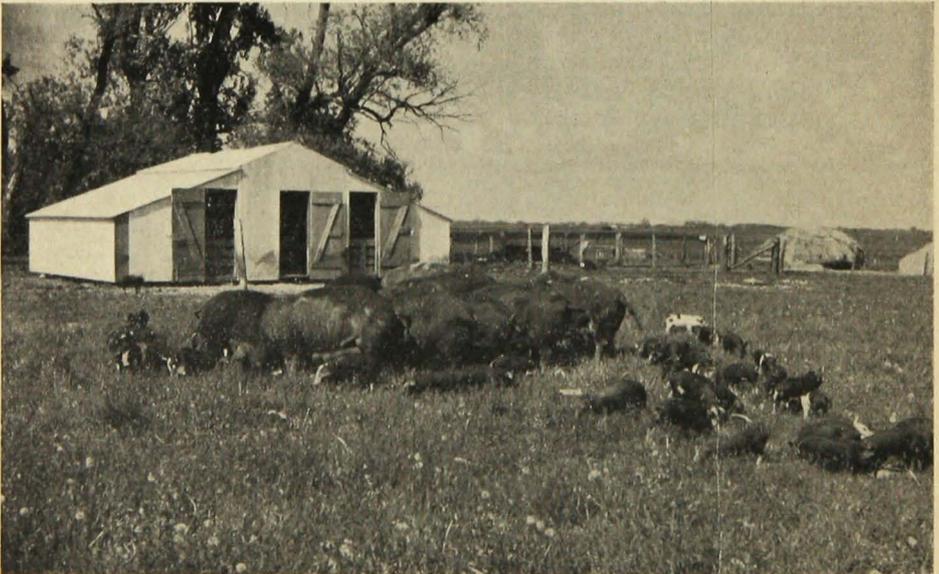


Fig. 6. Colony houses must be movable in order that pigs may have clean pasture.

A Watonwan County farmer says: "Last year I had 99 pigs at vaccination time, and this year I have 140 from the same number of sows. I have no runts and no signs of worms or necro in my pigs, and they average 40 pounds more at the same age on the same feed. Sanitation alone is responsible for the results."

and moved to new pastures each year. Pigs farrowed in clean pasture in early fall and not brought to permanent quarters until the ground freezes will be past the age of greatest susceptibility to worms.

### FLOORS CAN BE CONCRETE

Many farmers have concrete feeding floors on one, two, or all sides of their permanent hog house. These floors are f nced and scrubbed before farrowing, and then they are used for sun porches until the pigs are weaned and hauled out to clean ground.

The pigs may be kept on the floor for 8 to 10 weeks. Some farmers take the sows away at weaning and keep their market pigs on concrete floors until marketing time. This method of raising pigs is followed by many successful hog producers.

### SANITATION STEPS

There are four steps necessary in sanitation:

1. Clean the hog house and scrub it thoroughly with boiling lye solution.
2. Wash the sows—especially their sides and udders—with soapy water be-

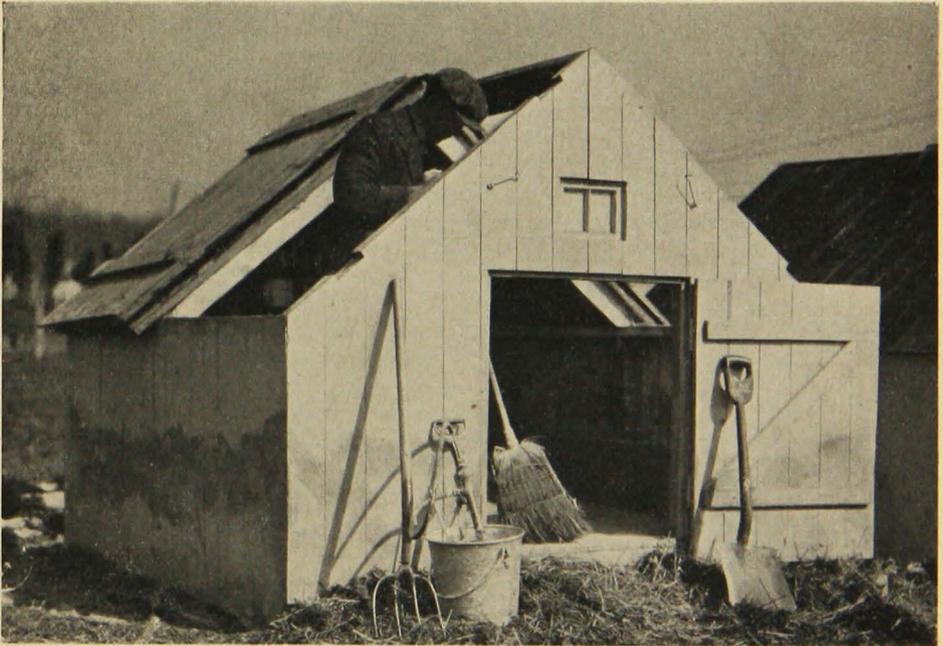


Fig. 7. Clean and scald individual houses before you move them to clean ground.

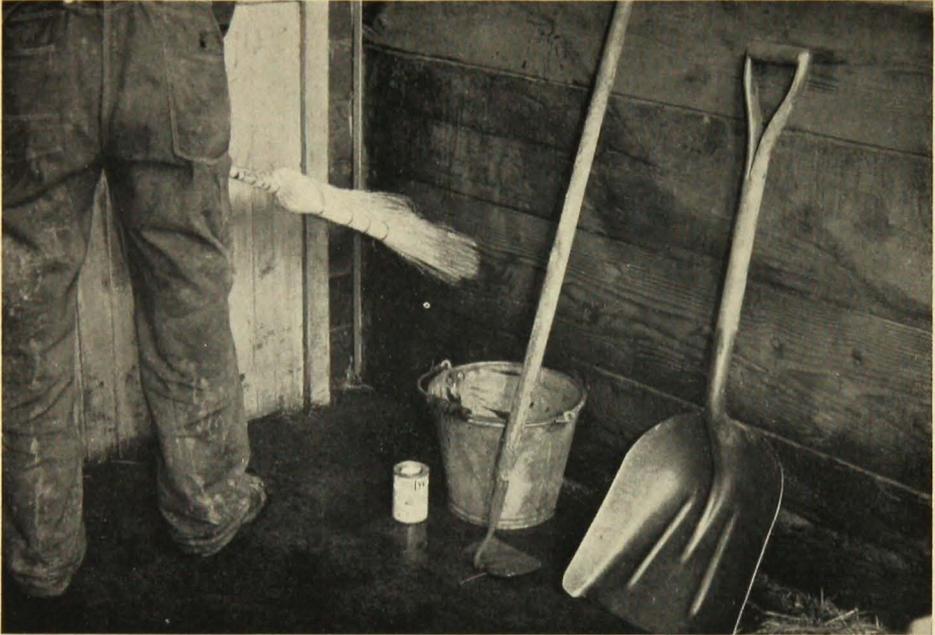


Fig. 8. Wash floors with a hot lye solution to kill disease germs and parasites.

fore putting them into the clean farrowing pen.

3. If the pigs have been farrowed in permanent houses, haul them to clean pasture.

4. Keep the pigs on clean pasture.

These requirements are simple, but they are necessary if the pigs are to be kept in good health. All these preventive measures must be carried out until pigs are about four months old. If any one of these steps is neglected, the pigs may become infected. After four months of age, pigs are reasonably resistant to worms and necro.

**CLEANING THE HOUSE**—Regardless of the type of house used, it should be cleaned thoroughly just before the sows are due to farrow. In cleaning the permanent house, take out all movable partitions. Then remove all litter and dirt from the floors and lower walls with a shovel, hoe, or scraper. The

floors may be soaked a day or two to loosen the dirt.

Wash all floors, partitions, and lower walls with a boiling lye solution (1 pound of lye to 30 gallons of water is recommended). The boiling water kills worm eggs and destroys germs, and the lye loosens the dirt.

The water may be heated in a large kettle such as is often used at butchering time. Many farmers have stoves in hog houses and others set up oil stoves temporarily. An old broom makes a good scrubbing brush. Keep all hogs out of the clean pens until the washed sows are in.

Concrete or wooden feeding floors outside the permanent hog house should be thoroughly scalded with the lye solution. Concrete floors are easily cleaned and make excellent places to exercise and sun sows and pigs.

Floors of movable houses, too, should be scalded before the houses are moved

to clean ground. Houses with dirt floors are more difficult to clean. It is advisable to haul out three or four inches of old dirt and fill in with clean soil. Woven wire laid under about three inches of soil will keep the sows from rooting deeper.

If a horse or cow barn is used for farrowing early pigs, clean it carefully if it has been used for hogs before.

Since it is impossible to disinfect hog lots, plow and seed them before using them again. A four-year rotation is the most desirable. Under favorable conditions, worm eggs may survive in the ground for three or four years.

**WASHING SOWS**—Wash the sows with lukewarm soapy water before allowing them in the clean farrowing pens. You should do this even with sows that have been on pasture. Pay particular attention to sides, udders, and feet to remove dirt containing worm eggs and disease germs. This washing will help prevent the pigs from

getting worm eggs or disease germs when they first suckle.

You may wash sows in horse or cow barns or in one pen in the hog house. If the sows are on pasture, you may corral them in a corner by use of hurdles or gates. You could also place them in a crate or drive them into a stock rack or wagon box for washing.

You may wash the sows and put them into the pens at any time before farrowing, but it is better not to wait longer than two weeks ahead.

While the sows are being washed, examine them carefully. If there are any signs of mange and lice, treat the sows so the little pigs will not be infested. Consult your veterinarian on new treatments as BHC, chlordane, and lindane.

**HAULING PIGS TO CLEAN PASTURE**—If the pigs are farrowed in the permanent hog house and there is no clean lane to the pasture, haul both pigs and sows there—don't drive them. If

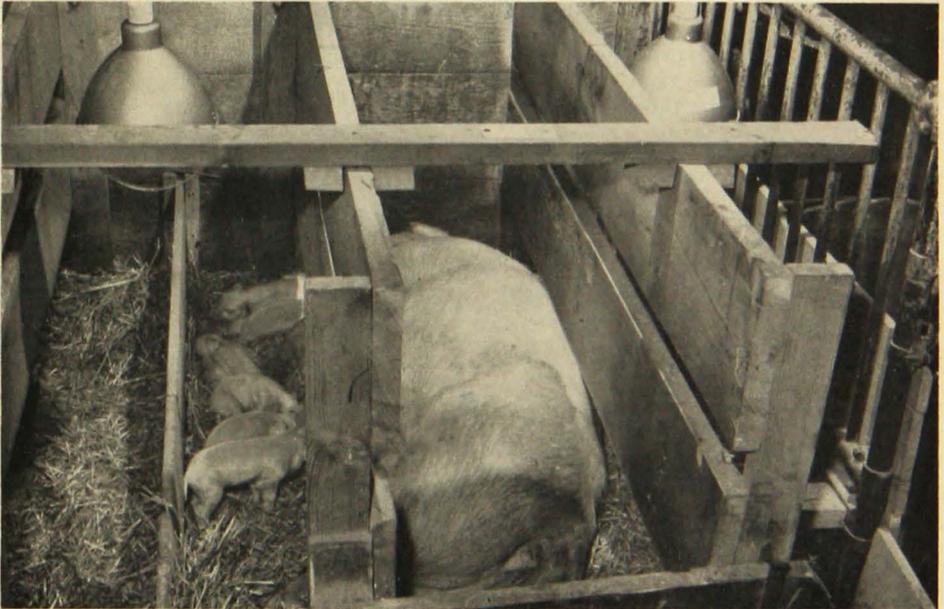


Fig. 9. Farrowing stalls save little pigs from crushing.

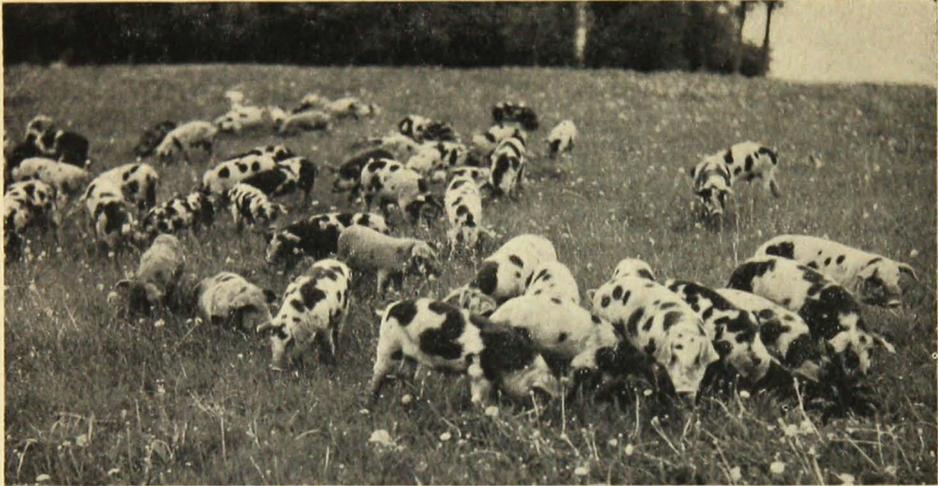


Fig. 10. Clean pastures help maintain health.

the hogs are driven, worm eggs and disease germs may be picked up or carried from the old lots or runs. Hauling is also easier and quicker than driving.

**KEEPING PIGS ON CLEAN PASTURE**—Keeping pigs away from old hog lots and other contaminated places is best done by raising them on clean pastures. A clean pasture is one that has not been used for hogs for at least two or three years. Keep pigs on clean pasture until they are at least four months old, or until they weigh about 100 pounds. Then they are past the greatest danger. Do not allow them to run in the old hog lots. Many farmers make the mistake of furnishing their pigs with clean pasture but allowing them to run back in old hog lots.

Remember that "permanent pastures perpetuate parasites."

## PASTURES NECESSARY

Pastures are so important to the swine sanitation plan that they often mean the difference between profit and loss. Many kinds of pastures may be used, but alfalfa, sweetclover and other clovers, and rape give best results in Minnesota. Winter rye sown in the fall furnishes excellent early pasture.

Experiments show that pigs farrowed early and crowded for the early market are usually the most profitable. It is therefore advisable to full-feed the early-farrowed pigs. If the pigs are not full-fed, even on the best of pasture it is desirable to feed at least 2 or 3 pounds of grain for each 100 pounds liveweight. A smaller ration will not keep pigs healthy and growing.

One of the great advantages of pastures is that the pigs can be kept health-

A Nobles County farmer says: "This is the first year I have tried your system of sanitation. I raised 212 thrifty pigs from 26 sows, an average of more than eight pigs. I am so pleased with the results that no one could induce me to go back to the old method."

A Martin County farmer says: "I raised 55 pigs to maturity from six gilts. The 55 pigs averaged 211 pounds in 180 days. Sanitation and good feeding made it possible."

ier than on old hog lots. Pigs make cheaper gains on pasture because forage crops are succulent and are rich in protein, minerals, and vitamins. Thus the pigs need less grain to make 100 pounds of gain than they do in dry lots.

Good pastures have been known to save one-third of the protein feeds and as much as one-fourth of the grain.

Select a well drained part of the farm for hog pastures. Arrange the hog yards so that new runs to different pastures can be used each year. Where the pasture has frozen during the previous winter or was not seeded the previous year, a thick seeding of small grain such as oats, rye, or barley makes an excellent early pasture. Follow this with

rape or with sweetclover sown without a nurse crop. You may use sudangrass during the latter part of the season.

### WATER, FEED, AND SHELTER

"The sanitation system is simple enough, but who is going to carry water and feed to pigs out on pasture?" Is that your next question? Satisfactory ways have been worked out for meeting this problem, and farmers who have given the system a trial say they have been well repaid for the extra work involved.

If the pasture is close to the farmyard and the ground is sloping, you can pipe water through  $\frac{3}{4}$ -inch pipes on top of

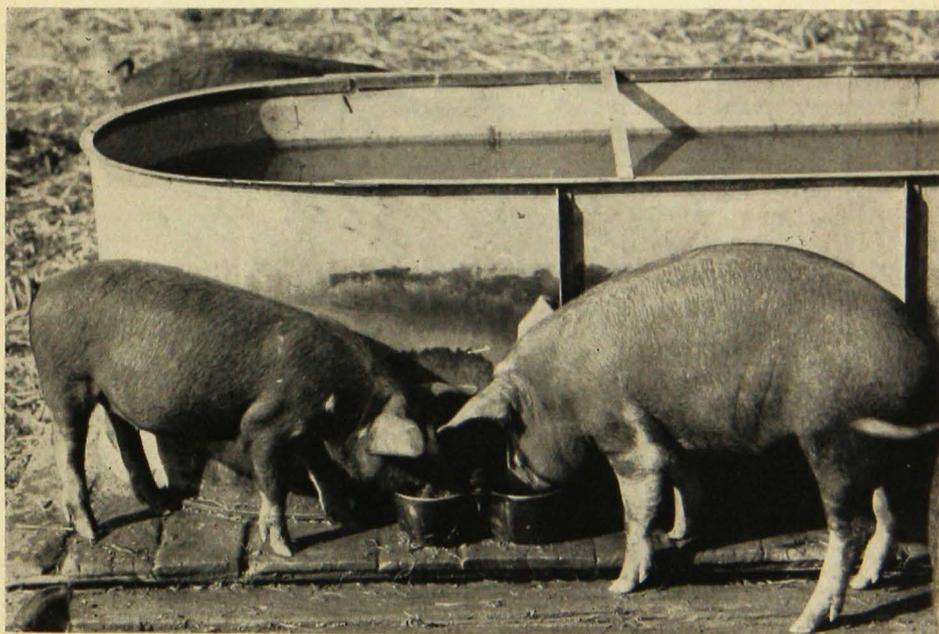


Fig. 11. Provide water at all times.

**A Faribault County farmer says: "Before using the sanitation system of raising hogs, my losses had reached 50 per cent. During the last four or five years, since using that system, I have raised more than 1,200 hogs and losses have been less than 5 per cent."**

the ground direct from the farm well or tank. If the pasture is some distance from the farmstead, you may be able to dig a shallow well.

Many wells have been dug with a post auger equipped with an extension. If you plan to use the hole for a long time, line it with tile. If your soil is sandy, you may be able simply to drive in a sand point.

Where fields are tiled, you can usually dig a well below the level of the tile and get a supply of water for at least part of the season. On many farms, water has to be hauled in barrels or in tanks.

Another important problem—feeding—can usually be solved this way: haul enough feed to last several days and leave it in the wagon box or put it in self-feeders. You can get waterproof cover for a wagon at small cost.

Shelter is important too. If natural shade is not available, you must provide some shelter. The sides of many individual hog houses may be propped up to furnish shade while the pigs are small, but this is not adequate when

they are larger. It is better to erect inexpensive shelters to protect the pigs from intense heat as well as cold.

You can make a good shade by setting in regular fence posts, placing support rails over them, and putting brush or coarse sweetclover on top. You can spread straw or coarse hay on top of the brush or sweetclover. Build the shade high enough for air to circulate.

### **ALWAYS GUARD AGAINST DISEASE LOSSES**

Things too numerous to mention can happen in a herd of swine. To stay in business, you must continually guard against losses. The successful farmers "clean up, clean out, and keep clean." Sanitation is the greatest insurance for hog health but if disease does break out, call a veterinarian. There is no "shot-gun" cure for all swine ailments.

New stock should have a clean bill of health. Outbreaks of trouble can often be traced to newly purchased hogs. One often hears the following stories: "It



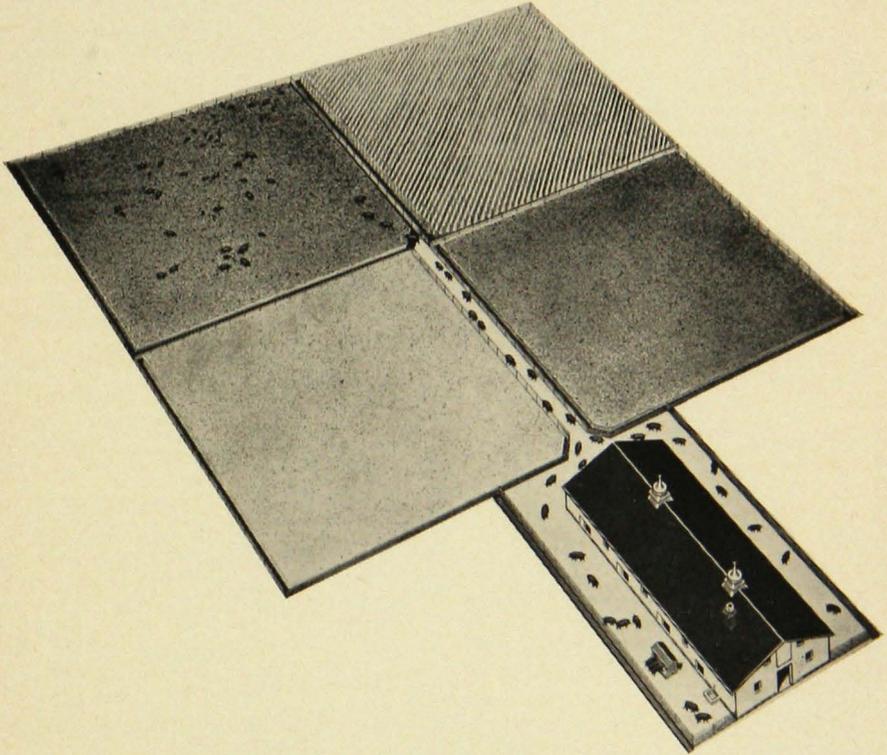
Fig. 12. Pigs need plenty of shade in the summer for comfort.

was the last sow I bought that brought Rhinitis on my farm." "I never had necro on the place until I bought that bunch of feeders."

Keep new stock in a pen away from the rest of the herd for two or three

weeks and watch them for diseases or parasites. Keep the show herd that has been at the fair separated for two or three weeks and if possible have a separate caretaker in order to prevent carrying germs to the regular herd.

## The Minnesota Centralized Hog Plan



**The Minnesota centralized hog plan includes—**

- a modern, permanent hog house which can be used the year around.
- a concrete feeding floor equipped with gutter for easy cleaning.
- concrete-floored lane giving hogs access to pasture without contact with contaminated ground.
- four fields that can be rotated so the hogs will always have clean pasture.

A PERSONAL WORD FROM THE AUTHOR

COOPERATIVE EXTENSION WORK  
IN  
AGRICULTURE AND HOME ECONOMICS  
STATE OF MINNESOTA

AGRICULTURAL EXTENSION SERVICE  
INSTITUTE OF AGRICULTURE  
ST. PAUL 1, MINNESOTA

UNIVERSITY OF MINNESOTA  
U. S. DEPARTMENT OF AGRICULTURE  
COUNTY EXTENSION SERVICES  
COOPERATING

Mr. Hog Farmer  
Home Town  
Minnesota

Dear Friend:

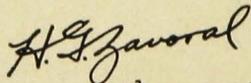
The facts that you have read in this bulletin should convince you that the clean way is the best way of raising pigs.

During my many years of Extension work in Minnesota, I have spoken to thousands of farmers and visited hundreds of hog farms. These contacts have made me believe more than ever that "hog health makes wealth."

Successful farmers know from experience that preventing pig troubles is not easy. But they know that preventing them is more profitable than trying to cure them.

Since filth-borne diseases and parasites cause most of the troubles for pigs, it is just common sense that sanitation will help prevent these troubles. No other system will protect the pigs as well. The plan described in this bulletin will work on any farm where the owner is willing to give it a trial.

Sincerely yours



H. G. Zavoral  
Extension Animal Husbandman

