

CONTROL OF SWINE KIDNEY WORMS

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AGRICULTURAL EXTENSION SERVICE • UNIVERSITY OF HAWAII

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THE AUTHOR

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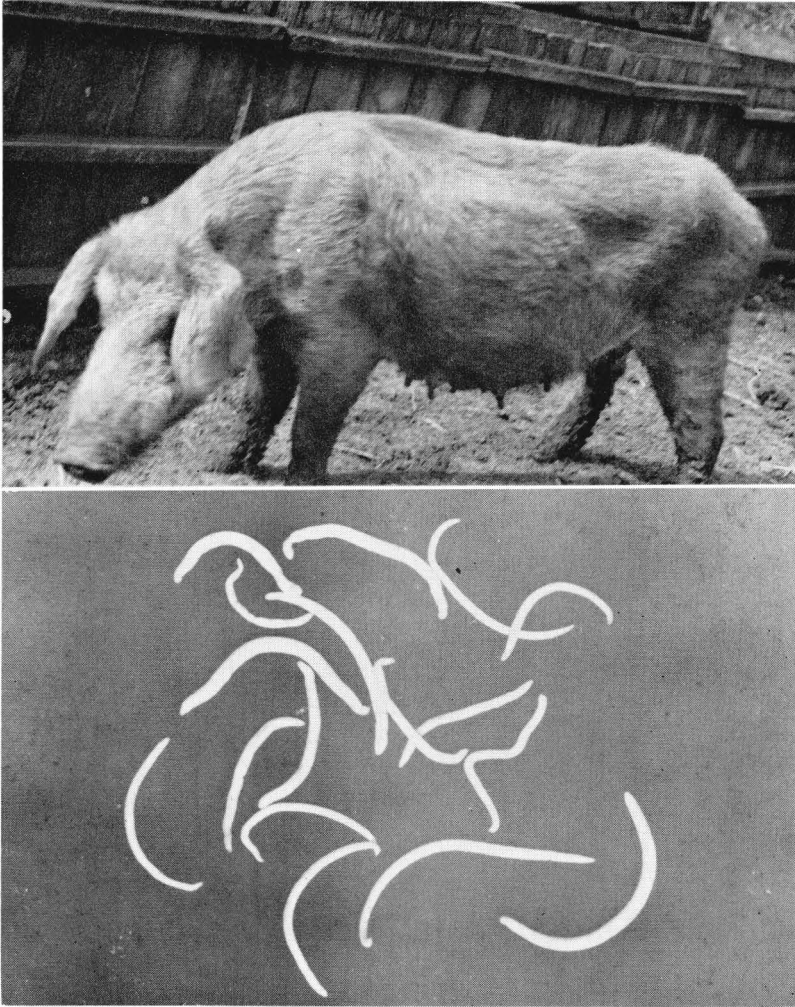


Figure 1. Upper: Sow heavily infected with kidney worms. Lower: Adult kidney worms recovered from the kidneys and kidney fat of an infected sow.

CONTROL OF SWINE KIDNEY WORMS

Kidney worms are one of the most important parasites of swine in the Hawaiian Islands. They often retard growth and are regarded as the principal cause of liver damage found in hogs at slaughter. In a survey conducted recently, approximately 21 percent of the hogs slaughtered on Oahu showed kidney worms; in some areas of the Territory as many as 70 percent of the animals have been found infected. This represents a considerable loss because, in most cases, the livers and kidneys of these animals are condemned as unfit for human consumption. The loss from the destruction of these livers and kidneys in the Territory amounts to approximately \$30,000 a year.

Presence of kidney-worm infection among swine on a farm may be ascertained by the examination of the carcasses of these animals at slaughter.

HOW KIDNEY WORMS ARE SPREAD

The adult kidney worms, which measure about 2 inches in length, are often found in or around the kidneys. They lay hundreds of eggs, which pass out with the urine. In the presence of moisture on the ground the eggs develop and hatch, and in about 3 days the newly hatched larvae reach the stage infective to pigs. Swine become infected by ingesting the larvae with contaminated feed or water or by having the larvae bore into the skin while the animal is lying on the wet, contaminated ground. After entering the body, the larvae migrate to various parts of the internal organs, especially the liver, where they remain and grow for several months. Eventually, these young parasites migrate to the kidneys, where they mature and repeat the cycle. It is estimated that it takes about 6 months or longer from the time the parasites enter the body of the animal until they reach maturity and lay eggs.

NEW STUDIES IN KIDNEY-WORM CONTROL

One of the major concerns in kidney-worm control is to prevent pigs from coming in contact with infective larvae, which are found in the soil. In this connection, recent work carried out at this Station has shown that Polybor-3 (manufactured by the Pacific Coast Borax Co., Los Angeles) when used as a spray on the soil at the rate of 5 pounds in 3 gallons of water to 100 square feet, destroys infective kidney-worm larvae in about 3 weeks. Furthermore, for a period of about 4 weeks after spraying, newly hatched larvae are killed

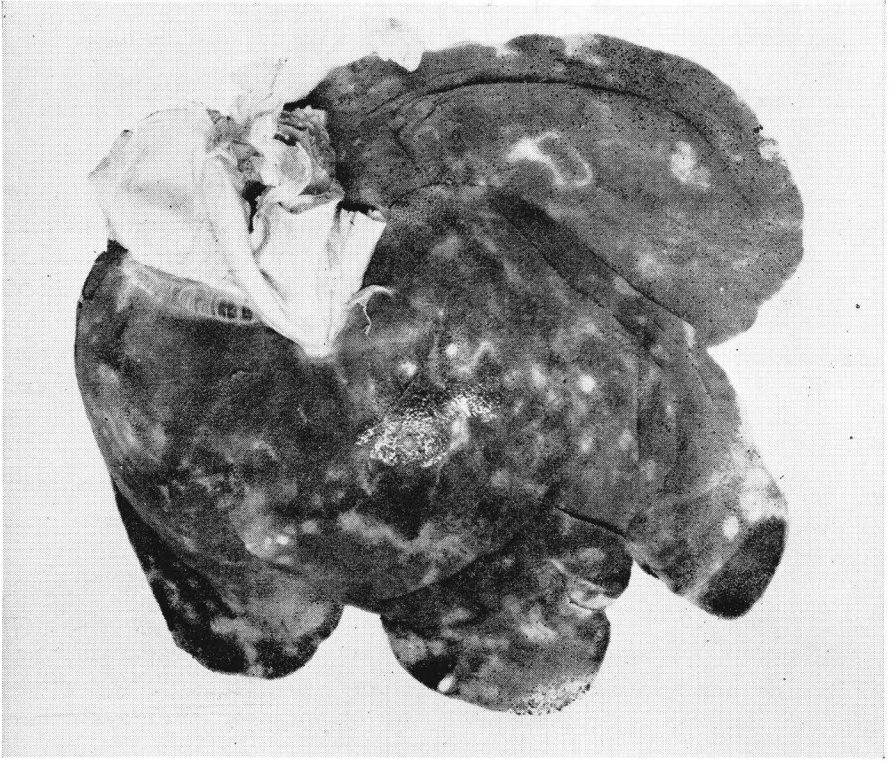


Figure 2. Liver of swine showing lesions produced by the migratory, immature stages of the kidney worms.

before reaching the infective stage; however, during periods of heavy rainfall, this residual action of the spray may be reduced. Polybor-3 is a commercial product composed of sodium pentaborate tetrahydrate and sodium tetraborate pentahydrate. This product, however, is injurious to plants and should not be used in areas where vegetation is to be maintained.

Because of the limited observations which have been carried out by us under field conditions, the use of Polybor-3 on hog lots is not recommended unreservedly at the present time; however, since it is a good larvicide and relatively nontoxic, it is suggested that it be given special consideration for the control of kidney worms. In this connection the following two plans are suggested, one for sows and young pigs maintained on concrete floors and one for those maintained on the ground.

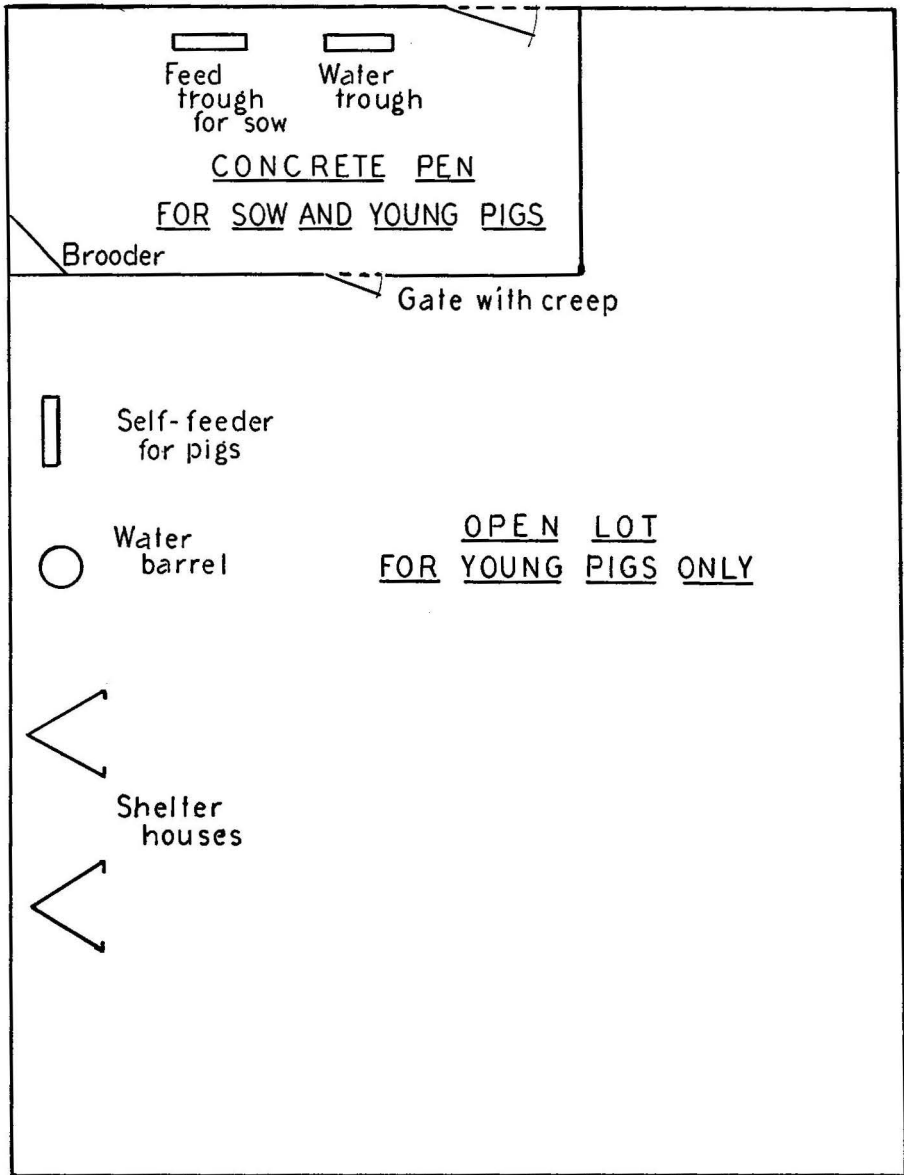


Figure 3. Plan for raising sow and young pigs on concrete floor, giving the young pigs access to a lot free of kidney worms.

Plan A. FOR SOW AND LITTER KEPT ON CONCRETE FLOOR

1. Allow sow to farrow on disinfected concrete floor.
2. Wash the floor thoroughly each day. This is extremely important since hundreds of kidney-worm eggs may be eliminated daily with the sow's urine. These larvae hatch and become infective in about 3 days. Do not allow the washings from the floor to enter the adjoining open lot referred to in figure 3.
3. If the pigs are to be allowed outdoors, provide a small outlet for them to an adjoining open lot, which has not been used by older pigs for at least 6 months. If the lot is not used for crops, it may also be rendered free of kidney-worm larvae by spraying it with Polybor-3 at least 4 weeks before the young pigs are allowed access to it.
4. Provide separate and sanitary feeding and drinking pens for the sow and the young pigs. Supply an adequate, balanced ration for the animals.
5. After the pigs are weaned, transfer them to other concrete pens or to open lots. These lots must not have been used by older pigs for at least 6 months or must have been sprayed with Polybor-3 at least 4 weeks previously.
6. Maintain all breeding animals in separate lots away from growing pigs. These lots should be sprayed as often as possible with Polybor-3 for the purpose of keeping down further infection. Especially, spray all areas which are kept shaded and damp. It is important to remove all trash before spraying. Even though Polybor-3 is relatively nontoxic, animals may be kept away from the ground on the day of spraying as an added precaution.

Plan B. FOR SOW AND LITTER KEPT ON GROUND

1. Fence off three adjoining lots, A, B, and C, as shown in figure 4. Lots A and B, which need not be more than 25 feet wide, are to be used for the sow and the young pigs and lot C for the young pigs alone. Provide a gate for transferring the sow from A to B; furthermore, provide small outlets with gates to give the young pigs access to lot C. If the terrain is sloping, lots A and B should be on the lower level.
2. If the above lots have been occupied by older pigs within a 6-month period, spray them with Polybor-3 at least 4 weeks before the sow is due to farrow. If lot C is used for crops, it naturally cannot be sprayed; therefore, before allowing young pigs in, keep it free of older pigs for at least 6 months in order to allow any kidney-worm larvae present to die out.
3. Spray lots A and B a few days before the sow farrows. Then place the sow

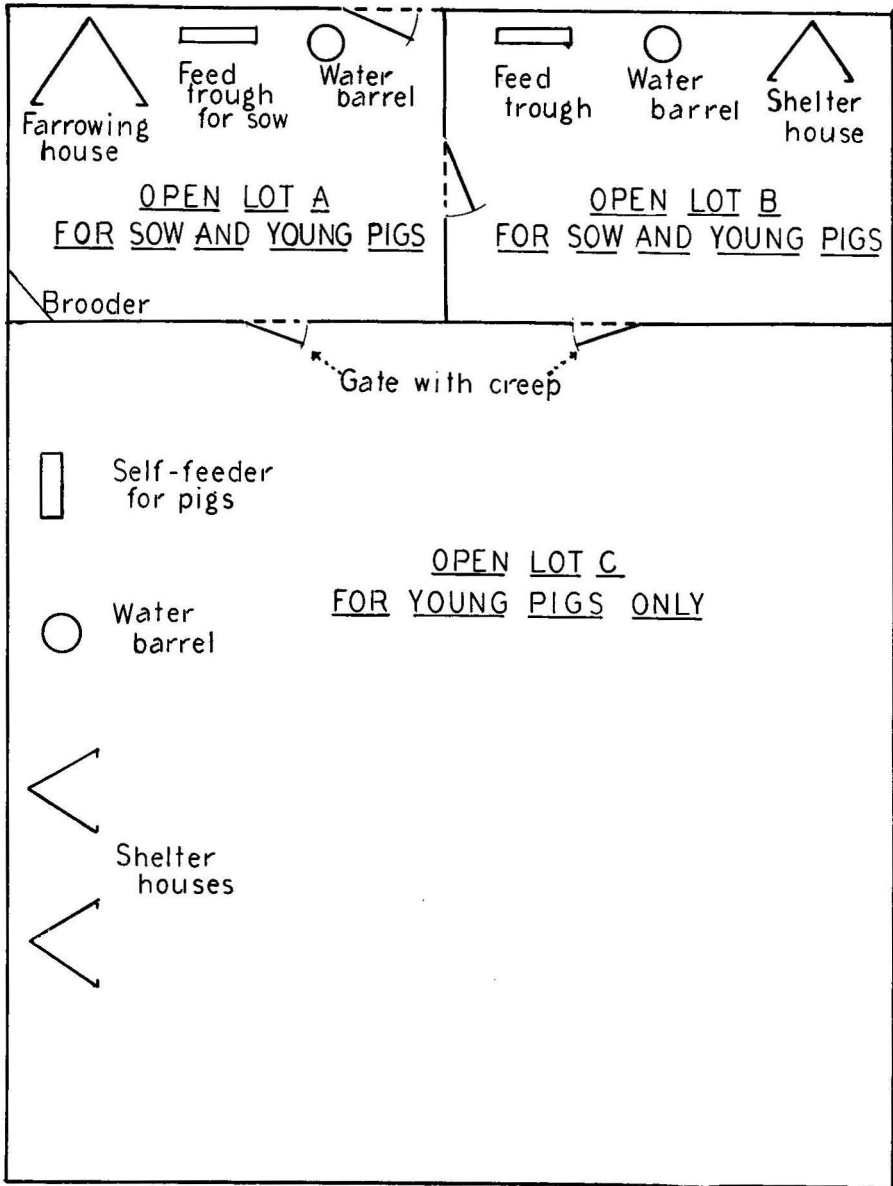


Figure 4. Plan for raising sow and young pigs on open lots, giving the young pigs access to a lot free of kidney worms.

in lot A and provide her with a clean farrowing house. (Application of the spray solution to the soil will prevent the growth of vegetation and thus better expose the soil to sunlight and dryness; these factors are important in the destruction of the parasite eggs and larvae.)

4. After the pigs are farrowed, alternate the animals between lots A and B every 2 to 3 weeks. Each time one lot is vacated, close all the gates and spray it with Polybor-3; keep the lot empty until occupied by the pigs.
5. Provide separate and sanitary feeding and drinking devices for the sow and the young pigs. Supply an adequate, balanced ration for the animals.
6. After the young pigs are weaned, isolate the young pigs and the sow as outlined in items 5 and 6 of plan A.

In planning areas for the maintenance of hogs of all ages, it is advisable to choose lots which are sunny and well drained in order to control parasitic infections of all kinds. To avoid risk of heavy infections, it is desirable to change pastures every few years.

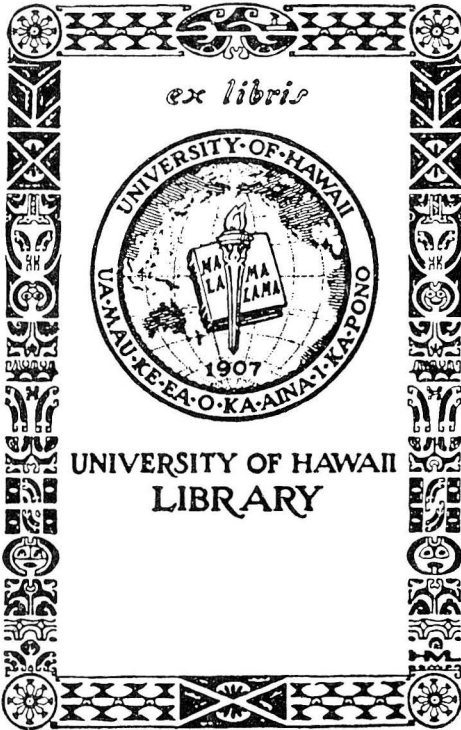
ACKNOWLEDGMENT

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USEFUL GOVERNMENT PUBLICATIONS ON SWINE PARASITES AND SWINE PRODUCTION

FARMER'S BULLETIN No. 1787. Internal Parasites of Swine. U. S. Department of Agriculture, Washington, D. C.

EXTENSION BULLETIN 31. Pork Production in Hawaii. University of Hawaii Agricultural Extension Service, Honolulu, Hawaii.



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