Mange of Swine

BY MARION IMES

A SUITABLE DIP, used in a vat or a hog wallow, will get rid of common mange of hogs. The method of treatment is described here, and it is worth putting into practice because when mange takes hold it can be very expensive to the hog owner.

COMMON MANGE OF HOGS is a contagious skin disease which costs swine growers huge sums of money each year, and they pay the bill whether they know it or not. There are no specific data on losses at the farm and feed lot, but as mange stunts the growth of young hogs, delays fattening, and causes some deaths, the estimated losses at these sources probably average about $2 an animal in infected herds. In addition, mangy hogs shipped to market are usually sold at a discount of from 50 cents to $1.50 a hundredweight. The average yield of the principal cuts per hog at packing houses is 35 pounds of hams, 30 pounds of bacon, and 15 pounds of picnics, or a total of 80 pounds of the most valuable parts of the carcass. When the skin over these parts is mangy, the grade and consequently the selling price are lowered—hence the discount on the price of the live hog.

Common mange is more or less prevalent throughout the United States, and the total number of infected hogs is large. The losses, therefore, are sufficiently impressive to emphasize the fact that the disease is a serious menace to the industry. Fortunately there is a brighter side to the picture. Several years ago the Bureau of Animal Industry made an investigation of mange of swine and conducted experiments on treating infected hogs, and the findings showed that the disease yields readily to proper treatment and is easily eradicated.

A contagious disease, however, cannot be eradicated by temporizing or following slipshod methods. Mange is caused by a well-known parasite and is not a filth-borne disease. Good sanitation and careful feeding are essential parts of all successful methods of swine pro-

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duction, but shifting undipped hogs to clean lots, changing or increasing the feed or adding medicines to it, sprinkling dry lime-sulfur in the bedding, or hand treating only the well-developed skin lesions will not eradicate hog mange.

Swine in the United States are affected by two kinds of mange, sarcoptic and demodectic, caused by two different genera of mites—*Sarcoptes* and *Demodex*—which live in the skin of the host animal.

The entire life cycles of the mites are passed on the host animal. In obtaining their food from the tissues and blood and preparing suitable places for their various life processes, the mites cause characteristic wounds, or lesions, in the skin. The sarcoptic mites burrow into the skin, each female making a separate gallery in which she lays her eggs. The skin over and around the burrows becomes inflamed, and small vesicles and cone-shaped swellings appear. The demodectic mites, which cause demodectic, or follicular, mange, live in colonies or groups in the hair follicles and sebaceous glands and cause small hard swellings or pimples.

**SARCOPTIC MANGE**

Sarcoptic, or common, mange occurs in all parts of the United States where hogs are raised. Traffic in breeding stock evidently has been an important factor in spreading the disease. Under conditions favorable to it, mange spreads rapidly unless active measures are taken to control it. Hogs of all classes and ages are susceptible to the infection, but young stock and poorly nourished, older animals of low vitality suffer most.

The mites that cause sarcoptic mange of swine are known as *Sarcoptes scabiei suis*. These mites are small white or yellowish insectlike parasites, visible to the naked eye, especially when they are placed against a dark background. The mature female is about one-fiftieth and the male is about one-sixtieth of an inch in length. They are plainly visible under an ordinary hand lens.

The general form of the body is round, and the bluntly rounded head is as broad as it is long. The mature mites have four pairs of short thick legs, the fourth pair and usually the third pair not extending beyond the margin of the body. Under a high-power microscope a number of short, backward-projecting spines can be seen on the upper surface of the body.

In the burrows or galleries made by the mites in the skin each female may lay from 10 to 25 eggs, which hatch in 3 to 10 days. The mites of the new generation form new burrows and begin laying eggs when they are 10 to 12 days old. The average period of incubation is about 4 days and the average period between hatching and egg laying about 11 days.

**Symptoms**

The first lesions of sarcoptic mange usually appear on the head of a hog, around the eyes, nose, or ears, where the skin is tender and the hair is thin. From these parts the infection spreads over the neck, shoulders, and back and along the sides, finally involving
the entire body. The mites cause irritation, itching, inflammation, and swelling in the sensitive tissues of the skin. Nodules and vesicles appear over and around the burrows. The vesicles break and discharge serum, which usually dries into hard granules or scales. The hair over the lesions stands erect, and some of it drops out.

As the mites multiply and the disease advances, increasingly large areas of skin become involved. The nodules increase in number and are closer together. The mechanical injury to the skin resulting from rubbing and other efforts to relieve the intense itching cause large scabs that may be stained yellowish or reddish by serum or blood. The skin becomes thickened and is thrown into wrinkles or folds. Scrapings taken from moist furrows of the wrinkles usually contain mites. In chronic cases of the moist form of the disease there is a very offensive odor. When the mites are not very active, the surface of the affected skin may be a silver-gray color and have a dry, scurfy, or leatherlike appearance. In such cases the mites are difficult to find.

Positive diagnosis consists in finding the mites, which are the sole cause of the disease, but on account of their burrowing habit this is not always easy. They may be found by deeply scraping the affected area with a blunt-edged knife and examining the scrapings in warm sunshine or near artificial heat, under a low-power magnifying glass. Well-advanced cases of mange are easy to detect, but since the disease should not be allowed to reach this stage, early diagnosis is important. Repeated rubbing, scratching, or biting in one place indicates irritation and itching and should be investigated at once by a close examination of the animal. Disarranged hair indicates the area of skin to be examined. If the skin is thickened and hardened and dried serum or scabs are present, search should be made for mange mites.

**CONTAGIOUSNESS**

Sarcoptic mange is contagious to all animals of the same species. It is transmissible from one species of animal to another, and in some cases from animals to man. Sarcoptic mites of the hog are known to be transmissible to man. They live only a limited time on the human host but may produce lesions that persist for 30 days or longer and cause extreme annoyance. It is advisable, therefore, to change clothes and bathe after handling mangy hogs.

The disease is usually transmitted among swine by direct contact of uninfected with infected animals, but it may be contracted from infected enclosures, equipment used on or around infected animals, or other objects that are carriers of the mites. Although they cannot propagate except on the host animal, dislodged mites that drop in moist shady places may retain their vitality for 4 weeks or longer during mild weather. Bright sunshine, freezing weather, and lack of moisture usually destroy mites and eggs not on an animal in a few days.

Usually the disease spreads slowly during warm weather, especially when the animals are on pasture, but it spreads rapidly when hogs
are closely confined in small enclosures. Exposure to inclement weather, insufficient feed or feed of poor quality, or any other circumstance tending to lessen the vitality or functional activities of the hogs hastens the spread and development of mange. When the mites are active and new lesions are developing, the entire body surface may become involved in about 6 weeks.

Attacks of the disease do not confer immunity, and hogs may become infected any number of times. Since sarcoptic mange is contagious, plans for keeping hogs free from the disease should include precautionary measures against the introduction of infection by such means as bringing undipped animals onto the premises, contact between clean and infected hogs separated only by a wire fence, and allowing hogs to occupy infected premises.

All small enclosures that have been occupied by infected hogs should be cleaned and disinfected before they are used for healthy hogs. Remove all litter, cleaning down to a smooth surface, then spray the exposed surfaces with coal-tar-creosote dip or disinfectant diluted in accordance with the directions on the label of the container. The coal-tar-creosote preparations are sold under many different trade names, and when properly diluted with water they are suitable for use as disinfectants on animals as well as for premises.

**TREATMENT**

The proper treatment of hogs infected with sarcoptic mange mites consists in killing the parasites without injuring the animals by applying medicated liquids known as dips. Of the several different kinds of effective dips available, oils and lime-sulfur are the ones most commonly and successfully used. These are obtainable ready-prepared for dilution with water, or they may be made by the user. Ready-prepared dips should be diluted and used in accordance with the instructions on the label.

In treating hogs for mange the entire herd should be treated regardless of the number showing visible lesions. To select and treat only those with well-advanced cases of mange will not eradicate the disease, as any member of the herd may at any time carry the parasites temporarily without showing visible lesions. In some cases the disease may be dormant during the summer and early fall months, but with the advent of cold inclement weather it may develop very rapidly. When the weather is too cold for dipping or other effective treatment, rapid spread of the disease may be checked temporarily by hand applications of dips to the worst cases, but mange cannot be eradicated by such methods. Dipping during the mild weather of autumn is good insurance against the risk of loss from mange and the probable additional expense of winter treatment.

Sows heavy with young should not be dipped or oiled within 2 weeks of their farrowing time or too soon after farrowing. When the pigs are 3 weeks old, the sow and pigs may be dipped or treated without undue risk of injury. All the pigs of the litter should be dipped or treated in the same manner as the sow; otherwise she may fail to recognize and to suckle some of them. As mange affects the
heads and ears of hogs, it is necessary to submerge, or duck, the head of each hog as it swims through the dip.

**Dips**

The most effective known dip for sarcoptic or common mange of hogs is crude petroleum or some of the oils derived from it. Unprocessed crude oil is often difficult to obtain and is more expensive than some of the processed oils. The various processed oils vary greatly in the number and relative percentages of their constituents, and there is no fixed standard for oil dips for hogs. The processed oils from which the gasoline and other light hydrocarbons have been removed are usually suitable, but those from which the lubricating oils have been removed are not.

Used lubricating oils, drained from the crankcases of automobiles and other engines, are suitable and effective as dips for hogs, but lubricating oil is not suitable for use on cattle, horses, or sheep. When properly used on hogs, lubricating oil is an effective remedy for mange, it does not injure the animals, and it is usually available at low cost. Several proprietary brands of oil dips are available and are usually effective, but they cost more than crankcase drainings.

In preparing an oil dip, fill the vat with water to within about 6 or 8 inches of the dip line (40 to 48 inches from the bottom) and add sufficient oil to bring the fluid up to that line. The oil floats on the water, forming a layer 6 to 8 inches deep, depending on the quantity added, and as the hogs swim through the vat their bodies become coated with oil. It is not necessary to retard the progress of the animals through the vat. Oil dips are used cold, and one dipping is usually sufficient to eradicate ordinary mange. Hogs with thick adherent scabs from old chronic infections should be dipped two or more times. The proper interval between dippings in oil is about 10 days.

Shade or shelter should be provided for freshly oiled hogs, which should not be exposed to bright, hot sunshine or cold, inclement weather for 24 hours or longer after being oiled. Injury may result also from too much exercise or overheating if the freshly oiled animals are moved rapidly or driven too far.

Lime-sulfur dip is effective in eradicating common mange of hogs when four or more dippings are given at intervals of 6 or 7 days. The temperature of the dip while the animals are in it should be maintained at 95° to 100° F., and visibly infected hogs should be held in the swim 3 minutes. Scrubbing and soaking any lesions covered by hard scabs with warm dip just before the first dipping is recommended.

Proprietary brands of lime-sulfur dip, in the form of concentrated liquid, powder, or crystals, the latter two known as dry lime-sulfur, are available. These products are standardized and are equal to or even better than home-made lime-sulfur dip. Unless the user has proper equipment for preparing the home-made product, the prepared dips are also cheaper.
Methods of Applying Dips

A properly constructed dipping vat or hog wallow is necessary for the proper treatment of any considerable number of hogs. Hog-dipping vats made of galvanized iron, ready for setting in the ground, may be purchased, or vats made of concrete or wood may be constructed on the premises. They are usually arranged so that the hogs enter one end of the vat filled with dip, swim through, and leave the vat at the opposite end, where they enter a draining pen with a watertight sloping floor from which the surplus dip that drips from them flows back into the vat.

The liquid in the vat should be from 40 to 48 inches deep, which is sufficient to swim the tallest animal. A full-grown hog carries out of the vat and retains on an average about 1 quart of dip, and the average quantity for each animal of a mixed herd is about 1 1/2 pints. Adding the quantity of dip carried out and retained by the hogs to the quantity required to charge the vat originally gives the approximate quantity needed to complete the dipping process for a given herd. The capacity of the vat in gallons is obtained by multiplying the average length in inches by the average depth, then the product by the average width, and dividing by 231, the number of cubic inches in a gallon. The average length of a vat with sloping sides is obtained by adding the length in inches at the dip line to the length at the bottom and dividing by 2, and the average width in a similar manner.

If shallow water is available, hogs will wallow in it when the weather is warm, and this habit may be utilized in preventing or curing mange. Adding oil to the water in properly constructed wallows is an inexpensive and satisfactory method of applying oil to hogs.

The water in the wallow should be about 3 inches deep without oil until the hogs become accustomed to using it. Hogs will not wallow in deep water, and when they lie down in wallows they displace a volume of the liquid, which causes the water line to rise. If they cannot easily keep their nostrils above the liquid, they leave the wallow before their bodies are wet on both sides. After the habit of using the wallow is well fixed, oil may be added and the depth of the liquid increased to 5 or 6 inches, depending on the size of the hogs and as observation and experience may indicate. After the bodies of the animals are well coated with oil, the wallow should be drained, cleaned, and recharged with water only. Oil may be added every 10 days until the desired results are obtained.

Demodectic Mange

The mite known scientifically as Demodex phylloides, which is the primary cause of demodectic or follicular mange in hogs, is a minute, wormlike parasite that penetrates into the hair follicles and sebaceous glands of the skin. The mites are microscopic in size, the mature
female measuring about one one-hundredth of an inch in length. Positive diagnosis of the disease can be made only by demonstrating the presence of the mites. If the contents of demodex nodules are examined under a microscope, the small wormlike mites are easily identified.

In small numbers demodectic mites apparently do not cause lesions. Although it is difficult to transmit the disease by artificial means, it is classed as contagious. Demodectic mange may spread rapidly on a hog, but the transmission of the disease from one hog to another is usually much slower than the transmission of common or sarcoptic mange. Ordinarily the disease does not spread to all members of a herd, since many animals are apparently immune, or at least do not contract the disease.

The lesions of demodectic mange appear as small hard nodules, or pimples, in the skin, usually around the eyes or snout, and spread slowly over the under side of the neck, breast, and abdomen, and between the hind legs. The nodules range in size from that of a pinhead to that of a hazelnut and usually contain a material of creamy white color and cheesy consistence. In advanced cases the nodules may rupture and discharge their contents over the hair and skin, and in rare cases suppurating (pus-generating) cavities result.

There is no known practical cure for demodectic mange in hogs, as the cost of treatment is out of proportion to the usual value of the animals. Individual animals that show lesions of demodectic mange should be removed from the herd and disposed of or killed. The rest of the herd should be dipped in oil or coal-tar-creosote dip and the premises cleaned and disinfected in the same manner as for sarcoptic mange.