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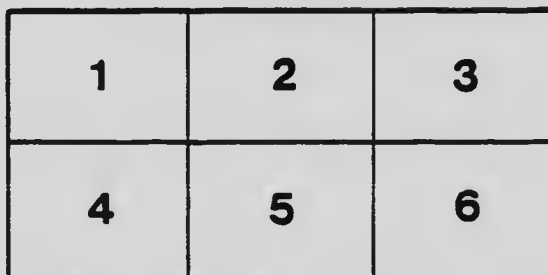
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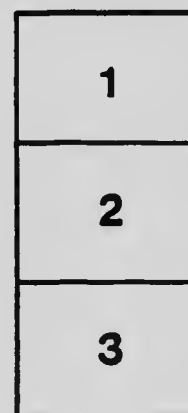
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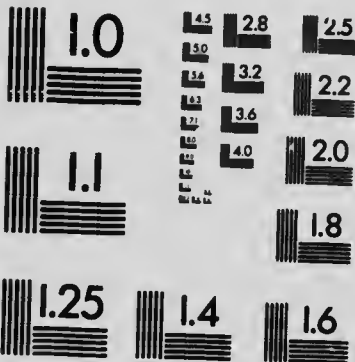
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## BULLETIN No. 32

Government of the Province of Saskatchewan

DEPARTMENT OF AGRICULTURE

LIVE STOCK BRANCH

# HOG CHOLERA

ITS CAUSE, SYMPTOMS, TREATMENT AND PREVENTION

A Bulletin compiled from various sources by J. C. SMITH, B. S. A.,  
Live Stock Commissioner for Saskatchewan

Owing to the depredations of this disease in the Province of Saskatchewan it has been thought fit to set forth the more ordinary causes, symptoms and methods of treatment of the disease in order that farmers owning infected animals may at once take steps to stay its spread, and those whose hogs are not yet affected may take preventive measures. The following data is taken from various bulletins, etc., on the subject:

### HOG CHOLERA AND SWINE PLAGUE.

"The term hog cholera has become somewhat ambiguous by reason of the different, yet curiously related, diseases which are often included within its meaning. Until within a very few years it was recognised that we had two diseases in the North-West which were more or less confused under this term "hog cholera" and which frequently appeared in a mixed outbreak of the two diseases. These were hog cholera proper, supposedly caused by a specific bacillus; and swine plague, supposedly caused by another specific bacillus.

"For the present we may accept as hog cholera a disease which answers to the following requirements:

First, contagious by natural exposure.

Second, the animal before death and the carcass after death must show the hitherto accepted symptoms of what we know as hog cholera.

Third, blood must be infectious and capable of reproducing the same disease by inoculation under the skin of a susceptible animal.

Fourth, attack and recovery must confer immunity.

### CAUSE OF HOG CHOLERA.

"The specific cause of hog cholera is a germ so small that it cannot be seen by use of a microscope, and which is designated the 'filterable virus' owing to the fact that the organisms pass through the finest filters and cannot be artificially grown in the laboratory. The blood and excretions, especially the urine and feces of a hog sick with cholera, are capable of producing the disease in a susceptible hog. The virus (blood of a sick hog) is highly infectious.

"The accessory causes of hog cholera are numerous and include all conditions that weaken the constitution and natural resistance to disease, such as: (1) improper feeding, which includes unbalanced rations, over feeding, insufficient food, irritating food—as garbage and fermented slops are likely to be—and insanitary feeding troughs and floors; (2) impure drinking water. A hog requires clean water just as much as any animal. Stagnant, warm and dirty water in which the hog bathes should not be given him to drink. This may be conservation of water but not of health; (3) insufficient protection from the heat in summer and from the cold and dampness during the winter brings about disorders that may render a hog susceptible to cholera; (4) insanitary condition of yards, houses and farrowing pens. Many forms of bacterial life develop in insanitary environment. Lice and worms are a menace to the health of the hog; (5) crowding hogs in sleeping quarters causes unhealthy conditions; (6) improper ventilation. Hog cholera cannot be produced except through infection with the specific virus but these accessory causes increase the susceptibility to this virus."

#### PERIOD OF INCUBATION.

The period of incubation, or the time between the actual infection and the appearance of the symptoms, may vary from four days to two weeks, depending upon the virulence of the infecting material and the natural resistance of the hog. Young hogs are more susceptible to cholera than older hogs. Fat hogs, heavily fed and closely penned, exhibit less resistance than those receiving lighter rations and more exercise. All breeds are about equally susceptible.

#### SYMPTOMS OF THE DISEASE.

"Animals affected with cholera show some or all of the following symptoms. It should be clearly understood that not all cases of hog cholera are typical cases showing all of these symptoms. There are many cases where examination of the carcass shows very little evidence of this disease and an expert would never be justified in pronouncing such cases hog cholera if they did not occur in well-demonstrated outbreaks or as a result of direct experimental inoculation. Some cases show a portion of the symptoms very prominently and other cases show more prominently the other symptoms. In general we may say that the symptoms of hog cholera are as follows:

"The animal is dull, with constipation or diarrhoea, usually of a yellowish colour, and the appetite is impaired. The skin turns red and then purple in quite large blotches, especially noticeable on white hogs along the belly and flanks. The eyes are more or less inflamed and have a sticky discharge which tends to glue the lids together. The walk may become uncertain and irregular especially as to movement of the hind limbs. A considerable number of cases show a persistent, short, hacking cough. Affected animals may show marked inflammation of the ears and perhaps of the skin of the back. A few cases develop great sloughs of skin on the back leaving large sores."

The great variance in the symptoms indicated seems dependent upon the course or nature of the disease. In certain cases the disease seems

to settle in the respiratory tract—larynx, windpipe, bronchial tubes and lungs,—and when this form is present the disease is indicated by a short, more or less hoarse, hacking cough, by difficulty in breathing, by a peculiar stretched, somewhat drooping position of the head and a slow wavering gait.

Again, in the other form of the disease, the morbid processes seem to have their principal seat in the organs of the abdominal cavity, especially in the liver, spleen, kidneys, ureters and intestines, and almost invariably in the peritoneum or serous membrane in which the intestines are enclosed. In this case the short hacking cough is not present and the difficulty of breathing is less plain; the weakness of the hind quarters is more pronounced and in general the animal arches the lumbar portion (over the kidneys) of the back. In the more advanced stages of both forms the under portion of the body has the characteristic red or reddish purple spots or splotches.

#### AUTOPSY.

"When examining a carcass suspected of hog cholera we look for certain evidences, characteristic of this disease. The skin of the belly or flank is red or purple. The fat under the skin shows red spots as of blood, usually quite small.

"On opening the chest cavity the lungs show a peculiar and rather characteristic condition. Quite frequently certain lobes of the lungs or portions of the lobes are collapsed and somewhat resemble liver in appearance and touch. There may be a general and purulent inflammation involving an entire lung or possibly both lungs, with adhesions between the lungs and chest wall; but this form of pneumonia may scarcely be considered as characteristic of hog cholera. The hog cholera lung shows instead of these large inflamed areas shading off gradually to the healthy lung tissue, if there be any of the latter, certain portions collapsed or resembling liver as already mentioned and sharply set off from the healthy surrounding lung substance. The lining of the stomach is frequently inflamed, thickened, possibly ulcerated. The intestines show areas here and there of intense inflammation in the acute cases. In such cases the lining membrane may appear almost bloody in spots.

"In the slow chronic cases there develop characteristic hog cholera ulcers which may be found in almost any portion of the intestines but especially at the point where the small intestine connects with the large, and also in the large bowel. The slower cases are apt to show weak and irregular action of the hind legs. The characteristic hog cholera kidneys are known as the turkey egg kidney. When the thin capsule covering the kidney is removed the exposed surface shows small red spots which remind one of the peculiar colouring of a turkey egg.

"The following table shows the organs which should be examined when hog cholera is suspected. A description of the appearance of the organs in cases of cholera is given after each organ. It must be remembered that all of these post-mortem appearances may not be found in one hog. Those in the skin, large intestine, small intestine, spleen, kidneys and lungs are the most diagnostic.



Skin.....	Red or purple discolouration along belly and between the hams. Ulcers may appear and the skin crack and ears slough.
Large intestines....	External congestion and internal congestion with hæmorrhagic spots in the acute form, and ulcers in chronic cholera.
Small intestines.....	External and internal congestion. Sometimes hæmorrhagic spots. Seldom ulcers.
Kidneys.....	Pale or dark in colour, with reddish-black spots on the external surface. May resemble a turkey egg in appearance.
Spleen.....	Enlarged, black, friable. Sometimes resembles black jam.
Liver.....	Seldom any visible changes. May be enlarged and congested.
Stomach.....	Congestion on mucous lining in varying degrees.
Bladder.....	Congestion and hæmorrhagic spots on mucous surface.
Lymphatic glands..	Varying degrees of congestion, from pin to dark in colour.
Lungs.....	May be covered with hæmorrhagic spots of red or brown colour varying in size from a pin head to half dollar. Complete hardening of parts of the lung occurs. Pus may form, and adhesions to the chest wall sometimes take place.
Heart.....	Sometimes shows small areas of congestion of the base."

#### SUGGESTIONS OFFERED FOR PREVENTION.

These may include measures to prevent not only the introduction of hog cholera, but also further extension of the disease. One thing only is necessary to prevent cholera, and that is to keep the hogs from coming in contact with the specific virus.

"Stockmen who bear in mind the cause and infectious nature of this disease realise that there are many ways of scattering the disease, many of which are easily avoided. It is important to remember that the especially infectious thing about a hog sick with cholera is the manure. This of course contaminates yards, pens, feeding floors and even troughs. A person walking through a pig pen or yard may easily gather enough infection on the shoes and clothing to start other outbreaks on farms subsequently visited. Visitors from farms where the hogs are healthy should very carefully avoid pens and yards where sick hogs are confined on neighbouring farms.

"Wagon racks frequently serve as a source of spread. A farmer whose hogs have not been exposed will sometimes haul for a neighbour whose hogs are beginning to die. This is to get the neighbour's hogs to market as soon as possible. The farmer then drives into his own barnyard and the rain washes off manure from the wagon box or hog racks—or in some other way the infectious material is removed from the rack and possibly to his pens. In about two weeks his hogs are sick.

"Hog cars and stock yards must be considered as always infectious. Many outbreaks of cholera have been spread by hogs wandering from infected farms along the road and to a neighbouring place. It is never safe to ship in hogs by rail from a distance even from a neighbouring district or province where hog cholera has not prevailed for many years, because the cars into which such hogs are loaded are probably infected. The hogs then contract this disease in transit and in turn infect hogs already on the purchaser's farm.

"Running streams may serve as a source of spread when dead hogs are thrown into them or when they receive drainage from an infected barnyard. Unquestionably birds may serve to spread this disease but I believe most outbreaks can be traced to other causes. Dogs roaming about from farm to farm frequently start new outbreaks of cholera by bringing home pieces of dead hogs.

"The general health of the hogs must be considered a factor in the prevention or occurrence of cholera. The healthy herd, well cared for, will often resist the disease when other hogs, not so well attended, will contract it. Clean pens, pure drinking water, clean feeding places, proper feed and care, are factors working against infection. Plenty of room in dry, well ventilated houses for sleeping quarters should at all times be provided. The yard should be well drained.

"The lousy hog is more susceptible to cholera because lice weaken the general health of the affected animal. Hogs should be dipped twice at intervals of ten days every six months. The pens, hog houses and troughs should be frequently cleaned of all litter and refuse, and strong solutions of one of the various dips sprayed upon the premises.

"A tonic powder composed of the following may improve the general health:

Wood charcoal.....	1 part
Oil meal.....	5 parts
Copperas.....	2 parts
Salt.....	1 part
Sulphur.....	1 part

"The powder may be given in doses of one tablespoonful to each hundred pounds of hogs, once a day in the feed.

"The herd not yet affected should be taken care of by some one man exclusively and he should be very careful not to go where there is opportunity of getting infection upon his shoes or clothing. Visitors, especially stock buyers and threshing machine crews, should be kept out of the hog yards. The owner's family should avoid going into yards and pens where there are sick hogs. Public stock yards should always be considered as infected and the man who has a herd of well hogs at home should therefore keep out of public stock yards.

"It is important to bear in mind that this disease is usually contracted by feeding; i.e., through the mouth and stomach, and therefore if the food and drink are not contaminated from infected troughs, yards or feeding floors there is very little prospect of hogs contracting the disease.

"In case the disease appears soon the may usually be gained by moving the apparently well hogs to an infected place. If sickness again appears they may be moved again, always moving out the well hogs, keeping them in small groups if possible, and leaving sick hogs in the infected yards. Ponds and sluggish streams to which sick hogs have access give the best possible assurance of heavy losses on account of the concentration of infection which occurs in them when sick hogs have access."

#### TREATMENT AND DISINFECTION

"It is the confident opinion of practically all veterinarians and stockmen who have interpreted much experience into practice that money spent for ordinary medicines in the hope of curing the disease is wasted, and it is well to remember that *there is no known specific treatment for the hog sick with cholera.*"

"Hygienic measures are important in checking outbreaks of hog cholera. Dip the well hogs, separate them from the sick hogs, and move them to clean quarters at the appearance of the disease. All dead hogs should be burned, or covered with lime and buried six feet deep. It is better to burn because there is then no opportunity for the carcasses to be uncovered and infect the premises. If possible, the well and sick hogs should have different attendants and the utensils of the sick should not be used in feeding the well hogs."

All pens, floors, partitions, troughs, enclosure posts, etc., should be thoroughly cleaned and sprayed with some strong coal tar disinfectant or any of the standard dips. Corrosive sublimate in the proportion of one to one thousand of water makes an excellent disinfectant. Tablets of corrosive sublimate of a given strength may be obtained at any drug store.

It should be remembered also that whitewash is an excellent germicide which will well repay its liberal application.

#### INOCULATION FOR PREVENTION.

In the United States, experiments have been conducted in the inoculation of healthy hogs with a preventive serum. The main arguments against this method are the facts that the operation is of no benefit to a visibly sick animal, that the cost is relatively high, being at the present time about fifty or sixty cents for a fifty pound animal and also that there are certain stipulated regulations which, although not hard to understand, are yet beyond the power of the average farmer to carry to a successful issue.

The farmer who has suffered loss from hog cholera should make himself thoroughly acquainted with the symptoms, etc., of the disease, and whilst in many cases animals slaughtered by veterinary inspectors do not evince any of the given symptoms, yet a post-mortem investigation will invariably reveal the correctness, or otherwise, of the diagnosis and subsequent action.

Those in charge of the stamping out of hog cholera and such diseases in this and other provinces do not benefit in the slightest degree by the destruction of the farmer's stock, in fact the reverse is the case, as, should it be proven that needless slaughter has been carried on, the reputation of these men, upon which their earning power is based, is bound to suffer. This should be borne in mind and whilst it can readily be understood that the loss is, in many cases, severe, yet the man who takes it in a sportsmanlike way always stands the higher in the esteem of his fellows.

In the compilation of this bulletin, acknowledgments must be made to Prof. M. H. Reynolds, of Minnesota State University, and Dr. F. M. Hays, of the California Agricultural Experiment Station, from whose bulletins the bulk of the foregoing was gleaned.

