NOTES TECHNIQUES

TECHNICAL NOTES

TECHNISCHE NOTA'S

NOTAS TÉCHNICAS

The Belgian Veterinary Project at the College of Veterinary Medicine of the University of the Philippines at Los Banos

D. Van Aken* & J. Vercruysse**

Keywords: Philippines — Veterinary Project — Swine diseases

Summary

From 1990 to 1993, through a project of cooperation between the University of Gent and the University of the Philippines, a mobile veterinary clinic and diagnostic laboratory for swine diseases was established at the College of Veterinary Medicine at Los Banos, Philippines. This report describes the background of the project and its achievements in the field of extension services and research.

Résumé

De 1990 à 1993, une clinique ambulante ainsi qu'un laboratoire pour l'identification des maladies porcines ont été établis à la Faculté Vétérinaire de Los Banos, Philippines. Le projet était financé par le Conseil Interuniversitaire Flamand (VIIR). Le présent rapport décrit l'historique du projet et les résultats obtenus dans les domaines clinique, diagnostique et de recherche.

Introduction

From March 1990 to February 1993 the University of Gent (UG) and the University of the Philippines at Los Banos (UPLB) cooperated in the project "Establishment of a Mobile Veterinary Clinic at the University of the Philippines at Los Banos College, Laguna, Philippines" The project was founded by the Belgian Administration for Development Cooperation, upon recommendation by the Flemish Interuniversity Council.

The objectives of the project were to develop and run a mobile veterinary clinic and diagnostic laboratory, to serve as a training ground for veterinary students in preventive and curative therapies and diagnosis of diseases in food animals, to train local counterparts in the organization and conduct of a mobile clinic, to provide veterinary services to livestock owners in the region and to conduct applied research. Clinical activities and research were to concentrate on pig production, the most important sector in livestock production in the island of Luzon.

The project was coordinated by the Department of Parasitology, Faculty of Veterinary Medicine, University of Gent, Belgium. Two permanent Belgian staff were based at the University of the Philippines at Los Banos for the duration of the project.

Infrastructure, basic amenities and counterpart personnel were provided by the University of the Philippines. The Belgian input consisted of project personnel, laboratory equipment and logistic support.

The College of Veterinary Medicine of the University of the Philippines at Los Banos

The University of the Philippines at Los Banos (UPLB) began as an Agricultural College in 1909. At present it has eight degree-granting units (Agriculture, Forestry, Arts and Science, Human Ecology, Engineering and Agro-Industrial Technology, Veterinary Medicine, Economics, Management), a graduate school and several specialized research and teaching centers on the campus. There are over 6000 students, both graduate and undergraduate.

The College of Veterinary Medicine of the University of the Philippines offers a six-year curriculum leading to the degree of Doctor in Veterinary Medicine (DVM). On average 60 students graduate each year; this is about one fifth of the total number of veterinarians graduating yearly in the Philippines.

Livestock situation of the Philippines

The present livestock population of the Philippines is estimated at 8,271,000 hogs, 1,662,900 cattle, 2,565,600 carabao and 2,368,400 goats. Swine production is by far the most important sector of the livestock industry; the total pig population is valued at 17,7 billion Pesos, or 79% of the total of 22,3 bilion Pesos, being the value of all livestock species combined. Backyard farms (i.e. all farms of less than 25 animals) still account for the major part of the livestock production: 99% of carabao and goats, 88% of cattle and 82% of

* College of Veterinary Medicine. Central Mindanao University, 8710 Musuan, Philippines

** Department of Parasitology, Faculty of Veterinary Medicine, University of Gent, Belgium.

Received on 09.08.93 and accepted for publication on 17.08.93.

the pig population; commercial farms make up the remainder. In the poultry sector 61,873,000 chicken and 8,321,000 ducks are counted.

The majority of the animals are slaughtered for the wet market, i.e. the meat is sold immediately after slaughter; only a few large integrator farms, who own their own slaughterhouses, produce processed meat products.

As in many Asian countries, pork constitutes a major part of the animal protein in the Philippinos' diet. Over the period 1977-1987, the FAO recorded for the Asian Pacific region an annual growth in pork production of 8.9% against only 1.4% growth in pig population. This was made possible due to increasing efficiency in production and a shift to larger scale commercial farms where modern technology is applied. In these large farms (up to 10000 sow level) acute disease outbreaks have an enormous financial impact and animal health care is to be oriented towards quick and accurate disease diagnosis and prevention.

Project activities and results

Clinic and laboratory services

Diagnostic services through farm visits were offered in the provinces of Bulacan, Rizal, Cavite, Batangas and Laguna.

In the first three provinces mostly larger commercial farms (500 to 8000 sow level) were being visited, whereas in the latter two provinces smaller scale operations (50 to 200 sow level) were serviced.

First contacts with farms originated from a direct appeal for assistance from the farm veterinarian; the farm was then requested to submit specimen for necropsy at the laboratory and, depending on the initial outcome of the laboratory examinations, farm visits were scheduled.

On the farm, life examination of the herd was made and usually a few recently diseased animals were sacrificed for post mortem examination; fresh organ specimen for fluorescent antibody technique and histopathology were collected and stored in liquid nitrogen until processing in the lab; other samples (blood, faeces, organs) were kept cool in a portable fridge.

On large industrial farms, with 1000 to 10000 sows, an average of two hours would be spent for complete herd inspection, during which farrowing pens, gestating units, weaner and fattening units were visited, and animals selected for euthanasia and post mortem examination; this examination would take another two hours. Taking into account a traveling time of two to six hours, usually only one farm could be visited per day.

Some of the farms were invited to participate in research activities and were visited on a one- to two-monthly basis, during which a complete herd inspection was made, eventual new problems examined and routine samples collected for specific research purpose. Other farms were visited upon special appointment to examine actual disease problems. Farmers could also bring life or dead animals for examination at the diagnostic laboratory, where post mortem facilities were available.

Laboratory techniques included fluorescent antibody technique; tissue culture on PK15 cells for virus isolation and seroneutralisation test; histopathology; bacteriology and antibiotic susceptibility testing; inoculation of embryonated chicken eggs and suckling mice; ELISA and hemagglutination inhibition.

Student and counterpart training

Students were given the opportunity to follow up the processing of samples that had been collected from post mortem examinations at the College facilities, or directly from swine farms. In that way they could familiarize themselves with basic diagnostic laboratory procedures as well as more specialized techniques. Students could also make use of the project facilities for thesis work.

During the first two years of the project staff members of the departments of microbiology and surgery were assigned to the project on a daily, rotational basis. In November 1992 the College provided a first full time counterpart, followed by a second one in December 1992. These two veterinarians were given an intensive training during the last months of the project.

Research activities

Research has been concentrating on swine diseases, particularly Hog Cholera, Pseudorabies, Influenza, Parvo Virus Infection, Atrophic rhinitis and Enzootic pneumonia.

Hog Cholera

Hog Cholera (HCV) or Classical Swine Fever, is enzootic in a large part of Asia; it exists in the Philippines but its distribution and occurrence is unknown.

During the first year of the project, more than 120 herds, ranging in size from 20 to more than 10000 pigs were examined for presence of HCV.

It was concluded that HCV was a major cause of loss and chronic malperformance and its presence in many farms seemed to be enzootic. These large farms might constitute a major virus reservoir

The prevalence, epidemiology and zoonotic aspect of HCV was studied by means of serological examination using tissue culture (1,5).

On 12 selected farms where HCV was confirmed, the persistence of the virus was monitored after implementation of strict zoo-sanitary measures and a rational vaccination program. Two farms became clinically free of disease after 2 and 6 months respectively, after which there has been no serological evidence of persistence of virus. In 4 other farms the administration of vaccines and/or sanitary measures were questionable and monitoring was discontinued. In the remaining farms fattening pigs were repeatedly affected by HCV suggesting that at the beginning of the fattening period a certain percentage of pigs was not sufficiently protected in spite of the vaccination program. Moreover, virus spreading among fattening pigs could be responsible for persistence.

Pseudorabies

Pseudorabies virus (PRV) was first reported in the Philippines in 1983 as a cause of nervous disease in young piglets. In Europe and the United States the pathogenic effect of PRV is not only limited to nervous signs in suckling piglets, but could also be related to respiratory pathology in fatteners. However, in these moderate climates, pneumonia due to PRV is seen only in winter while infections during summer months have a mild course or remain subclinical.

Respiratory disease is one of the main pathological observations in swine in the Philippines. Serological studies in the project laboratory have indicated the presence of PRV in farms (1,5) but fluorescent antibody technique and animal inoculation tests have not confirmed the presence of PRV in lungs or tonsils of sick animals and therefore, persistence of PRV in swine herds could not be related to respiratory problems.

However, PRV is known to have a great host adaptability, and it has been suggested that continuous multiplication in a swine population during a long time might change the pathogenic capability of the virus.

Influenza

Swine influenza is a highly contagious, acute viral disease of the respiratory tract; influenza viruses associated with respiratory pathology in swine belong to the H_1N_1 and the H_3N_2 groups and can be important as a zoonosis.

In farms visited by the project, serological evidence was found of H_1N_1 infections and its involvement in respiratory pathology was suspected. Presence of H_3N_2 was examined using a Port Chalmers related isolate; presence of this strain of the virus was not detected, but in view of the known antigenic drift of this virus, the presence of other strains could not be excluded (5).

In view of the large number of people involved in swine operations in the Philippines, a survey on the incidence of different strains of influenza virus has been recommended.

Parvo virus infection

Porcine Parvovirus (PPV) causes reproductive failure of swine characterized by embryonic and fetal death, usually in the absence of clinical signs in the mother. The disease develops when seronegative dams are exposed oronasally to the virus during the first half of gestation. Porcine Parvovirus is ubiquitous among swine and it is enzootic in most farms. Therefore the immunity against PPV is usually a natural one, through contact with field virus. Non-vaccinated pregnant gilts that have not had contact with field virus are the most susceptible animals within a breeding group.

Hemagglutination inhibition tests on paired serum samples from gilts from large scale farms confirmed contact with field virus (2). Frequent movement of technicians and animals within the farms and the open housing system, are believed to favor natural spreading of the virus.

Atrophic rhinitis

Atrophic Rhinitis (AR) is an infectious disease of pigs, characterized by inflammation of the lining of the nasal cavity, shrinkage of the nasal turbinate bones, twisting or shortening of the snout and poor growth rates. The relationship between AR and pneumonia is a controversial issue.

Though the etiology of the disease is complex and probably multifactorial, *Bordetella bronchiseptica* (Bb) and toxigenic strains of *Pasteurella multocida* (Pm) are presently incriminated as the causative agents.

On farms in this investigation a high incidence of moderate atrophic rhinitis was observed (3). Toxigenic Pm, though in low numbers, was observed on all farms. Neither growth performance, nor patterns of bacterial infection were different from animals with or without AR. Within the farms, no correlation between atrophic rhinitis and pneumonia was observed. However, there was a low, positive correlation between individual scores for atrophic rhinitis and the associated percentage of pneumonia, indicating that conditions that predispose to the development of one of these diseases may also predispose to the development of the other (6). *In vitro* antibiotic susceptibility testing of the isolates of *P. multocida* and *B. bronchiseptica* showed resistance against several commonly used drugs (7).

Enzootic pneumonia

Mycoplasma hyopneumoniae is a cause of chronic pneumonia in swine, known as enzootic pneumonia. In the Philippines pneumonia is one of the main disease problems in swine production.

The effect of enzootic pneumonia on growth performance of pigs depends upon the period of life, in which the animals become infected; infections before the age of 12 weeks have a severe negative influence on the growth rate.

On all study farms serological evidence indicated the presence of *M. hyopneumoniae* infection. There was no clear relationship between presence of infection and pneumonic lesions at slaughter; irrespective of early or late detection of *M. hyopneumoniae* antibodies, levels of pneumonia in growing pigs were comparably high. On one farm an early *M. hyopneumoniae* infection was the probable cause for a depression in the growth rate (4).

Discussion

The original objective of the project was to establish a mobile clinic and diagnostic laboratory that would cater for different large animal species.

Large animal production in Luzon, however, consists mainly of swine production. Therefore diagnostic services as well as research activities have concentrated on swine diseases; these were mainly in the field of bacteriology and virology.

Whereas diagnostic services were provided to backyard as well as to larger farms, most of the research activities were carried out on semi-industrial and industrial farms. These were chosen for their accessibility as well as for the availa-

bility of production figures. Backyard farmers show less interest in long term follow-up studies and usually do not keep any figures on performance of the animals; also on small farms insufficient numbers of animals of different age groups are available.

A mobile clinic with laboratory back-up enables the University to keep in touch with latest disease developments in the field and serves as a training ground for students. In view of the importance of the livestock sector in the country's development, there is a definite need for independent laboratories which can provide an unbiased approach to disease diagnosis. Such facilities, however, are rare.

From the side of practicing veterinarians and pharmaceutical companies an incresed interest in co-operating with the project laboratory was noted during the latter part of the project. It was proposed to form a working committee consisting of swine practitioners, observers from the private sector and staff of the College of Veterinary Medicine of the University of the Philippines at Los Banos, to advise on the operation of the laboratory. The Philippines-Belgium Veterinary Project officially ended in February 1993. The Belgian Administration for Developement Co-operation approved continuing support to the Mobile Clinic and Diagnostic Laboratory of the College of Veterinary Medicine of the University of the Philippines at Los Banos. Financial assistance for operating expenses for clinic and laboratory was granted for three more years as well as continuing scientific support through consultancies by Belgian visiting professors. This would enable the College to further strengthen its ties with the farms, with the purpose of establishing a self supporting diagnostic facility.

Samenvatting

In de periode 1990 tot 1993 werd een ambulatorische kliniek en een diagnostisch laboratorium voor varkensziekten opgericht aan de Faculteit Diergeneeskunde, te Los Banos (Filippijnen). Het project werd gefinancieerd door de Vlaamse Interuniversitaire Raad (VIIR). Dit rapport beschrijft de achtergrond van het project en zijn verwezenlijkingen op het gebied van diagnose, buitendienst en onderzoek.

Literature

1 Geerts P. & Van Aken D., 1992. Confirmation of hog cholera and pseudorabies: a serological approach in 4 swine farms. Proceedings 8th Congress of the Federation of Asian Veterinary Association, Manila, 21-25 November 1992: 267-272.

2. Geerts P., Van Aken D. & Castillo L., 1992. Hemagglutination-inhibition titers for porcine parvo virus in gilts before first service in 5 swine farms. Proceedings 8th Congress of the Federation of Asian Veterinary Association, Manila, 21-25 November 1992: 904-912.

3. Van Aken, D., Geerts P. & De Roose P., 1992. Atrophic Rhinitis in fattening swine in Luzon, Philippines. Proceedings 12th Congress of the International Pig Veterinary Society, The Hague, 17-20 August 1992, p. 175.

4. Van Aken D. & Geerts P., 1992. Mycoplasma hyopneumoniae infections in fattening swine in Luzon, Philippines. Proceedings 12th Congress of the International Pig Veterinary Society, The Hague, 17-20 August 1992, p. 314.

5. Van Aken D., Geerts P. & Pensaert M., 1992. Serological evaluation of influenza-, pseudorabies- and hog cholera virus infections in fattening swine from commercial farms in Luzon, Philippines. Proceedings 8th Congress of the Federation of Asian Veterinary Association, Manila, 21-25 November 1992: 264-266.

6. Van Aken D., Geerts P., De Leon E., Garcia J. & Valera E., 1992. Atrophic rhinitis and pneumonia in swine from commercial farms in Luzon, Philippines. Proceedings 8th Congress of the Federation of Asian Veterinary Association, Manila, 21-25 November 1992: 292-296.

7 Van Aken D., Flores T.C., Valera E., De Leon & Garcia J., 1993. Antibiotic susceptibility of Pasteurella multocida and Bordetella bronchiseptica isolates from the nasal cavity of swine. Philippine Journal of Veterinary Medicine (in press).

D. Van Aken, Belgian. Dr in Veterinary Medicine. State University of Ghent, Belgium. Attached to the Philippines-Belgium Veterinary Project (VLIR).
J. Vercruysse, Belgian. Professor, Head of Department of Parasitology and Parasitic Diseases at the Faculty of Veterinary Medicine, University of Ghent, Belgium.