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Brazil

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Figure 1: Location of Agriculture and Veterinary Colleges in Brazil.

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Brasil

A. General

Brazil has a larger livestock population than any other Latin American country. Despite this numerical superiority, the output of livestock products is less than that of Argentina because of less effective animal disease control, poorer livestock management and indiscriminate breeding practices. Lack of^a sufficient number of qualified veterinarians, poorly organized veterinary services and a failure to establish or enforce control regulations are contributing factors to severe livestock losses from disease and parasitism. Efforts toward effective animal disease control have been generally confined to the herds of a few progressive cattle raisers in the southern Brazilian states. Adequate sanitary supervision of livestock products is carried out only in the export slaughterhouses (frigorificos) and a few of the major municipal abattoirs. A substantial volume of meat is processed under completely unsanitary conditions and loss through spoilage is high.

The government recognizes the lack of attention to animal disease control and food sanitation, and has recently sought the assistance of international organizations to recommend progressive veterinary programs and to advise on improvement in veterinary educational standards. 1/ 2/ 3/ 4/ 6/ 16/

B. Environmental factors

1. Topography and climate -- The expansion of the livestock industry in areas other than the coastal plain and the southern zone is restricted by the high incidence of

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diseases and parasites in the humid tropical climate of the Amazon Basin and the drought areas in the north. Inaccessibility to markets also tends to confine production to areas nearer population density. 4/ 12/ 31/

2. Socio-economic pattern -- With the exception of a relatively few wealthy large landowners, livestock raisers know little about the possibilities for animal disease prevention or control. The government has not conducted significant extension programs in this field and veterinary services have not penetrated into the remote livestock producing areas.

The low income level of the major portion of the population and prevailing high production costs limits the consumption of livestock products, particularly that of reasonably high quality fresh meat and milk. Particularly in rural areas lack of refrigeration and adequate transport has resulted in the widespread use of the sun dried beef called "charque," generally produced under extremely unsanitary conditions from low quality animals. 3/ 4/ 12/ 31/

4. Nutrition

c. Food sanitation -- Facilities and supervision for sanitary meat processing were maintained at about 21 export slaughterhouses (frigorificos) and a few municipal slaughterhouses in the larger urban areas in 1957. Most rural slaughterhouses and nearly all of the 70 "charquesades" (dried meat plants) in Brazil do not maintain reasonable standards of hygienic production. Some improvement has recently been achieved through enforced reconstruction of buildings and equipment. Except in a few retail markets catering to high class trade, there is little attempt to handle meat in a sanitary manner. 12/ 17/ 32/

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G. Diseases

2. Diseases of animals -- Both the number of animal diseases and, in most cases, their incidence, in Brazil is as high or higher than in other Latin American countries. The majority of livestock producers are either unaware of modern disease and parasite control procedures or will not undertake measures to improve conditions for their animals. The veterinary services are generally ineffective. Regulations to eradicate or eliminate the spread of diseases have either not been enacted at all or the ones that have been enacted have not been enforced. These factors are major causes for Brazil's failure to achieve production necessary to maintain normal consumption rates for its increasing population and to take full advantage of a profitable export market. 3/ 4/ 5/ 10/ 11/ 12/ 13/ 14/

(1) Foot-and-Mouth disease -- Foot-and-mouth disease is endemic over all the major livestock producing areas of Brazil. Three types (O-A-C) occur regularly and mixed infections with these immunological separate types have been reported in some outbreaks. Two government laboratories prepare over 5 million doses of vaccine each year but this is insufficient for effective control. The lack of susceptible animals for growing virus for vaccines has largely been overcome by recent introduction of the tissue culture technique now in use in Europe. Foot-and-mouth disease is particularly serious in its debilitating effect on cattle. A large share of government or state funds allocated for animal disease control are expended on the programs intended to control foot-and-mouth disease, particularly in dairy herds. 10/ 11/ 12/ 13/

(2) Hog cholera -- Hog cholera results in serious losses annually in Brazil. Vaccination, using the Crystal Violet-type vaccine, has reduced infection in some areas, and the more effective attenuated virus vaccines are gradually being introduced. 10/ 12/

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(3) Brucellosis -- A few regional investigative surveys for bovine brucellosis reveal incidence as high as 15 percent. The State of Sao Paulo is the only area that has attempted a serious eradication program, and the original plan of eliminating reactors has given way to a less effective vaccination plan because of the inability to finance an indemnification for slaughtered reactors. State and Federal veterinarians cannot agree on a coordinated control procedure and there is little hope that this disease can be brought under effective control. 5/ 10/ 12/

(4) Anthrax -- Anthrax occurs sporadically in most areas of Brazil. Progressive cattle raisers vaccinate regularly, and the Federal or State governments attempt to provide veterinary service to the less developed areas when outbreaks occur. 10/ 21/ 22/

(5) Anaplasmosis and piroplasmosis -- Both of these protozoan blood diseases are serious among imported cattle other than zebu types. Dairy cattle are generally treated regularly to eliminate ticks, which are the vectors, and drugs to combat the infection are available. 10/ 12/ 23/

(6) Equine encephalomyelitis -- Equine encephalomyelitis, principally affecting horses, occurs frequently, particularly in the Northern zone. It is highly virulent and considered of considerable importance because humans are occasionally affected. Vaccination is carried out when outbreaks occur, but well-planned preventive programs are not undertaken. 10/ 29/

(7) Newcastle disease -- Recent advances in an expanding poultry industry have stimulated considerable concern over the effects of Newcastle disease. Concentrated poultry production installations are endangered unless regular effective vaccination is carried out. The government laboratories are currently producing sufficient quantities of vaccines for industrial poultry production but the lack of application

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of vaccine in the small farm flocks results in serious losses. 10/ 25/ 30/

(8) Parasites -- Both internal and external parasitism affect Brazilian livestock so extensively that a classification according to relative significance is impossible. An external parasite of major importance is Dermatoba hominus; the larval stage causes debility through irritation in its migratory movement in the animal and seriously reduces the value of hides through the effect of its emergence through the skin. Ticks, beside being vectors of animal diseases, are responsible for irritation that reduces animal growth and development efficiency. They are also responsible for causing serious hide damage. Psoroptic and other types of mange in sheep are common and cause loss in meat and wool production. The more progressive farmers conduct spraying or dipping programs to reduce infestation, but the rational use and rotation of insecticides is not well developed in most areas.

Internal parasites are as important a source of livestock losses as external parasites and some, such as Echinococcus, Cysticercus, and Trichinella, are responsible for human infestation. In a recent survey among sheep, it was estimated that parasitic infestation resulted in at least 40 percent loss in the wool yield alone. The Brazilian livestock industry has not established mass treatment procedures for parasite control except in a few areas. ^{2/}

(9) Other diseases -- Other important diseases are calfhood enteritis, pasteurilosis and blackleg in cattle; strangles, tetanus and mange in horses; and foot rot, mastitis and deficiency diseases among sheep. 10/ 12/ 21/

D. Veterinary organization and administration

1. Civilian

a. Organization -- Two departments, the National Animal Production and the

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National Veterinary Education and Research Departments, directed by the Ministry of Agriculture, are responsible for the Federal veterinary services in Brazil. The National Animal Production Department, headed by a director general, is made up of five divisions: (1) Development of Animal Production, responsible for breeding and animal husbandry; (2) Hunting and Fishing, charged with wildlife conservation; (3) Inspection of Products of Animal Origin, chiefly concerned with inspection of export products; (4) Field Services, intended to control epidemic diseases and conduct investigations; and (5) Institute of Animal Biology, which produces biologics not normally produced by commercial concerns and conducts a limited amount of research and disease diagnosis.

The Department of Veterinary Education and Research, also headed by a director general, is responsible for the national veterinary, animal husbandry, and technical education. This Department establishes uniform standards for veterinary education in all Brazilian veterinary schools and conducts research in conjunction with the divisions and laboratories of the Department of Animal Production. ^{1/ 3/ 6/ 10/}

Various states have veterinary services organized in much the same manner as those of the Federal government. Some of the less developed states rely entirely on the Federal Services. Cooperation between State and Federal services has not been well established, and this has resulted in inefficient disease control planning and occasionally the development of conflicting policies. ^{4/ 5/ 6/}

A few major municipalities provide veterinary services chiefly concerned with meat and milk sanitation. ^{6/}

Almost every section of Federal and State services consistently fail to obtain adequate funds to effectively carry out the scheduled veterinary programs. Recent inflationary trends curtail still further the money available for necessary projects. ^{1/3/4/5/}

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In a vast unexploited area, comprising the drainage basin of the Amazon, recommendations for organizing a veterinary service under the Superintendency for the Plan of Economic Development of the Amazon (Superintendencia do Plano de Valorizacao Economica da Amazonia - SPVEA), are being considered. This service, under a Chief Veterinarian, would be comprised of six sections: (1) veterinary diagnosis and vaccine laboratories, (2) veterinary field services, (3) artificial insemination service, (4) personnel instruction service, (5) food inspection service, (6) veterinary police service.

Influential cattle producers and various cattlemen's associations exert a powerful influence on the veterinary services of Brazil, and their actions frequently adversely affect the operation of necessary disease control programs. Pressure from these sources has led to the abandonment of such programs as regional brucellosis control, the dangerous relaxation of animal import and quarantine requirements, and the failure to control the movement of livestock from infected premises.

b. Legal controls

(1) Licensure -- Veterinary graduates receiving the degree of "Veterinario," signed by the college director and the secretary of the college and registered by the Superintendency of Agricultural and Veterinary Instruction (Superintendencia do Ensino Agricola e Veterinario - SEAV), are legally qualified for government or private employment.

(2) Quarantine -- The Ministry of Agriculture requires health certification for animals and some animal products being imported, plus notification of arrival twenty-four hours prior to entry. Regulations are amended according to the discretion of the Ministry. An international quarantine station on the island of Fernando de Noronha,

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for export and import of animals in the area, has been proposed, and delegates to Inter-American Meetings on Livestock Production have recommended studies on the advisability and feasibility of such an installation. Brazil has made use of this station in quarantining imported animals for national distribution but there have been frequent breaches of Brazilian regulations regarding importation and quarantine. Quarantine of diseased premises within the country has been imposed, but in most cases these measures have not been effectively implemented. 12/ 13/ 23/ 30/

(3) Inspection -- Effective meat inspection is carried out only in export slaughterhouses and a few major municipal abattoirs. 12/32/

c. Professional veterinary organizations

The Brazilian Society of Veterinary Medicine (The Sociedade Brasileira de Medicina Veterinaria) represents the profession at the national level and publishes a quarterly bulletin. The major livestock producing states have active veterinary associations, the Sao Paulo Society of Veterinary Medicine (Sociedade Paulista de Medicina Veterinaria) ^{being} the most notable. Brazilian veterinarians are active participants in the Pan American Veterinary Congress. 10/ 21/ 32/

d. Veterinary research

Veterinary research in Brazil has reached a comparatively high quality level among Latin American countries despite deficiencies in educational standards, an inadequate number of research facilities, and the lack of a regular appropriation of sufficient funds. This anomaly is a tribute to the individual researchers who have by personal effort risen above the adverse circumstances that afflict the profession.

Research in animal virus tissue culture propagation and serological studies compare favorably with research of other countries. Toxicology of certain plants has received considerable research attention and systematic identification of parasites

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has not been ignored. Unfortunately, the application of research toward improved livestock production has not been achieved because of ineffective veterinary organization and economic conditions which have stifled the development of field programs. 1/ 3/ 4/ 6/ 11/ 12/ 21/

2. Military veterinary organization

The Remount and Veterinary Service (Servicos de Remonta e Veterinaria) of the Ministry of War, directed by a Brigadier General, has become considerably more important than similar services in other Latin American countries, because the Brazilian armed forces maintain a number of livestock farms to supply animal food products for its troops. Duties of the veterinary service include food inspection, animal care and disease prevention, and equine breeding for mounted and transport service. Several Brazilian officers have attended the armed forces veterinary food inspection schools in the United States. 10/

E. Veterinary manpower

a. Distribution -- At least 85 percent of the approximately 1500 veterinarians in Brazil are employed in the Federal or State government services and institutions. Most of the remainder are engaged by biological firms or other private industries interested in livestock production. Private practice is negligible. The ratio of veterinarians to livestock units (1:50,000) is clearly far below reasonable standards for effective animal care and disease prevention. This lack of attention to animal health is further complicated by an inequitable distribution of veterinarians resulting in irregular or neglected veterinary service in remote and currently undeveloped livestock producing areas. The Brazilian government has not provided significant incentives for personnel to endure unfavorable living conditions in these remote areas; therefore, most veterinarians

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obtain employment in institutions or colleges in metropolitan areas. Efforts are being made to increase the selection of rural youths for admission to veterinary schools in hopes that they will return to their native locality after graduation. 1/ 2/ 3/ 8/

b. Training -- Eight veterinary colleges are strategically located in seven of the most populated and culturally advanced states, with the majority situated in the currently important livestock producing areas. Although all of these Federal and State operated colleges are required to conform to the "minimum superior college standards" established in 1943, the interpretation of criteria for conformity, with the exception of curricula, varies considerably. Claring differences exist in teacher-student ratios, clinical facilities, laboratory equipment, and operational budgets. In all but three schools, the veterinary student enrollment is far below the optimum number for economical veterinary education. The four-year curricula offered in Brazilian schools, in addition to overemphasis of theoretical aspects of subject matter, is too short to provide adequate veterinary education according to modern standards. Surveys and recommendations have been made to improve veterinary educational facilities, teaching techniques, and financial support; but response by Federal or State government has been slow. It will apparently be some time before veterinary educational institutions will be in a position to provide more adaptably trained personnel in sufficient numbers to improve significantly the animal health care and disease prevention. Opportunities for advanced training are few, and most veterinarians who receive such education are absorbed by veterinary colleges as teachers. 1/ 2/ 3/ 8/ 9/

Fig. 1

F. Veterinary medical facilities

Few facilities to provide veterinary care or diagnostic services exist other than those of the educational institutions and the biological production laboratories.

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Veterinarians are forced to rely largely on clinical diagnosis in identifying diseases and parasitism in most areas. Recommendations by various survey groups to establish rural diagnostic centers and a modest water borne mobile laboratory in the Amazon region have not resulted in positive action.

The most significant development in providing veterinary facilities in recent years was the establishment of the Panamerican Foot-and-Mouth Disease Center near Rio de Janeiro. This internationally supported institution has made useful contributions to the investigations of vesicular diseases and to the training of veterinarians, as well as serving as a pilot project for the preparation of more effective vaccines for the region. 3/ 4/ 10/ 11/ 12/

G. Veterinary supplies and material

Brazil produces essentially all of its required veterinary biological products and most of the necessary medicinal products. A part of the chemicals used in veterinary pharmaceuticals is imported for compounding within the country. The most significant current imports are insecticidal material from the United States, or from the United Kingdom and other European countries.

Both State and Federal departments of agriculture maintain a number of biological and pharmaceutical producing laboratories, and private companies manufacture or prepare veterinary products for commercial sales and government contracts. Many of the private concerns are small firms specializing in a limited number of products.

Outlets for veterinary products are numerous in the populated areas, but distribution outside these centers is slow and inefficient.

Strict regulations govern the registration and sale of foreign veterinary products but internal control is lax.

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The major part of veterinary products used are disease preventive preparations, because treatment of individual animals is uncommon in Brazil. 10/ 11/ 12/ 13/

H. Reference data

Figure 1: Location of Veterinary Schools.

I. Comments on principal sources

1. Evaluation -- The most useful information regarding Environmental factors (E1 and 2) was found in sources 4 and 6.

Sources 2 - 4 and 5 together formed the principal sources for numerating the Animal diseases (C2). Incidence of disease is reported only in general terms, because no extensive surveys have been accomplished.

Source 1 was reasonably complete in describing Veterinary organization (D), and the information was brought up to date by brief reference in a number of other sources.

The data relative to Manpower (E) and Veterinary facilities (F) was adequate in sources 1 - 2 and 8.

Veterinary supplies and materials (G) information was collected from a number of brief references in many source documents. The most important were sources 5 and 8. Source 8 is quite old, but the data is substantiated in material from numerous other sources.

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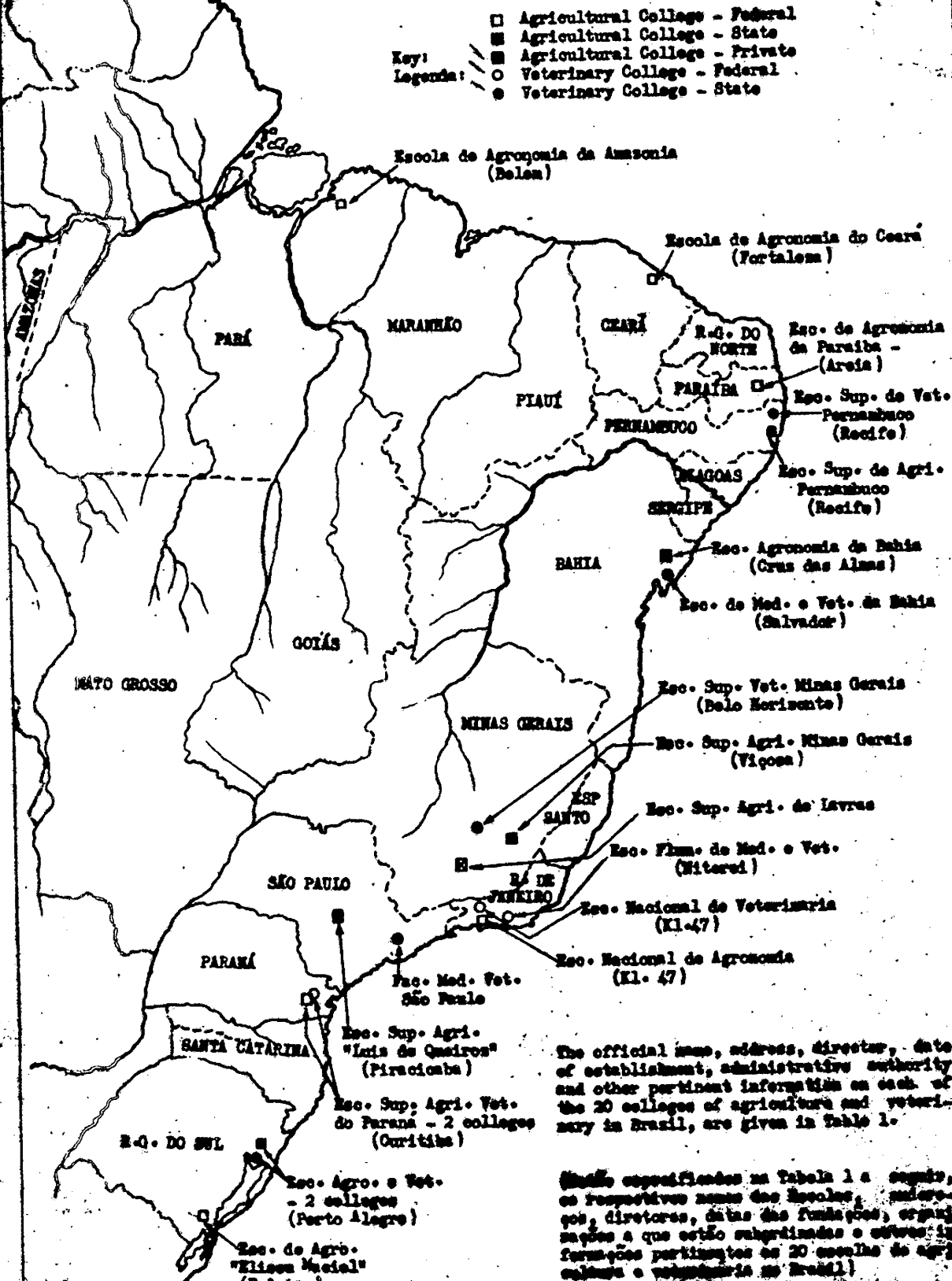
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Source 1/

Figure 1: Location of Agriculture and Veterinary Colleges in Brazil
 Localização das Escolas de Agricultura e Veterinária no Brasil



The official name, address, director, date of establishment, administrative authority and other pertinent information on each of the 20 colleges of agriculture and veterinary in Brazil, are given in Table 1.

(Dados especificados na Tabela 1 a seguir, as respectivas nomes das Escolas, endereços, diretores, datas das fundações, organizações a que estão subordinadas e outras informações pertinentes as 20 escolas de agricultura e veterinária no Brasil)

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