FARM ANIMAL WELFARE IN THE PHILIPPINES

A SITUATION REPORT

Prepared for

World Society for the Protection of Animals (WSPA)

Philip Lymbery
Animal Welfare Consultant
July 2001
ABOUT THE AUTHOR

Philip Lymbery is an Animal Welfare and Campaigns Consultant based in the UK. He now works internationally, developing campaign strategy, policy advocacy, research and training for a range of animal protection organisations.

Philip has more than a decade of experience campaigning at the highest level for leading European farm animal welfare organisation, Compassion In World Farming (1990-2000), the last 7 years as Campaigns Director. He has extensive experience in strategic campaign planning; including developing the strategy for, and leading the successful 1998/99 European campaign to ban battery cages for laying hens.

Philip is an acknowledged expert on farm animal welfare, particularly of laying hens, poultry, pigs and farmed fish. He is also experienced at international alliance building having founded and co-ordinated (1994-2000) the European Coalition for Farm Animals (ECFA).

Contact: Philip Lymbery
Animal Welfare Consultant
Turnstone Campaigns
2 Meon Close, Petersfield
Hampshire, GU32 3DW
United Kingdom
Tel: +44 1730 231534
Email: philip@turnstones.com
<table>
<thead>
<tr>
<th>CONTENTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Executive Summary</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Introduction</strong></td>
<td>7</td>
</tr>
<tr>
<td><strong>Background</strong></td>
<td>7</td>
</tr>
<tr>
<td><strong>Farm Animal Welfare in the Philippines</strong></td>
<td>8</td>
</tr>
<tr>
<td>Chicken for Meat Production</td>
<td>8</td>
</tr>
<tr>
<td>Egg Production</td>
<td>10</td>
</tr>
<tr>
<td>Pig Breeding &amp; Rearing</td>
<td>11</td>
</tr>
<tr>
<td>Cattle</td>
<td>13</td>
</tr>
<tr>
<td>Exotics</td>
<td>13</td>
</tr>
<tr>
<td>Livestock Markets</td>
<td>14</td>
</tr>
<tr>
<td>Slaughterhouses</td>
<td>15</td>
</tr>
<tr>
<td>Slaughter Statistics – Philippines 2000</td>
<td>18</td>
</tr>
<tr>
<td>“Traditional” Practices</td>
<td>19</td>
</tr>
<tr>
<td>Fish Farming</td>
<td>19</td>
</tr>
<tr>
<td><strong>Political Situation in the Philippines</strong></td>
<td>20</td>
</tr>
<tr>
<td>Committee on Animal Welfare</td>
<td>21</td>
</tr>
<tr>
<td>Supermarkets</td>
<td>21</td>
</tr>
<tr>
<td>Fast Food</td>
<td>22</td>
</tr>
<tr>
<td>Feed Imports &amp; Sustainability</td>
<td>22</td>
</tr>
<tr>
<td><strong>Official Vision for Agriculture</strong></td>
<td>23</td>
</tr>
<tr>
<td><strong>Future Strategy for Farm Animals in the Philippines</strong></td>
<td>24</td>
</tr>
<tr>
<td><strong>References</strong></td>
<td>25</td>
</tr>
</tbody>
</table>
EXECUTIVE SUMMARY

FARM ANIMAL WELFARE IN THE PHILIPPINES

A SITUATION REPORT

The aim of the study visit from 23rd May till 2nd June 2001 was to assess the farm animal welfare situation in the Philippines and, working with the WSPA contact society, to devise a campaign strategy to achieve relevant welfare reforms.

Background

The Philippines is a densely populated archipelago with a rapidly growing population of over 75 million people. Population growth, poverty, food security and pollution are major issues. It is an agricultural country with a predominantly rural population. About 70% of the total population live in rural areas with 45% of the workforce engaged in agriculture. The agricultural sector is vital to the economy and contributes about 23% of the gross domestic product. The livestock industry contributes 29% of total agricultural production in terms of volume.

‘Backyard’ or smallholder producers remain the predominant part of Filipino agriculture, making up 80% of farms. These tend to be simple farms that are owned and managed by single families for subsistence or commercial purposes. A typical farming system consists of crop production such as rice, corn and coconut, with a few cattle, poultry or other animals.

Western-style intensive or “factory farming” methods of producing meat, milk and eggs are already well established and increasing in the Philippines. Intensive or industrial methods already dominate the nation’s production of poultry and eggs. Pig farming too has become increasingly intensive, whilst cattle are often fattened in barren and densely stocked feedlots.

There is little awareness amongst the general public of the issue of farm animal welfare. However, there are encouraging signs of general support for the humane treatment of farm animals.

Farm Animal Welfare Situation

Pigs – Over 17 million pigs are reared and slaughtered annually. About 23% of the nation’s pig herd are bred and reared using highly intensive systems and practices. With over 10 million animals, the Philippines’ pig herd is substantial in world market terms. Most pigs are still raised by backyard producers. Nearly a quarter is now kept commercially, with highly restrictive sow stalls and farrowing crates being common. In these systems, breeding sows are confined and cannot even turn around for months at a time.
Chicken meat – The vast majority of the 480 million broiler chickens slaughtered in the Philippines each year are reared using mass production methods. These are likely to become more intensive.

Multi-national companies and intensive methods have increasingly dominated chicken production. Only 10% of chicken production now comes from Backyard producers. Contract growers using intensive broiler units produce the vast majority of chickens for meat. Multinational companies supply the chicks, feed, veterinary support and husbandry advice, and buy back the birds when ready for slaughter. Important characteristics of a typical Filipino broiler chicken shed include lower stocking densities than currently used in Europe, and natural light and ventilation. Floors are slatted and without litter after the chicks reach 10 days old. Pressure to adopt highly intensive, fully enclosed units could lead to a worsening welfare situation for Philippine-reared broiler chickens.

Egg production – Commercial production is almost exclusively from battery cages. Excluding backyard hens, about 98% of laying hens are kept in battery cages. The eggs are sold in supermarkets as “Farm Fresh” eggs. There appears to be an emerging interest in extensive egg production that could be advantageous to our campaign.

Cattle – Over 200,000 cattle are imported live each year from Australia for fattening. They are often fattened in intensive feedlot for 3-4 months before slaughter. Overall, nearly 900,000 beef cattle are slaughtered annually. Some 300,000 water buffalo, or caribou, are also slaughtered, although production is largely a backyard venture for draught animals.

The predominant breed of dairy cow in the Philippines is the highly bred Holstein/Friesian, which often suffers welfare problems associated with excessive milk production.

Exotics – Embryonic ostrich and crocodile farming industries are now established. Crocodiles are killed using the ‘nape-stab’ method and can conscious of pain almost 2 hours after stabbing.

“Traditional” Practices – dog eating, cruel chicken & caribou killing methods exist regionally. The killing of dogs for food in the Bagio area continues despite being technically illegal. Other practices still conducted in this region include ‘Pinikpikan’, whereby chickens are slowly beaten to death, and the hacking to pieces of live caribou (water buffalo).

Livestock Markets – Widespread cruelty was witnessed during a brief visit to one of the nation’s largest markets. A catalogue of cruelties were witnessed, including overcrowding, beating, severe tying via nose-rings, an animal hauled into a truck without a ramp by its tail and ear, female cattle kicked in the udder, and a bull water buffalo repeatedly kicked in the testicles.

Slaughterhouses – Inhumane killing methods still widely used. So-called ‘traditional’ killing methods persist. For cattle, this involves severing the spinal cord with a “puntilla” knife, causing immobility but not unconsciousness. The animal dies from suffocation. A blow to the head from an iron bar is used to kill pigs.
Humane stunning techniques are gaining acceptance. Serious problems slowing their uptake include the cost of the equipment, difficulties in maintaining supplies of cartridges for captive bolt pistols, and a lack of training.

**Political Situation**

The Republic of the Philippines is a constitutional democracy, with the President as Head of State and Government. Farm animal welfare falls under the responsibility of the Department of Agriculture (DA). A Government Committee on Animal Welfare was set up under the Animal Welfare Act of 1998. This Committee drafts new animal welfare legislation under the Act. These are passed into law after being signed/approved by the Secretary of Agriculture, without the need for further democratic discussion. Several welfare laws now exist under the Act, e.g. for pigs and animals at slaughter.

The Committee is composed of official representatives from 14 government agencies and NGOs. WSPA’s contact in the Philippines, Dr Abe Agulto, sits on this Committee. The Chairman and other members of the Committee were given a presentation on farm animal welfare concerns during this visit, which was well received. There is great scope to work productively with the Committee.

**Recommended Strategy for Humane Reform:** To place farm animal welfare as an integral part of a sustainable agriculture that produces quality food at affordable prices without destroying the environment or compromising food security in the future. Within this context, a positive campaign can be launched advocating humane farming methods and practices without appearing out of place in a country facing serious human welfare challenges.

**National Campaign Organisation:** The Philippine Society for Protection of Animals (PSPA) was established in January 2001 and currently has about 70 members and no paid staff. Abe Agulto and PSPA are keen to progress with the campaign. Strong support in terms of finances and technical resources would be needed from WSPA if reforms are to be achieved.

PHILIP LYMBERY
Animal Welfare Consultant
INTRODUCTION

The aim of the study visit from 23rd May till 2nd June 2001 was to assess the farm animal welfare situation in the Philippines and, working with the WSPA contact society, to devise a campaign strategy to achieve relevant welfare reforms.

BACKGROUND

The Philippines is a densely populated archipelago with a rapidly growing population of over 75 million people (NSO, 2001). Its 7,107 islands are located 600 miles off the southeastern coast of mainland Asia, and are bounded in the north and west by the South China Sea, on the east by the Pacific Ocean, and on the south by the Celebes Sea. The climate is tropical with temperatures ranging from 24°C-31°C. The predominant religion is Roman Catholic. The country has the most highly educated population in Southeast Asia, with a literacy rate of 94% (UNDP, 2001). Population growth, poverty, food security and pollution are major issues facing the Philippines.

The typical Filipino diet consists of rice, boiled fish and vegetables. The urban populaces are relatively heavy consumers of livestock products such as meat, poultry, eggs and milk (NNC, 2001).

The Philippines is an agricultural country with a predominantly rural population. About 70% of the total population live in rural areas (DA, 2001), with 45% of the working population engaged in agriculture (PIDS, 2001). Agriculture is vital to the economy and contributes about 23% of the gross domestic product (DA, 2001).

The main agricultural products of the Philippines are rice, corn, coconut, sugar, banana, livestock including poultry, and fishery production activities. Recent growth in the sector has been due largely to the expansion in the poultry and other livestock sectors, as well as in palay production (DA, 2001). The livestock industry contributes 29% of total agricultural production in terms of volume (Drilon, 2001).

The majority of the 4.6 million farms in the country are small farms with an average size of about 2 hectares (NSO, 1991; DA, 2001). ‘Backyard’ or smallholder producers remain the predominant part of Filipino agriculture. These tend to be simple farms that are owned and managed by single families for subsistence or commercial purposes. A typical farming system consists of crop production such as rice, corn and coconut, with a few cattle, poultry or other animals.

Western-style intensive or “factory farming” methods of producing meat, milk and eggs are already well established and increasing in the Philippines. Intensive or industrial methods already dominate the nation’s production of poultry and eggs. Pig farming too has become increasingly intensive, whilst cattle are often fattened in barren and densely stocked feedlots.
There is little awareness amongst the general public of the issue of farm animal welfare. However, there are encouraging signs of general support for the humane treatment of farm animals.

**FARM ANIMAL WELFARE IN THE PHILIPPINES**

Each year in the Philippines, over 500 million farm animals are reared and slaughtered. The vast majority of the countries’ farms are small-scale, mixed and extensive. However, the growing involvement of agribusiness concerns in animal production has led to dramatic increases in poultry and pig production and the adoption of intensive “factory farm” methods.

The following review looks at each sector of farm animal production in the Philippines and presents an overview of the methods used and the major animal welfare problems relevant to each.

**Chickens for Meat Production**

*The vast majority of the 480 million broiler chickens slaughtered in the Philippines each year are reared using mass production methods. ‘Advice’ from agribusiness concerns means that production methods are likely to become more intensive.*

Intensive methods of broiler chickens, whereby thousands of birds are reared in each shed have become increasingly dominant in the Philippines. The vast majority of chickens reared for meat are now produced this way, with only 10% now reared in the backyard. Those farmers that have chosen to go down the intensive production route have found themselves to be “contract growers” to multinational companies or “integrators”. These specify to the contract growers the housing practices to be used, and supply the chicks, feed, medication, and veterinary support. They buy back the chickens at slaughter. Integrators specify the weight and age of the chickens at slaughter. The farmer simply provides the housing, labour, and rears the chickens (Dumapis, pers comm.).

There are a number of important differences between a typical Filipino broiler chicken shed and the intensive units used in Europe. The birds are typically given significantly more space in the Philippines and also have the benefit of natural light and ventilation. Their cousins in Europe will be stocked more densely in dimly lit, windowless sheds with computer-controlled temperature, lighting and ventilation. However, there is some pressure on growers to adopt highly intensive, fully enclosed units. Some farms already have these intensifications.

During the study visit, two typical Filipino broiler chicken farms were visited. The broiler houses were raised about 12 feet from the ground on concrete ‘stilts’. Lighting and ventilation are natural. The floor of the house was of a slatted wooden construction (bamboo and coconut) with a plastic netting overlay. *The netting was fitted in such a way that the birds’ legs were in danger of becoming trapped. I saw at least one bird trapped in this way and unable to reach food or water.* A common feature in Philippines chicken rearing is the provision of litter material only until the chicks are about 10 days old. After this period, they have a barren slatted floor. This is in contrast with the European situation where the chickens have a litter-covered

---

8
floor throughout their 6-7 week lives. Litter is important to the birds as it allows them to carry out natural behaviours such as scratching and pecking.

**Farm Visits - Broiler Chickens**

Two farms were visited during this study visit. They are both located about 100 km north of Manila. The first had 17 broiler rearing houses of the typical Filipino design – raised on concrete stilts. Lighting and ventilation are natural. The birds on this farm were supplied with bedding in the form of rice hulls, but only for the first few days after hatching.

A maximum of 5,000 birds are kept in each house at a stocking density of 1 ft² per bird. In hotter weather, the number of birds may be reduced to 4,300 at a stocking density of 1.2-1.3 ft² per bird. This compares with the recommended maximum stocking density in the UK, which equates to 0.55 ft² per bird. Birds are typically slaughtered at 33-37 days old. Mortality on this farm ranges from 4-9%. Other farms are said to get mortality levels of 15%. The houses are cleaned out only after harvest. The faeces tend to drop through the slatted floor and collect in a heap under the house.

The second broiler chicken farm visited slaughtered its birds at 37 days old. They would usually reach a live weight of 1.6-1.7 kg. 12,000 birds were reared in each building at a stocking density of 1 ft² per bird. Again, rice hull litter was provided to the chicks for their first 10 days.

Commercial broiler chickens are the large, dumpy, white birds now sold the world over. Nearly all of the broiler chicks for rearing are now produced by just 6 companies. Three of these companies produce 80% of the total (SCAHAW, 2000). The breeds of bird used on the farms visited were supplied by the well-known brands Cobb and Arbor Acres. These breeds are common throughout the commercial broiler industry in the Philippines, and indeed the world. It follows then, that the health and welfare problems too, will be similar globally.

**Welfare Problems in Chickens Reared for Meat**

Modern broiler chickens are ready for slaughter at 6-7 weeks old. They are now growing twice as fast as they did 40 years ago. This fast growth is due to selective breeding for fast-growing strains, and feeding them on high protein diets that often contain growth-promoting antibiotics.

Fast growing broiler chickens suffer high rates of lameness, heart disease and skin sores. Although broilers now put on weight very quickly, the strength of their bones has not improved significantly. Putting on weight at twice their normal rate has led to the travesty of a 42-day old bird’s skeleton being forced to carry the weight of an 84-day old. This often causes lameness and painful crippling. One UK study found that 90% of commercially reared broilers could not walk normally. 26% were believed to be suffering chronic pain and discomfort. For some birds, (2%) crippling was so bad that they could only move with the help of their wings or by crawling on their shanks.

Broilers are growing too fast not only for their legs, but also for their heart and lungs. Heart failure is a common problem amongst broiler chickens. It is caused by a lack of
oxygen supply to the overweight birds’ bodies, causing their hearts to work harder. Heart failure is one of the major causes of death in broilers worldwide and is blamed, by European veterinary experts, on abnormally fast growth rates (SCAHAW, 2000).

As broiler chickens grow, they tend to become increasingly inactive. This is due to overcrowding as they take up space in their overstocked shed, and because their overweight bodies make activity more difficult. With little room to move and often wracked with painful deformities, broilers spend a lot of time squatting on the litter floor. This puts them at risk of developing sores or ammonia burns from the faeces-covered litter. These burns can cause breast blisters, hock burns, and ulcerated feet, all painful conditions that are common in European broilers. Further intensification within the Filipino broiler industry could see a consequent increase in these serious welfare problems.

The Impact of Intensive Chicken Production

The rapid expansion of intensive poultry production in the Philippines has not only caused serious animal welfare problems and seen farmers relegated to the status of “contract growers”; it has also had a profound effect on traditional village livelihoods:

“Despite this growth in the [poultry] industry, the average Filipino-Farmer family have not directly participated nor benefited from this economic boom. Forty years ago, it was the production of native eggs and chickens by the Filipino Farmer family that was feeding the entire population. Presently, these traditional livelihood of raising native chickens is even threatened to extinction, by an array of viral diseases brought about by the influx of the dominant white chicken breeds.” The paper by A.P. Inocenciao Farms (Teresa Farms) continues, it is “our vision to bolster, improve and resurrect a native-chicken enterprise and help bring back the lost livelihood opportunities of small-farm holders in the countryside” (Teresa Farms, 2001).

The spread of chicken factory farming worldwide has brought human, environmental and animal welfare problems in its wake:

“There are enough examples in the world to show where things may go wrong and what has to be done to prevent environmental disasters caused by unlimited expansions in intensive livestock production” (Zainuddin, 1995).

**Recommendation:** All chickens reared for meat should be provided with litter such as wood shavings, natural light and ventilation, and receive a minimum space allowance of no less than 1ft² per bird. Growth rates should be slowed and breeds used that are less susceptible to crippling lameness. The imposition of a minimum slaughter age of no less than 56 days should be enacted in legislation.

**Egg production**

Almost all laying hens kept commercially for egg production in the Philippines are kept in battery cages. Excluding backyard hens, about 98% of laying hens are kept in battery cages. The eggs are sold in supermarkets as “Farm Fresh” eggs.
In the battery system, hens are crammed into a cage so small that the hens cannot even stretch their wings, let alone walk, or peck and scratch at the ground. Under these conditions, hens are prevented from performing most of their natural behaviours, such as dust bathing, perching, or laying their eggs in a nest. Up to 90,000 caged hens can be crammed into one windowless shed in Europe where the cages are stacked between 4 and 9 high. Japan is said to have the world’s highest battery cage unit, with cages stacked 18-tiers high (Elson, pers comm.).

There appears to be an emerging interest in extensive egg production, and some demand for “green” eggs amongst educated, health conscious people (Dumapis, pers comm.).

**Recommendation:** Humane alternatives to the battery cage should be used for egg production. These include free range and organic egg laying systems. Battery cages will be prohibited in the European Union from 2012. Battery cages should also be prohibited in the Philippines.

**Pig Breeding & Rearing**

*Over 17 million pigs are reared and slaughtered annually. About 23% of the nation’s pig herd are bred and reared using highly intensive systems and practices.*

With over 10 million animals at any one time, the Philippines’ pig herd is substantial in world market terms. Most pigs are still raised by backyard producers, although 23% are now kept commercially, with the use of highly restrictive sow stalls and farrowing crates being common. In these systems, breeding sows are confined and cannot even turn around for months at a time.

The pig industry in the Philippines is so far less controlled by multinationals. There are a much larger proportion of backyard pig producers within the pig industry. Some backyard producers keep pigs on concrete. Some even tether their pigs, although these are usually quite long (2.5 metres is stipulated in the Animal Welfare Act) and allow the animals some degree of behavioural freedom. Tethered pigs do generally have access to rooting etc (Dumapis, pers comm.). They do not equate with the western system of sow tethering, whereby the pigs cannot even turn round.

During this study visit, a 600-sow pig-breeding unit was visited. It was using intensive production methods; sow stalls, farrowing crates, weaner cage-pens. There were 8 farrowing units or buildings, each with 24 farrowing crates each. The units were entirely open on all four sides and largely receive natural ventilation and light. A large mechanical fan at one end provides additional ventilation.

The farrowing sows were housed in standard farrowing crates, and confined the sow to the degree where turning round and exercise was simply impossible. When the piglets are born, rice hulls were provided in the farrowing crate and pen as bedding. This is a new and unique innovation on this farm. Mothering sows and their piglets do not usually receive any bedding material in intensive Filipino farms.

Piglets are tooth-clipped and sometimes tail-docked depending on the requirements of the buyer. Both are painful mutilations carried out without use of anaesthetic. Some
buyers require the tails to be clipped to distinguish those commercially reared pigs from backyard-raised animals, as these will have a different carcase quality.

Male piglets are castrated due to fears of boar taint, an unpleasant odour associated with the meat of sexually mature male pigs. This is seen as a particular problem to avoid in the Philippines where the meat is usually bought freshly slaughtered.

Weaning age for the piglets is 28-30 days. They are then reared in 74 pens containing 13-14 weaner pigs each. The pens are raised and have a slatted metal floor without bedding. The fattened pigs will be slaughtered at 5-6 months old, and will weigh 70-90 kilos (live weight).

Pregnant sows are kept in intensive sow stalls that are apparently made on the farm. These have a solid concrete floor. The use of both sow stalls and farrowing crates are common in commercial piggeries in the Philippines.

Large white x Landrace with some PIC stock were being used, and were supplied by the Pig Improvement Company (PIC). The Pig Improvement Company (PIC) only sells the breeding stock. The company also provides advice on intensive feeding and management practices. Other European companies do the same thing and see it as helping the Philippine industry to modernise.

The pig units visited were intensive, and involved total and close confinement for the breeding sows. However, the farm appeared well managed and clean.

Pig Welfare Problems

**Sow stalls** are in widespread use on intensive pig breeding farms in many countries. The sow is caged in a metal-barred stall, so narrow that she cannot turn around, let alone exercise. Typically, a stall will measure 0.6 metres wide and 2 metres long – that is just bigger than the sow herself. She is confined like this throughout her pregnancy, which lasts for nearly four months.

Confined sows suffer a range of health problems. Compared with those kept in humane alternative systems where the pigs can exercise properly, confined sows are more likely to suffer foot injuries, lameness, and long-term pain from infected cuts and abrasions. Lack of exercise leads to weakened bones and muscles. Being unable to move freely also causes greater levels of urinary infections. Heart problems too can develop.

**Farrowing crates** are highly restrictive contraptions widely used on intensive pig farms to confine breeding pigs nursing their piglets or about to give birth (farrow). Sows remain in this system for about a month at a time.

The main reason given by the intensive industry for using the farrowing crate is to prevent the sow from lying on her piglets and killing them. This problem is brought on by keeping large modern breeds of sow in tiny pens with little or no straw to build a protective nest for the piglets. Sows kept outside or in spacious, extensive systems are perfectly able to rear piglets without crushing them.
Confining the sow at farrowing prevents the animal from carrying out her strong instinct to build a large nest. Instead she shows intense repetitive behaviours, such as gnawing at the bars and pawing at the floor. She will also make strenuous attempts to escape from the crate, whilst frothing at the mouth, showing clear signs of stress.

Recommendation: The use of close confinement stalls for pregnant pigs and farrowing crates should be abandoned. Alternative loose-housing systems, where the animals are provided with manipulable bedding material should be used.

Cattle

Over 200,000 cattle are imported live each year from Australia for fattening. They are often fattened in intensive feedlot for 3-4 months before slaughter at about 26 months old. They are stocked at 2-3 m² per animal in pens measuring 10 m x 5 m, and fed on corn and spent grains. Nearly 900,000 beef cattle are slaughtered annually.

Some 300,000 water buffalo, or caribou, are also slaughtered each year. Water buffalo production has been largely a backyard venture and oriented toward providing draught animals.

The dairy industry in the Philippines has traditionally been small, with a large proportion of milk being imported. The predominant breed of dairy cow in the Philippines is the highly bred Holstein/Friesian, which often suffers welfare problems associated with excessive milk production. Dairy cattle are usually housed during the rainy season, but allowed out at other times (Dumapis, pers comm.).

Veal crates are not used in the Philippines (Dumapis, pers comm.).

Exotics

Embryonic ostrich and crocodile farming industries are now established for the production of meat, leather and feather (ostriches).

Crocodile Farming

There are at least 5-6 crocodile farms now established in the Philippines. The breeding stock has been captured from the wild. Hatchlings are contract grown by rearers around the country. Two species of crocodile are currently being farmed:

1. Saltwater crocodile – breeds at 10 years old and is slaughtered at 3 years old. These are reared for commercial slaughter for meat and hide. The meat apparently tastes like “pork with a fishy twang”. Farms anticipate replacing the current market for hides supplied from wild-caught stocks internationally.

2. Freshwater crocodile (C. minderensis) – breeds at 7-8 years old. This species is not slaughtered but is bred for conservation purposes.

Crocodiles are naturally long-lived animals, with a lifespan of 70-80 years. They are farm-reared in pens that typically comprise 40% water and 60% land. The land should ideally be divided equally between shaded and unshaded area. As crocodiles
do not digest plant food they are fed offal and fish. There has been a suggestion that
the bodies of captured stray dogs could be fed to crocodiles.

About 5,000 crocodiles are currently held at The Crocodile Farm, Palawan, where
research into trial farming methods and breeding takes place. A further 1,000
crocodiles are being reared around the country by contract growers.

Crocodiles are slaughtered commercially using the nape-stab method. This severs the
spinal cord and can cause a slow and painful death. The animals can still be
conscious of pain nearly 2 hours after stabbing (Agscene, 1990). Crocodile farmers
will not use the captive bolt stunner, as they want to preserve the skull undamaged for
sale as curios.

*Ostrich Farming*

Ostrich farming started about 3-4 years ago in the Philippines and is still at an early
stage in its development. There is one commercially successful ostrich farm in the
country, with about 200 birds. This farm is experiencing difficulties in rearing the
chicks successfully as they often die on or around the time of hatching.

*Deer*

There have been attempts made at farming deer in the Philippines, but these have not
proved successful as yet.

(Source: Dias, pers comm.)

**Livestock Markets**

*Widespread cruelty was witnessed during a brief visit to one of the nation’s largest
markets.*

A visit was made to the Urdaneta City Livestock Auction Market, Pangasinan (10.00
am – 11.30 am) on 27th May 2001. This livestock market is one of the biggest in the
Philippines. The principal species marketed here are cattle and caribou. During the
brief 1.5-hour visit here, a range of animal welfare issues was readily evident. These
were documented in detail by video and photographs, and included:

- A caribou bull that refused to enter a waiting truck was repeatedly subjected to
tail twisting and testicle squeezing, before handlers resorted to repeatedly
kicking the animal’s testicles over several minutes.
- An animal kicked in its udder to make it move
- A cattle yearling being hauled by its ear and tail onto the back of a truck with
no loading ramp
- Cattle and caribou tied too tightly to vehicles via rope through their nose rings
- A young cattle observed recumbent and overcome with stress
- Animals in overcrowded lorries and pens
- Animals being kicked and beaten
- Twisting of tails as a means of goading animals to move
- Ear pulling
• Overly-tight halters
• Loading ramps too steep for animals to board with ease
• Inappropriate vehicles being used (not purpose-built for livestock)
• No shade for cattle (provided only for yearlings and caribou)
• Often no bedding provided
• Muddy and waterlogged conditions underfoot

On the basis of this short visit, there is clearly great scope for improvement in animal welfare at livestock markets in the Philippines.

Recommendation: *The animal welfare situation at livestock markets in the Philippines should be surveyed more widely and in greater detail. Recommendations for specific reforms should then be submitted to the Animal Welfare Committee of the Department of Agriculture.*

**Slaughterhouses**

*Inhumane killing methods are still widely used in the Philippines.* So-called ‘traditional’ killing methods persist. For cattle, this involves severing the spinal cord with a “puntilla” knife, causing immobility but not unconsciousness. The animal dies from suffocation. A blow to the head from an iron bar is used to kill pigs.

Humane stunning techniques are gaining acceptance. Serious problems slowing their uptake include the cost of the equipment, difficulties in maintaining supplies of cartridges for captive bolt pistols, and a lack of training. There is scope for government, industry and animal advocates to liaise and find a solution to the availability problems of stunning equipment. Current humane slaughter legislation should be properly enforced nationally.

**Humane Slaughter Forum**

During this study visit, WSPA consultants, Steve Wotton and Philip Lymbery, participated in the Forum on Assessment of Humane Slaughter with Farm Animal Welfare Updates, held at the Animal Products Development Centre, Bureau of Animal Industry (BAI) in Manila.

Slaughterhouse attendees from each region were asked to submit a report on progress so far in their area following the 1999 course on humane slaughter. The summaries gave an interesting insight into the state of the slaughter industry in the Philippines with respect of welfare. A recurring theme throughout the reports was a difficulty in either obtaining a captive bolt pistol in the first place, or subsequently maintaining a supply of firing cartridges that are apparently difficult to get hold of in the Philippines.

Each of the following notes summarise information from a separate region of the country:

1. One region had not yet implemented humane stunning in its 2 abattoirs due to lack of will power, expertise and equipment.
2. A survey of slaughterhouses in one region showed that 6.1% were using captive bolt stunners, and 17.1% were using electrical stunners. For cattle slaughter, those facilities not using a captive bolt, which accounted for 93.9% of the total, were using the puntilla applied in the back of the animal’s neck. The puntilla is a short, thick knife used to sever the spinal cord. It does not cause loss of consciousness. Instead, it renders the animal immobile and prevents it from breathing. The animal dies of asphyxiation. The puntilla is seen in this region as the fastest and cheapest stunning method available. It is apparently used in most small abattoirs in the Philippines. Where electrical stunning is not used (82.9%), hitting the pigs on the head with a metal tube (scaffolding bar) is practiced.

3. Del Monte in the Philippines slaughters cattle at the Animal Products Development Centre (APDC), where this event took place. APDC has been using the captive bolt pistol, but cartridges are now out of stock, so they have reverted to using the puntilla.

4. Dr Diaz, City Veterinarian and Chairman of the Veterinary Inspection Board, spoke of his plant in Manila that slaughters 300 cattle per day using the captive bolt. Dr Diaz suggested that the captive bolt would only gain widespread acceptance in the Philippines if the problems of cost and availability of both stun gun and cartridges could be solved. A firearms permit is needed to hold a stun gun, another potential obstacle to the uptake of this implement.

Meat quality difficulties had been experienced when using electrical stunning of pigs rather than the iron-bar method. Haemorrhaging, blood splash and bone breakages were found. These problems can be avoided with proper use of the equipment.

5. The Monterey Foods Corp. representative told how lorry drivers delivering animals to its abattoirs are held responsible for the condition of the animals arriving at the slaughterhouse. This policy has led to a lower mortality rate, animals arriving in better condition and under less stress. Animal carts are used to transport downer animals from lorries to the slaughter hall. The company uses the captive bolt and electrical stunning equipment. The Monterey facility kills 600 pigs and 60 cattle per day. There is no on-going training in humane slaughter for its personnel as yet, although this is planned. The company has offered to open its plant for showing best practice and skill sharing with others in the meat industry.

6. Another region reported that the captive bolt stunning for cattle was being used effectively. The “pipe” or iron-bar method is still preferred for pigs. Electrical stunning has been tried but problems with blood-splash and broken bones were experienced. A considerable problem is that meat dealers often require pigs to be killed using the “pipe” method. Government assistance was requested for a campaign to educate meat dealers on this.

The iron-bar or “pipe” method is considered the traditional method of slaughtering pigs in the Philippines. ‘Wet market’ meat traders demand this method. The meat for
the wet market is slaughtered at night, bought the next morning, and consumed by the eventual customer later that day. The meat is not chilled in any way. The customer apparently wants the pig meat to be warm, dark and chewy, which is the product of a tired, stressed animal. Warm meat is already prohibited for consumption in Singapore due to hygiene fears. It is predicted that eventually, the Philippines will go the same way.

Filipinos see wet markets as one way of avoiding being undercut by cheaper imports of chilled and frozen meat from abroad, something that is a growing concern due to global trade liberalisation.

Kalookan Slaughterhouse, Manila

An evening visit was made to Kalookan slaughterhouse. The actual slaughter process was not seen.

Kalookan has been consistently awarded the national Cleanest ‘AA’ slaughterhouse award. The facilities did indeed appear clean. It is a pig slaughterhouse, killing 150 animals per day. These are usually slaughtered at 60-80 kg live weight.

Pigs were observed in the lairage. About 34 pigs were housed in each pen. Most pens had slatted floors, with one having a concrete floor. No food, water or bedding material was provided. The only water was from when the animals were sprayed. The pigs were stocked so densely that the animals in a lying position covered the floor.

The backs of the pigs showed multiple lacerations, which were made using a blade as a means of identifying the animals.

In one pen, entire males (reject junior boars) and gilts with heavily notched ears were housed in the same pen. Attempts at mating were observed.

The plant uses an electrical stunner that consisted of an electrified metal rod. Steve Wotton commented that this instrument was likely to be very inhumane, as the electrical shock from the rod would make the animal move away. It would probably take several contacts with the stunner before the pigs were actually knocked down.

Veterinary Inspection Board (VIB) Slaughterhouse, Manila

Later that evening, we visited the slaughterhouse managed by Dr Diaz, the City Veterinarian and Chairman of the Veterinary Inspection Board. The plant kills 250-300 cattle and 250 pigs per day.

Cattle were placed individually in a stunning pen, and then on this occasion, stunned using a captive bolt pistol. At first, the stunner was being applied too far up the head to achieve an effective stun. After this was pointed out, the stunner then went to far the other way. Two cattle experienced misfires in which the animals had to be hit with the captive bolt a second time.
After stunning, the animal was rolled out onto the floor, where it had its blood vessels were cut (stuck), and the blood collected into metal cans. After blood-collection, the carcase was dragged away for hoisting and dressing.

The slaughter of 3 pigs was observed using new electrical stunning tongs. This was the first time ever that the equipment had been used in this plant. The first pig was stunned badly. All three pigs were stunned in succession. Only then were they stuck. The prolonged stunning to sticking interval meant that the first animal was able to rapidly recover from the stun. The tongs were applied again before sticking.

**Live Animal Imports from Australia**

A large proportion of the cattle slaughtered in the Philippines are imported live from Australia. Live imports in 1995 amounted to over 200,000 cattle (AAFC, 1996). In 1997, a total of 239,575 cattle were imported, 98% of these from Australia. The rest came from Indonesia, Bulgaria and Argentina (CEI, 1999). Imported at 1.5-2 years old, the cattle are fattened for 3-4 months in the Philippines (often in feedlots) before slaughter.

The main beef-producing companies in the Philippines are Monterey, Del Monte, and Dielco. Meat traders and major meat producing companies have more power in the Philippines than retailers such as supermarkets. In terms of retail sales, wet markets account for about 80% of beef and pork sales nationally.

About 3,000-4,000 pigs are also imported live each year, mostly from Australia and the USA. These are purebred breeding stock, unlike the cattle, which are fattened for slaughter (CEI, 1999).

**Slaughter Statistics - Philippines: 2000**

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>NUMBER SLAUGHTERED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef &amp; Veal</td>
<td>877,290</td>
</tr>
<tr>
<td>Buffalo</td>
<td>321,000</td>
</tr>
<tr>
<td>Chickens (broilers) for meat</td>
<td>480 million</td>
</tr>
<tr>
<td>Dairy cows (cull cows)</td>
<td>9,000</td>
</tr>
<tr>
<td>Ducks (meat)</td>
<td>9.5 million</td>
</tr>
<tr>
<td>Goats</td>
<td>2.713 million</td>
</tr>
<tr>
<td>Geese</td>
<td>0.27 million</td>
</tr>
<tr>
<td>Horses (meat)</td>
<td>6,700</td>
</tr>
<tr>
<td>Sheep</td>
<td>9,000</td>
</tr>
<tr>
<td>Pigs</td>
<td>17.961 million</td>
</tr>
<tr>
<td>Turkeys</td>
<td>0.425 million</td>
</tr>
</tbody>
</table>

Source: Food & Agriculture Organisation of the United Nations (FAO), 2001
“Traditional” Practices

Dog eating, cruel chicken & caribou killing methods exist regionally. The killing of dogs for food in the Bagio area continues despite being technically illegal. Other practices still conducted in this region include ‘Pinikpikan’, whereby chickens are slowly beaten to death, and the hacking to pieces of live caribou (water buffalo).

Dogs

During a visit to the BSU College of Veterinary Medicine, Bagio, 39 dogs were seen after being seized by the police from a local restaurant just days ago. Some of the animals showed marks on their noses from having had tin cans placed tightly over their muzzle.

Pinikpikan

Pinikpikan, or “killing me softly”, is a traditional method of slowly killing chickens practiced in the Bagio Benguet province. A live chicken is held by a rope around its neck and slowly beaten to death with a stick or other hard object. This is carried out to cause blood clotting throughout the carcase. A PSPA member reported having seen a blowtorch used to remove the feathers of the apparently dead chicken.

Another traditional practice in the region is for 2 or 3 persons to kill a caribou by hacking it to pieces rather than slaughtering it humanely. The process can take several minutes (Carlos, pers comm.).

Fish Farming

Fish farming is the world’s fastest growing livestock sector. Yet the welfare of farmed fish has received little attention. In the Philippines, the trend in fish farming is toward the increasing use of floating cages in the deep China Sea. Some fish cages for Milkfish can be sited up to 10 km offshore in deep water.

Earth ponds used principally to rear Milkfish were visited during this study visit. The earth ponds are used to rear Milkfish, tilapia, shrimp, and a few crab, which are all mixed within the same ponds. Milkfish are usually hatchery reared to fingerling stage (about 5”) then transferred to the ponds. On-growing takes 3-4 months before harvest. Stocking density for the milkfish was 20,000 fish per hectare², (which equates to 15,000 m²).

The earth ponds tend to be fairly shallow with low rates of oxygenation as they are relatively still and so don’t have a fast flow of oxygenated water. This is a factor in the apparently low stocking density. Problems that can occur during the rearing stage include difficulties with regulating the water levels. Lack of oxygen and overcrowding can cause ill health. This is a particular problem during low tides. Parasitic problems include gastrointestinal infections, the parasites for which apparently come from the soil and are ingested by the fish.
Commercial fish feed rations are used. Rearing from fingerling to harvest takes 4 months. Harvest weight equals about 0.5 kg for Milkfish, which measure about 12” long (similar to Rainbow trout in Europe).

Milkfish (and presumably the tilapia) are harvested by netting them out of the water and into the back of a truck where ice is added. The fish will die through suffocation on ice. This slaughter method is recognised as being inhumane. It is widely used for killing trout in Europe. A UK government advisory body on animal welfare recommended that suffocating fish on ice should be prohibited. This followed research showing that when fish are removed from water they often still feel what is happening to them almost 15 minutes later at low temperatures. They concluded that the practice of suffocating fish on ice could unnecessarily prolong the time to unconsciousness (Kestin, et al., 1991).

POLITICAL SITUATION IN THE PHILIPPINES

The Republic of the Philippines is a constitutional democracy, with the President as Head of State and Government. The Filipino Parliament is divided into 2 houses. The upper house is known as the Senate and has 24 members. The Senate has treaty-making powers, can act as an impeachment body, and hears the national budget. The lower house the Congress – forms the house of representatives, with a maximum of 250 members. Congress deals with more regional budgeting issues and standard national legislation.

Both the Senate and Congress are elected every 3-5 years.

The Constitution of 1987 is the fundamental law of the land.

Provincial Government

The Philippines is divided into 76 provinces, each headed by a governor. The provinces are sub-divided into a total of 60 chartered cities and more than 1,500 municipalities. Mayors are the heads of cities and municipalities. Barangay captains head local units, or baranays.

Government Agriculture Department

The Philippines is a predominantly rural country. It follows that the Secretary of Agriculture is an important player in the government. Within the rural economy, livestock is an important component. Farm animal welfare falls under the responsibility of the Department of Agriculture (DA). A Government Committee on Animal Welfare was set up under the Animal Welfare Act of 1998. This Committee drafts new animal welfare legislation under the Act. The Secretary of Agriculture passes these into law after being signed/approved, without the need for further democratic discussion. Several welfare laws now exist under the Act, e.g. for pigs and animals at slaughter.

The Committee is composed of official representatives from 14 government agencies and NGOs. WSPA’s contact in the Philippines, Dr Abe Agulto, sits on this Committee. The Chairman and other members of the Committee were given a
presentation on farm animal welfare concerns during this visit, which was well received. There is great scope to work productively with the Committee.

**Committee on Animal Welfare**

Abe Agulto sits on the Government’s Committee on Animal Welfare, which was set up under the Animal Welfare Act of 1998 (Act to promote Animal Welfare in the Philippines). This Committee is attached to the Department of Agriculture, and drafts and issues rules and regulations under the Act. Proposed new rules, of course, need the approval of the Secretary of Agriculture who signs them before they are passed into law without the need for further democratic discussion.

The Committee is composed of official representatives from 14 organisations; 6 on behalf of government agencies, and 8 NGOs:

*Government agency representatives:*

- Dept of Interior & Local Government (DILG) (enforcement authorities)
- Dept of Education, Culture and Sports (DECS)
- Bureau of Animal Industry (BAI) of the Department of Agriculture
- Protected Areas and Wildlife Bureau (PAWB) of the Department of Environment and Natural Resources (DENR)
- National Meat Inspection Commission (NMIC) of the Department of Agriculture
- Agricultural Training Institute (ATI) of the Department of Agriculture

*Non-Governmental Organisations:*

- Philippine College of Canine Practitioners (PCCP) (*represented by Abe Agulto*)
- Philippine Society of Swine Practitioners (PSSP)
- Philippine Society of Animal Science (PSAS)
- Philippine Veterinary Medical Association (PVMA) (*Abe is on the PVMA Council*)
- Philippine Animal Welfare Society (PAWS)
- Philippine Society for the Prevention of Cruelty to Animals (PSPCA)
- Philippine Animal Hospital Association (PAHA)
- Veterinary Practitioner’s Association of the Philippines (VPAP)

Delegates from each organisation are appointed on an annual basis for a fixed 12-month term.

Under the terms of the Animal Welfare Act, the Committee is chaired by a private sector representative, who has 2 vice-chairpersons composing of a BAI representative and another from the private sector. The Committee meets quarterly, or more regularly if the need arises.

Violations of the Act are punishable by up to 2 years in prison or a fine.

**Supermarkets**

There has been a steady growth of western-style supermarkets in the major urban areas, and now represent an important part of the urban retail scene in the Philippines.
During a 3-5 year period to 1996, 20 new supermarkets opened in the Metro Manila area alone. Major chains include Shoemart, Uniwide, Tropical Hut, Evre, Rempson, Plaza Fair, Robinsons, and South. American processed food products are well represented in these Philippine supermarkets (AAFC, 1996).

Hi-Top supermarket in Quezin City, Manila was visited during this study. The layout and many of the products and brands were similar to those found in supermarkets in the UK or USA. On the fresh meat counter, the Monterey Meat Company had a sign assuring customers that none of its beef came from Europe due to fears over BSE. It stated that 95% of its beef is imported live from Australia, with the rest made up of frozen imports. Also evident was a sign claiming that the products did not come from animals affected by Foot & Mouth disease. This consisted of a red roundel like a European traffic sign, with “FMD” in the middle and a red line through it.

The egg shelf had only battery eggs available. These were pre-packed and labelled as “Farm Fresh” eggs. Also available were “Farm Fresh” quail eggs.

Interestingly, Hi-Top had a separate section, rather like a separate small shop within the shop, selling alternative medicines and natural cosmetics. This seemed a strong indication of a demand for naturally produced, alternative products, at least in this part of the Philippines. Perhaps this could be used as a hook for promoting extensively produced farm animal products.

**Fast Food**

Fast food restaurants have rapidly gained popularity in the Philippines. Australia is the major source of hamburger meat for leading chains, whilst fish ingredients for McDonald’s are sourced from New Zealand. Fast food restaurants are mostly franchisees of multinational/American chains such as McDonald’s, Wendy’s, Pizza Hut, Dunking Donuts, KC and A&W. Local chains such as Jolly Bee, Galibi Foods Corp., and Burger Machine have largely relied on ingredients produced in the Philippines (AAFC, 1996).

**Feed Imports & Sustainability**

There is concern at the impact of intensive animal rearing on rural communities and national food security in the Philippines. One such concern is the increased consumption of imported grains by livestock.

Consumption of corn by Filipinos has declined in recent years. A contributory factor has been the increasing use of corn as livestock feed for intensively farmed animals. Demand for processed feed for livestock has been growing by 5-10% per year. This trend is predicted to continue as meat demand expands. Government policy has led to a situation whereby imported food grains for direct human consumption have been diverted to produce feed for farm animals. Government sources have indicated that this practice has been extensive (AAFC, 1996).

The area of land available for agriculture is reducing due to pressure from urbanisation and industry. Much of the prime agricultural land currently available is used to grow export cash crops to service the international debt. The expansion of
high value crops for export at the expense of food crops for domestic consumption has weakened the country’s capacity to feed its growing population from its own agricultural resources. A delegation from the UK-based Farmer’s World Network took part in an exchange programme between farming communities in the UK and the Philippines. They concluded, “State policy and action [in the Philippines] has to intervene in a comprehensive development programme for the sustainability of domestic agriculture and food production” (FWN, 1999).

**OFFICIAL VISION FOR AGRICULTURE**

A speech by Mr Cesar Drilon, the Undersecretary for Agriculture in the Philippines (1st June 2001), gave a valuable insight into the official vision of food and farming for the nation.

An initial overview of the current situation was given. The Philippines livestock industry is predominantly backyard/smallholder-based, with this type of production accounting for 80% of the nation’s agriculture. It is resource-based, and principally focussed on primary production. It receives a low level of investment, both in terms of the public and private sectors.

Livestock, including poultry, contribute 29% of the total volume of agricultural production in the Philippines. Livestock is seen as the saving grace of Philippines agriculture in times of crisis. Rice and corn make up 22% by volume, fisheries 16%, and other crops, 33%.

The priority goals of the Department of Agriculture were identified as; food security; increased incomes; and people empowerment. The Department of Agriculture’s Livestock Development Plan has specific roles in achieving these goals:

- To provide resources; technical, regulatory, marketing, education and to facilitate financing in the livestock sector
- To provide policy support

One of the focuses of the Livestock Development Plan is genetic improvement of livestock breeds. The Philippines has received expert guidance from the USA on genetic improvement in livestock. The USA is also exporting genetic stock for cattle to the Philippines as part of the development program.

Amongst a range of programmes mentioned, those of particular pertinence included a biotechnology programme involving “test-tube caribou”, a multiple ovulation embryo transfer-IVF programme for livestock, and an array of investment and development programmes for the dairy industry.

**Animal Health & Regulation**

Foot & Mouth Disease (FMD) is a major concern in the Philippines. The national target is to be FMD-free by 2004. Mindanao became FMD-free in 2000. Luzon remains a significant FMD problem area. Other disease problems include Fasciola, hog cholera, hemsapal, etc.
The government is to provide marketing assistance through public education programmes. The aims are for “increased egg consumption” and “increased meat consumption”. The latter program has recently received something of a setback due to the BSE scare, which caused a major dip in beef consumption in the Philippines. The programs will introduce information on the need for high quality protein, and sources of it.

According to Mr Drilon, agriculture in the Philippines has performed poorly compared with other countries in the Southeast region. This is blamed on low investment in R&D. The US Department of Agriculture is giving strong support financially to the Philippines DA for human resource development in agriculture.

**Overall Goals of the Department of Agriculture, Philippines**

*The Philippines Department of Agriculture is “heading towards…”*

- **Smallholder based, viable and sustainable livestock enterprises**
- **Globally competitive enterprises**
- **Food security in livestock products**

**FUTURE STRATEGY FOR FARM ANIMALS IN THE PHILIPPINES**

The key goals of the Philippines’ Department of Agriculture show that humane policy advocacy based on sustainable, small-scale, mixed agriculture is in keeping with at least some areas of political thinking.

*Recommended Strategy for Humane Reform*

To place farm animal welfare as an integral part of a sustainable agriculture that produces quality food at affordable prices without destroying the environment or compromising food security in the future. Within this context, a positive programme for reform can be undertaken, advocating humane farming methods and practices, without appearing out of place in a country facing serious human welfare challenges.

**PHILIP LYMBERY**
Animal Welfare Consultant
July 2001

Acknowledgements: Grateful thanks to Dr Aberlado Agulto for his invaluable help, input and organisation throughout this study visit. Thanks also to the sponsor, the World Society for the Protection of Animals (WSPA), WSPA colleagues who gave help and advice for the trip, and to the many members of the Philippine Society for the Protection of Animals (PSPA) who offered help and support along the way.
References


CEI, 1999. Foot & Mouth Disease, Philippines, September 1999 Impact Worksheet. Center for Emerging Issues, USDA.


Dumapis D., pers comm. BSU College of Veterinary Medicine, Bagio, Philippines. Personal communication, 26th May 2001.


