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INFPD Newsletter Editor-in-Chief:

Dr. E. Fallou Guèye, Senegalese Institute of Agricultural Research (ISRA), B.P. 2057, Dakar RP,
Senegal, E-mail: <efgueye@refer.sn>

INFPD Coordinator:

Prof. E. Babafunso Sonaiya, Department of Animal Science, Obafemi Awolowo University, Ile-Ife,
Nigeria, E-mail: <fsonaiya@oauife.edu.ng> or <fsonaiya1@yahoo.com>

CONTENTS

Editorial	1
Family poultry must no longer be a 'hidden harvest' - E.F.Guèye	1
Research Reports.....	3
Muscovy ducks (<i>Cinahanh</i>): a boon to rural tribal women of Assam, India - N.Kalita & R.Deka	3
A review of poultry development in Bhutan - K.Nidup, P.Dorji & Penjor	8
Village poultry, food security and HIV/AIDS mitigation - R.Alders, B.Bagnol, M.Harun & M.Young	15
Impact of avian influenza outbreaks in the poultry sectors of five South East Asian countries (Cambodia, Indonesia, Laos PDR, Thailand, Vietnam), outbreak costs, responses and potential long term control - J.Rushton, R.Viscarra, E.Guerne-Bleich & A.McLeod	16
Abstracts of selected papers on poultry production presented at the 11th International Conference of the Association of Institutions for Tropical Veterinary Medicine & 16th Veterinary Association Malaysia Congress in Petaling Jaya, Malaysia	18
Economics of smallholder commercial poultry production in Sefwi-Wiawso District - A.N.Akunzule....	18
The economy of different poultry production systems under Kenyan conditions - S.W.Njue	18
Constraints to peri-urban poultry production in Senegal - M.Cissé, E.Cardinale, C. Ly, E.F.Guèye, A.Dieng & A.Sow	19
The "Pros" and "Cons" of a sustainable approach to increase income from rural poultry production - K.Benabdeljelil, P.Johnston, T.Arfaoui & E.Karari	19
Epidemiology and control of avian influenza - J.A.Stegeman & A. Bouma	20
A new approach in Newcastle disease control in village chickens (Senegal) - A.Missohou, P.N.Dièye & A.Faye	21
Prevalence of <i>Libyostrongylus douglassii</i> in commercially reared ostriches in the Highveld Region of Zimbabwe - S.Mukaratirwa, Z.M.Cindzi & D.B.Maononga	21
Development Report	22
Yua women's poultry project	22
Publications	26

Prevention and Control of Avian Flu in Small-scale Poultry: A Guide for Veterinary Paraprofessionals in Cambodia	26
Proceedings of Workshop for the Dissemination of Research and Development Results on Small Ruminants and Traditional Poultry Farming in West Africa.....	26
Participatory Livestock Research: A Guide	27
News	28
4th International Poultry Show and Seminar in Dhaka, Bangladesh	28
Providing travel assistance for young WPSA members and students to participate in regional and global WPSA conferences.....	30
ISA Warren for free-range systems.....	30
International Diary	31
International Smallholder Poultry Workshop in Copenhagen, Denmark [30-31 August 2005]	31
4th All Africa Conference on Animal Agriculture in Arusha, Tanzania [20-24 September 2005].....	32
6th Global Conference on the Conservation of Domestic Animal Genetic Resources in Magaliesburg, South Africa [9-13 October 2005]	33
3rd International Waterfowl Conference in Guangzhou, Guangdong Province, China [3-6 November 2005] .	34
6th Iberoamerican Symposium on Conservation and Utilization of Indigenous Animal Genetic Resources in Chiapas, Mexico [7-10 November 2005]	35
12th International Conference of the Association of Institutions for Tropical Veterinary Medicine in Montpellier, France [August 2007]	36
Announcements.....	36
Bob Pym as FAO Visiting Scientist	36
Search for Collaborators in China	38

Editorial

Family poultry must no longer be a ‘hidden harvest’

E.F. Guèye

Editor-in-Chief

According to statistics of the Food and Agriculture Organization of United Nations (FAO, www.fao.org), the world human population was estimated in 2003 to be 6,301.5 million, with 78.9% living in developing countries (DCs), while the livestock population statistics indicate poultry to be the most numerous species of farm animals. In 2004, the world’s total poultry population was estimated to be 16,194.9 million chickens (with 71.6% in DCs), 1,019.5 million ducks (92.6% in DCs), 262.2 million geese (93.1% in DCs) and 276.2 million turkeys (21.3% in DCs), producing 67,718,544 metric tons (MT) of chicken meat (55.1% in DCs); 3,245,102 MT of duck meat (84.1% in DCs); 2,130,239 MT of goose meat (95.7% in DCs); 5,113,838 MT of turkey meat (8.8% in DCs); 17,508 MT of meat of pigeon and other birds (94.3% in DCs); 57,861,747 MT of hen eggs (67.3% in DCs) and 4,914,339 MT of eggs, excluding hen eggs (98.0% in DCs).

All over the developing world, the keeping of poultry by local communities has been practised for many generations, and all ethnic groups tend to be involved in family poultry (FP) production. FP have been a traditional and integrated component of most rural, many peri-urban and some urban households or small farms, and this is likely to continue in the foreseeable future. It has been estimated that more than 80% of the total poultry population are kept in traditional family-based production systems and contribute substantially to annual egg and meat production (up to 90% in many DCs). In addition to providing farmers with eggs and meat for their home consumption, the sale (or barter) of poultry products enables poultry producers to obtain money to spend on their own and family needs. Moreover, FP have a symbolic function and are closely linked to the social and cultural activities (e.g. special banquets for distinguished guests, gifts, cocks as alarm clocks for the villagers) and/or religious ceremonies (e.g. cocks as offerings to the deities) of several million resource-poor farmers, especially women. Poultry ownership ensures varying degrees of sustainable farming and economic stability for these farmers by minimizing risks and strengthening the cohesion within local communities. On the whole, FP farming can be seen as an appropriate tool to alleviate poverty, secure food, generate productive employment, and promote gender equality and well-being for the human population, especially in underprivileged groups and less-favoured areas of DCs.

Despite the high importance of FP in DCs, this low-input poultry sub-sector does not receive due attention from many agricultural policy makers (including livestock specialists). Small-scale poultry farming is not yet regarded by many researchers, development and extension workers as an area of importance in terms of political significance or scientific prestige. As a result, the FP sub-sector is generally overlooked in official national statistics of many DCs. What can be done to make FP more visible? Some actions can be suggested. INFPD members are thus invited to sensitize local authorities in their respective countries of domicile with regard to the urgent need to collect data on the FP sub-sector, and these data must be part of the official statistics published in national live-

stock annual reports. FP development in DCs must be seen as an integral part of the national development policy as a whole. Therefore it is essential to inform agricultural policy makers (including livestock specialists) about FP. INFPD members, who are doing research on FP, must not only publish in poultry-specialised journals, but also must submit their works for publication in journals devoted to domestic animals in general. Similarly, FP workers (researchers, development agents, extension workers, etc.) must also attend congresses, conferences, symposia and workshops devoted to domestic animals in general. This helps to reach a wider audience to plead the cause of FP in such gatherings where participants are often not familiar with FP issues. Other people who are not knowledgeable about FP (i.e. researchers, livestock specialists, veterinarians, development agents, extension workers, communicators, planners, policy makers, etc.) must comprehensively and properly be informed about the true status and potential of the FP sub-sector in DCs. It is encouraging to notice that FAO, while being strongly committed to support FP development, is designing, formulating, implementing and monitoring several studies to assess the importance and productivity of FP sub-sector in DCs.

Happy and thoughtful reading!

Research Reports

Muscovy ducks (*Cinahanh*): a boon to rural tribal women of Assam, India

Niranjan Kalita¹ and Rameswar Deka²

¹ *Department of Poultry Science, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati – 781022, Assam, India, E-mail: <niranjankalita2004@yahoo.co.in>*

² *Dairy Development Department, Government of Assam, Assam, India, E-mail: <dekarameswar@yahoo.com>*

ABSTRACT

A study was undertaken on the rearing of Muscovy ducks by tribal women in rural areas of Assam, India. Muscovy ducks are traditionally reared for economic uplifting of vulnerable sections of rural communities in India, especially among tribal women of Assam. Results, with respect to geographical area, climate, demographic and livelihood pattern, food habits of tribal people, behaviour of Muscovy ducks during scavenging, husbandry and feeding practices, production performance, incidence of disease and management-related problems of ducks under rural farming conditions, marketing, carcass yield and cost of production and profit, were highlighted.

Key words: India, Muscovy duck, scavenging

1. INTRODUCTION

Assam is famous for the different indigenous breeds of duck reared under traditional system. The state has a duck population of 4.99 million (Livestock Census 1997), out of which the Muscovy duck population is only 1.66%. Although the eastern and north-eastern parts of India comprise the major portion of the country's duck population, a survey report on Muscovy duck farming in these regions is not adequate. There are several tribes in Assam such as *Bodo, Kachari, Mising, Karbi, Dimasa, Rabha, Tiwa*, etc. All these communities mostly depend on agriculture, animal husbandry and forestry for their employment, livelihoods and existence. They are generally resource-poor and unskilled. Tribal women are hard workers, and they would like to contribute equally with their male counterparts. With steady population growth and shrinkage of agricultural land, livelihood becomes a challenge for local communities, which become more dependent on livestock, especially pigs and poultry (ducks) under backyard system. Muscovy ducks show various advantages, i.e. taste of coloured meat, good flavour in comparison to meat of other ducks, low fat content, adaptation to various conditions and environments for rearing and breeding and high percentage of edible meat (Leclercq and De Carville, 1985). Thus, these birds allow tribal women to get good value and profit. This attracts tribal women to rear Muscovy ducks in rural conditions as one of the main tools in income generation. Predominant plumage colours of Muscovy ducks are white, black and mixture of black and white. Ducks, whose plumage is white-coloured, are usually smaller in size in comparison to ducks that have feathers of other colours. Panda and Padhi (2004) also reported that Muscovy ducks are mainly reared in tribal districts of Orissa and Assam. The present study examines the rearing of Muscovy ducks by tribal women of Assam with respect to geographical area, climate, demographic and livelihood pattern, food habits of the tribal people, behaviour of Muscovy duck during scavenging, husbandry and feeding practices, production performance, incidence of disease and management-related problems of ducks in rural conditions, marketing, carcass yield and cost of production and profit.

2. MATERIALS AND METHODS

2.1. Description of site

The state of Assam is spread over a geographical area of 78,438 km². It has a warm and humid climate with hot summer followed by the monsoon season of heavy rainfall and a relatively cool winter with scanty rainfall. Average rainfall is as much as 2043.8 mm and is mostly concentrated between June and September. The descents of the rivers and its tributaries from the surrounding hill lead to heavy erosion and flood in every year and deposit silts on the alluvial plains.

2.2. Demographic and livelihood pattern

The total population of Assam as per the 2001 Census was 26,638,407 persons out of which 87.3% lived in rural areas. The population density was 340 per km², compared to the national average of 324. Decadal growth (1991-2001) of human population in Assam was 18.8%, compared to 21.3% in the country. Literacy rate was estimated at 64.3%, compared to the national average of 65.4%. Female literacy is comparatively lower than male literacy. The tribal people are lagging behind than other human groups in all spheres of life.

As per the 2001 census, out of the total human population in Assam, 26.6% were main workers, 9.3% were marginal workers and the remaining 64.1% were non-workers. The percentage of female non-workers was higher than male non-workers, and the participation of female workforce was higher in tribal-dominated districts. Out of total workers, 39.2% were cultivators, 13.5% were agricultural labourers, 3.4 % were household and industrial workers and the remaining 43.9% were other workers. Duck rearing under backyard system is a common practice among the tribal people. They rear Muscovy ducks as a supplementary household activity, and income generated out of it mostly accrue to women and children. Thus, the tribal women get some level of economic independence within the family through Muscovy duck rearing. This is in conformity with Kaiser (1990) who observed that village chicken production in Niger has been reported to produce higher income than minimum labour wage. Veluw (1987) also reported that village poultry in Ghana are estimated to contribute over 15% of the household cash income.

2.3. Food habits of the tribal people

Tribal people are mostly non-vegetarian and they mostly prefer pork, chicken and duck meat as the primary source of animal protein. They are not habitual milk drinkers and so cattle rearing among them are not very popular. All the tribal people used to drink home-made wine along with pork or chicken or duck meat and residue of wine is offered to pigs and poultry (chickens and ducks). So, there is good demand of pork, chicken and duck among them even in remote villages.

2.4. Sampling and statistical analysis

The study was conducted in 25 tribal villages selected randomly from all the agro-climatic zones of Assam, India. Duck farmers (tribal women) are identified along with locations with the help of Animal Husbandry and Veterinary Officers of the selected villages.

After completion of the list of duck farmers in each village, they were selected on the basis of their flock size. A

tribal woman who had a minimum of 12 ducks was considered as a duck farmer for the present study. A total of 100 farmers were selected by following the sampling technique of Lahiri (Snedecor and Cochran, 1989). The required information from the tribal women was collected by means of questionnaires, personal interviews and household records. Ducks were slaughtered according to improved Kosher Method. Collected data were tabulated and analyzed using standard statistical methodology.

3. RESULTS AND DISCUSSION

3.1. Behaviour of Muscovy ducks during scavenging

During the time of rearing of Muscovy ducks under scavenging conditions, their behaviour was also observed. It was found out that all the ducks scavenge together and did not mixed up with other birds. They did not hesitate to go near to the people, and they used to go to the kitchen or the places where leftover rice, vegetables, snails, earthworms, insects, etc. were available.

Studied Muscovy ducks went for scavenging at any time of the day but during hot hours they took rest under the shoots, shrubs, trees, etc. Predators sometimes attack birds during this period. Moreover, ducks cannot run faster, and they therefore could easily be tapped up by predators.

3.2. Husbandry and feeding practices

The flock size varied from 12 to 35 ducks per household. On average, tribal women maintained female to male ratio of 4 in their flocks. A similar sex ratio was also reported by Sauveur and De Carville (1985). They hatched out the ducklings through natural incubation that is either through the broody ducks or drakes. Panda and Padhi (2004) reported that both male and female Muscovy ducks take part in incubation and brooding process. Panda and Kumar (2004) reported that Muscovy ducks have extraordinary brooding capacity and are good mothers to raise their own ducklings. Each duck broods on average 10-15 eggs. The eggs were hatched so as to synchronize with the paddy harvesting seasons, namely January to February and April to June. However, Mahanta *et al.* (2001) reported that eggs were hatched only during the months of April to June. No candling is done during incubation period. Tribal women claimed that apparent hatchability rate is estimated at 75.0% when broody ducks are used. However, Sauveur and De Carville (1985) reported an average hatchability of 80.0%.

No artificial brooding was used to brood ducklings. Ducklings were raised in a room on paddy straw. Birds were then reared by farmers around their houses for about 2-3 weeks after which they were released and allowed to scavenge freely with their mothers. At night, ducklings were housed in small rooms enclosed by wooden or bamboo mats. Adult ducks were kept under free-range rearing system in which the birds were let loose in the morning after the eggs were collected and returned home in the evening only. Similar patterns of free-range duck rearing were reported in Andhra Pradesh (Rithamber *et al.*, 1986) and in Assam (Mahanta *et al.*, 2001). Moreover, Panda and Padhi (2004) reported that Muscovy ducks are good foragers and thrive well with limited water. Panda and Padhi (2004) as well as Panda and Kumar (2004) reported that Muscovy ducks are reared by tribal and landless labourers near the natural water streams in districts like Koraput and Kalahandi. During the night time, they were gathered on an elevated area within a 60 to 90 cm high open bamboo compound. Tribal women used hay as a bedding material for all birds and in nest boxes for laying ducks.

Ducklings were provided with cooked rice, broken rice, rice bran, crushed fish and snail up to 15 days of age. Thereafter, they were fed on kitchen waste, paddy grains and cooked vegetables in addition to the feed resources consumed from scavenging. Main sources of feed for adult ducks were rice leftovers, vegetables, post-harvested paddy fields for grains, ponds and waterlogged areas for fish, snails, insects, earthworms, caterpillars, termites, etc. This is in agreement with observations made by Ravindram (1983) and Reddy (1987) for feeding of adult ducks.

3.3 Production performance

The age at sexual maturity for Muscovy ducks ranged from 300 to 365 days. Similar results were also reported by Avanzi and Romboli (1979) and Mahanta *et al.* (2001) for age at sexual maturity. However, sexual maturity of both sexes of Muscovy duck was reported to be 20-24 weeks (Panda and Kumar, 2004) and 29-30 weeks (Sauveur and De Carville, 1985). It was recorded that annual egg production is 45-60 eggs, with an egg weight ranging from 75 to 80 g. Egg shell colours were usually white or reddish. This is in conformity with findings reported by Mahanta *et al.* (2001) for egg production. Sauveur and De Carville (1985) reported that Muscovy duck egg weight of ranges from 77 to 83 g. Panda and Padhi (2004) reported that Muscovy ducks lay few eggs. However, Panda and Kumar (2004) reported that Muscovy ducks lay as many as 150-200 eggs or even more than 190 eggs during their laying cycle. Male Muscovy ducks usually reach a live body weight of 3.2 to 4.3 kg at about 12-14 weeks of age. Adult body weight ranged from 4.5 to 6.4 kg per drake and from 2.2 to 3.0 kg per duck. Similar body weights were also reported by Panda and Kumar (2004). Tribal women observed a peculiar habit of Muscovy ducks indicating that they did not lay eggs as long as ducklings were with their mothers. However, ducks started laying eggs as soon as ducklings were separated from their mothers and sold out.

3.4. Incidence of diseases, mortality pattern and management-related problems

The most common diseases were duck plague, duck cholera and duck pox. Mortality was 8-20% in ducklings and below 7% in adults. However, Sauveur and De Carville (1985) reported only 1 to 3% mortality in Muscovy ducks during laying period. No medicine and vaccines are usually used by most duck farmers. However, occasional health protection offered by some farmers included vaccination against duck plague and treatment using common antibiotics and local vodka. Tapped-up of ducklings by predators is also a major constraint during growing period.

3.5. Carcass yield

Muscovy ducks were slaughtered at 10 weeks of age for females and 11-12 weeks of age for males. The dressing percentage of Muscovy ducks varied from 68 to 74%. However, Leclercq and De Carville (1985) reported that dressing percentage in Muscovy ducks ranges from 64.8 to 66.1%. The meat is dark-red with gamy flavour and resembles the meat of game birds. Panda and Padhi (2004) as well as Panda and Kumar (2004) also reported that Muscovy duck meat has excellent brownish colour with gamy flavour. The protein content is high. Breast muscle contains 21% protein. The fat content of duck meat is low and found to be 6%, in comparison with 18-19% for other species (Bhatt, 1992).

3.6. Marketing

The main purpose of rearing Muscovy ducks is to produce meat. However, produced eggs and ducks (growers,

drakes and spent ducks) were sold either at local markets or at farmers' doorsteps to individuals and local traders. This is in agreement with findings by Nind and Tu (1988). Marketing channels mostly involved are either producers to consumers or producers through middlemen to consumers for selling both duck eggs and meat. Similar observations were also made by Khan *et al.* (1994) in Andhra Pradesh.

3.7. Cost of production and profit

The cost of rearing a grower from hatch to 12 weeks of age averaged Rs. 47.24 [47 Indian Rupees (Rs.) are equivalent to US\$1] and net return per grower was Rs. 32.56. Similarly, the cost and return from rearing an adult duck were calculated to be Rs. 232.07 and 58.90, respectively. The net profit in the present study was found higher than those recorded in the findings of Ravindran (1983), Rithamber *et al.* (1986) and Reddy (1987).

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A review of poultry development in Bhutan

K. Nidup*, P. Dorji and Penjor

Natural Resources Training Institute, Faculty of Animal Husbandry, Royal University of Bhutan, Lobesa, Thimphu, Bhutan

*E-mail: <kn@druknet.bt> or <eeunidup@hotmail.com> or <nrti-dir@druknet.bt>

ABSTRACT

Poultry farming is one of the important livestock farming components in Bhutan. This paper reviews poultry breeding and development approaches adopted by Bhutan for over four decades. It proposes a way forward to a sustainable poultry breeding and development programmes in Bhutan.

The poultry development programme started in Bhutan in 1961 together with the launch of the first five-year plan. The main aim of the programme was to improve nutrition of the rural human population and alleviate poverty through increased egg and meat production. The programme also aimed at completely replacing the local chickens with exotic and improved breeds, which are believed to be more productive. Since 1961, Bhutan implemented five different poultry development strategies, including the present approach.

The analysis of available records and chicken population data suggests that Bhutan has not made any significant progress in the areas of poultry breeding and development programmes. Therefore, it is very important that Bhutan reviews its breeding policies and strategies. For this, research on indigenous chickens that could be used as basal germplasm for sustainable poultry breeding and development is very important.

Key words: Bhutan, breeding, indigenous chicken, poultry

INTRODUCTION

Bhutan is a small, developing, mountainous and mainly an agricultural country with livestock rearing as an important component of the whole farming system. More than 79% of the total population lives in rural areas. Bhutan can be divided into six agro-ecological zones, namely sub-tropical (wet, middle and dry) and temperate (cool, middle and warm). In all these zones, domestic chicken (*Gallus domesticus*) is found to be one of the important livestock components. The nation-wide renewal natural resources (RNR) census conducted by the Ministry of Agriculture (MoA) in 2000 also suggests the presence of poultry in the alpine region of the country. It is estimated that over 63% of the Bhutanese households in rural areas raise chickens (RNR Census, 2000). Poultry provides egg, meat, feathers, and manure to farmers. It is an integral part of Bhutanese farming system, many of which are operated at a subsistence level.

The main objectives of this paper are to review all the poultry breeding and development approaches adopted by Bhutan for over four decades, and propose a way forward to the sustainable poultry breeding development programmes in Bhutan.

WHAT DOES POULTRY MEAN TO BHUTANESE?

Technically, 'poultry' is a collective term for those species of birds that have been domesticated to reproduce and grow in captivity and that render products of economic value. They include varied species such as chickens, turkeys, ducks, geese, pheasants, pigeons, quails, etc. In Bhutan, the terms 'poultry' and 'chickens' are interchangeable as the only type of poultry reared and recorded are chickens. Only few ducks are found in southern Bhutan.

Before the first five-year plan (1961-1965), the only poultry birds known to Bhutanese farmers were age-old flocks known as *Yubjha* meaning 'village chickens' because of the roles they play in village life. The term 'village chicken' has been adopted by a number of rural poultry development scientists to differentiate the local/indigenous/scavenging/free-range chickens from the exotic or introduced chickens as well as from the small-scale intensive chicken production systems practised in rural areas (Kitalyi, 1997). From here on, the commercial breeds introduced into Bhutan will be referred to as 'exotic chickens' while crosses with local chickens are known as 'improved chickens' which are supposed to be an upgraded form of local chicken with good blend of superior traits from both parents.

POULTRY DEVELOPMENT APPROACHES IN BHUTAN

The history of breeding and development of poultry in Bhutan is as old as the five-year developmental plans that started in 1961 (Rai, 1987). Since then, the Royal Government of Bhutan (RGoB) has initiated five different approaches towards rural poultry breeding and development strategies.

First, the RGoB established poultry farms, one in each of the three locations Samtse, Paro and Wangchutaba (Thimphu) during the first five-year plan period (Sherpa, *personal communication*). *Rhode Island Red (RIR)* and *Australorp*, both imported from Bhubaneswar, India, were the first exotic breeds introduced in Bhutan. The main objective of this approach was to generate lines of improved birds or F1s (progenies of Local *versus* Exotic or *vice versa*) in the hope that they would be better egg producers compared with the pure local breeds. The goals were to improve the nutritional standards of the rural human population by supplementing additional protein-rich food through increased availability of eggs and poultry meat. Poultry production was also aimed at increasing income and alleviating rural poverty (Rai, 1987). However, this strategy was not very successful and is believed to be mainly due to outbreaks of diseases, particularly in those areas that are close to the Indian border (John Blake, FAO BHU/82/012 Poultry management consultant report, quoted by Sherpa, *personal communication*).

A second approach was initiated in 1984 with the establishment of a new poultry farm at Sarpang, where pure *RIR* parent lines were stocked. Although the overall goal remained the same, the main strategy was to supply male stocks to farmers for crossbreeding with local hens and to make available "fertile or hatchable" eggs for natural incubation under broody local hens (Sherpa, *personal communication*). Along with this, the policy of

distributing exotic males in exchange for local males (Rai, 1987) was also implemented. However, even with this incentive, programme did not make any impact on the human population or the development of improved rural chicken populations. The cockerel distribution programme has failed completely because areas under operation could not get rid of local cockerels to a certain extent (Rai, 1987). Thus, possible mating between local male and female birds could not be avoided. The record on the failure of “hatchable egg” programme is not available but presumably the failure could be attributed to many factors (fertility, temperature, sanitation, handling) governing the hatchability of eggs. Unless farmers are aware or advised on adverse effects of such factors, the programme is mostly likely to fail.

Thirdly, taking into account the egg production potential, purebred *White Leghorn (WLH)*, the third exotic breed was introduced to increase egg production in the villages. Although *WLH* is without doubt a prolific egg-producing Mediterranean breed, it could not capture the taste and eyes of the Bhutanese farmers. The reasons were that *WLH* chickens are small in body size as compared to the previously introduced breeds, were susceptible of attacks from predators, diseases, and above all they were poor scavengers and could not thrive under village conditions. A study in Ethiopia (Demeke, 2003) suggests that mortality from hatching to maturity was higher for *WLH* than for local chickens kept under scavenging conditions, indicating that exotic chickens are subjected to considerable hazards of diseases, parasites and predators. As a result, another or fourth approach had to be explored.

Fourthly, the MoA imported day-old chicks of parent stock, *380 BV* strain, developed in Bhubaneswar, India. They were reared and bred at two regional breeding farms (Khangkhu Poultry Farm at Paro and Lingmithang Poultry Farm at Mongar) to produce brown pullets known as “*Bayla*” that lay brown eggs. The chicks were identifiable through colour sexing at day-old (males have white plumage). These young birds were usually dumped unless there was a demand to distribute them to farmers free of charge. The brown pullets are distributed to farmers at 8 or 12 weeks of age. According to Sharma (*personal communication*) and other poultry scientists, this approach was initiated mainly because Bhutanese farmers prefer coloured birds to previously distributed white line. Birds of *380 BV* strain have good body conformation, lay brown eggs, are more efficient scavengers, and are better able to defend themselves against flying predators and other wild animals. However, the question is still being asked if *380 BV* brown layer strain can continue to be used for crossbreeding purposes. The pedigree and the breed information on this particular strain are not available, and it will never be known because of trade right reasons. In addition, it is found to be poorly adaptable to most village conditions, less broody, sits poorly on eggs during incubation and shows poor overall reproductive efficiency at village level.

Along with this fourth strategy, an attempt to supply parent stocks to farmers was made in 1999 by importing pure line *RIR* “hatchable” eggs from the Netherlands. The eggs despatched from the Netherlands were halted three days in Bangkok, Thailand, without any cooling facilities during the hot summer months. Additionally, the eggs were not properly handled as fertile eggs. As a result, many eggs had cracked shells. The quality of the chicks hatched from the remaining eggs was not encouraging. Therefore, this attempt to supply pure line *RIR* parent stocks to farmers could not be realised.

Looking at the number of birds distributed to the farmers and the chicken population trend over the years (Table
INFPD Newsletter Vol. 15, No. 1

1 and Figures 1 & 2), Bhutan has not made any significant progress in the poultry breeding and development strategies. In all these approaches, the crossbreedings of exotics with native chickens or *vice versa* were left to farmers only, and many of whom did not have sound knowledge on supplied birds as well as required breeding knowledge and skills. Farmers relied mostly on random natural mating rather than planned crossbreeding strategy in poultry. Although diseases are a major limiting factor, there was also lack of professional extension intervention, with poor delivery of rural poultry husbandry techniques and breeding programmes. This may be due to lack of professional human resources and lack of proper cross-breeding coordination at the central level.

In spite of all these experiences, the fifth approach included in the rural poultry development plan of the ninth five-year plan (MoA, 2001) has been recently initiated. This approach is somehow repetition of the earlier development plan with very little modification. According to MoA (2001), the Government will import day-old chicks of brown layers, rear them at the two regional farms, and distribute them to farmers at 8-12 weeks of age. Together with this strategy, a pure line *RIR* grandparent stock will be imported from neighbouring countries. It will be reared and bred at the newly developed breeding farm at Gelephu to produce pure line parent stocks. These pure line *RIR* parent stocks will be distributed to farmers for the production of their own replacement stocks. However, the performance of brown layers and its thriving ability in rural environments was not encouraging in the past. The *RIR* distribution is not a new idea, and it has already been tried in the past without success. The numbers of exotic and improved breeds did not increase, and there is no evidence to suggest that crossbreeding. So, from the past experiences, it can be predicted that even the fifth approach is not likely to make any impact on the overall chicken development in Bhutan.

CHICKEN POPULATION DEVELOPMENT TREND

The number of exotic chickens distributed or sold to farmers by the Government during the past five-year plan periods is given in Table 1.

Table 1: Number of chickens distributed to farmers during the past five-year plans.

Plan	Years	No. of chickens distributed
First	1961-1965	200
Second	1965-1971	2,477
Third	1971-1976	14,250
Fourth	1976-1981	23,000
Fifth	1981-1987	56,008
Sixth	1987-1992	34,568
Seventh	1992-1997	84,593
Eighth	1997-2002	74,485

Source: Rai, 1987; Sherpa, *personal communication*

The total poultry population in Bhutan was estimated to be 152,488 in 1981 (Rai, 1987) and 230,723 in 2000 (RNR Census, 2000). There is an increase of 66% over the last two decades (Figure 1).

The number of chickens in Bhutan has fluctuated over the last years (Figure 1). There was a steady increase in

the chicken population from 1981 up to 1988. The number drastically drops from 1988 to 1993 and between 1999 and 2000.

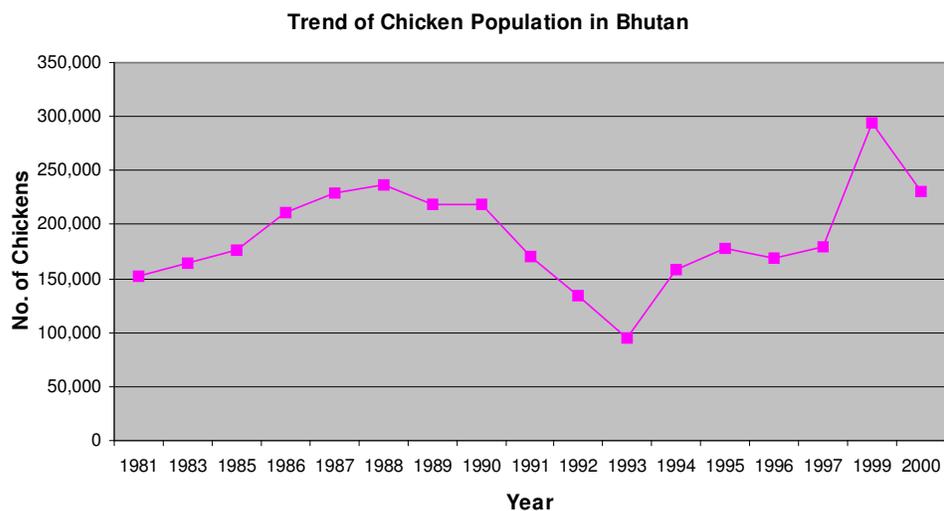


Figure 1: Change in the numbers of poultry in the last 20 years.

(Source: Data for 1981-1985 are estimated from Rai, 1987; Data for 1986-1991, 1993, 1995 and 1996 are taken from CLSD, MoA; Data for 1997 from PPD, MoA; Data for 1999 are from RNR Sample survey, LUPP, MoA; Data for 2000 from RNR census, 2000).

This reduction is believed to be attributable to outbreaks of diseases. Diseases such as Gumboro or IBD, Marek, corrhyza, fowl pox and internal parasitic diseases (especially coccidiosis) are some of the problems faced by Bhutanese farmers (Tshering, *personal communication*), but most threatening of all has been Newcastle disease (ND), a major constraint to village chicken production in Bhutan (Alders, 2002). The thermostable 1-2 ND vaccine supported by the Australian Centre for International Agricultural Research [ACIAR, www.aciar.gov.au] (Alders, 2002) and launched in May 2001 has yet to make any impact. ND is also reported to be the single greatest pathological constraint in village chickens of north, west and central Africa (Bell, 2002; George, 2002; Musiime, 2002; Olabode *et al.*, 2002) and south Asia (Gunaratne *et al.*, 2002; Lwin, 2002; Nguyen, 2002). In most cases, ND wipes out whole flocks belonging particularly to farmers who do not have access to ND vaccines.

The local chicken population has always outnumbered improved chickens. Like in many developing countries (Kitalyi, 1997), the number of indigenous chickens of Bhutan today makes up over 95% of the national poultry flock (RNR Census, 2000).

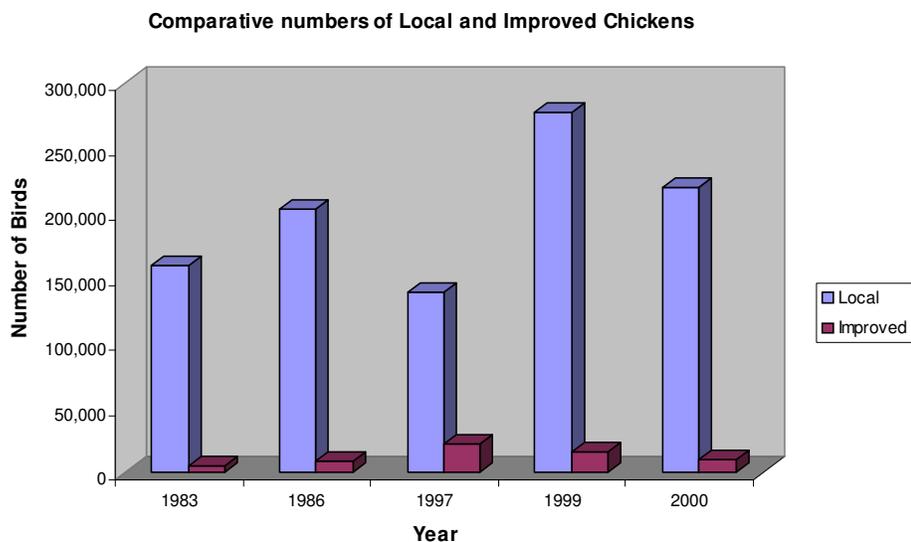


Figure 2: Trends in the number of local and improved chickens in Bhutan. Exotic birds distributed or sold to farmers from central farms are lumped with improved breeds.

(Source: modified from RNR Census, 2000; CSO, 2001).

The breeding programme that is spanning over four decades was also initially aimed at completely replacing local chickens with improved breeds so that high egg production and better rural nutrition for humans could be achieved. However, in terms of chicken numbers and increase in exotic or improved breeds of chicken, the programme did not make any significant progress, despite the fact that the number of indigenous chickens in Bhutan remained high (Figure 2). A similar trend is reported in many other developing countries (Kitalyi, 1997) where surveys have shown that farmers preferred to maintain their indigenous stocks for social, cultural and economic reasons.

Bhutan is not alone in adopting such poultry development strategies. Similar approaches had been used in many developing countries, especially in Africa. However, all these programmes had failed. For instance, Kaiser (1987) critically reviewed the multilateral rural poultry improvement programme in Niger, which started in the late 1970s. The programme, which was based on the delivery of hatching eggs or pullets at laying age, had failed due to high mortality associated with exotic stocks. Similarly, Creevy (1991) reported that *RIR* roosters given to Mali women for poultry breeding within a major rural development programme suffered a high mortality rate. These are all consistent with Kitalyi (1997), who reported that many rural poultry improvement programmes in Africa have centred on introducing exotic blood. She stated “*with the advent of this approach, a bigger portion of funding was allocated to centralised farms for the production of either fertilised eggs, pullets or cockerels, and most projects which followed this approach were not successful*”. Therefore, Bhutan must review all the past poultry development strategies including the present system and look for an alternative, suitable and sustainable breeding system.

THE WAY FORWARD

From the facts gathered, it is evident that native chickens remain the primary chickens reared by farmers in Bhu-

tan. It is also unequivocally evident that the introduction of exotic chicken breeds has made very little impact on the overall poultry development programmes in Bhutan. These facts warrant thorough review and study of poultry farming in Bhutan. The reasons why farmers prefer native chickens in spite of all the efforts to introduce high-yielding exotic chickens have to be found out and analysed based on which the poultry development policies and strategies.

The purpose of rearing local chickens differs from region to region (Nidup *et al.*, 2002). In the Northwest and Northeast regions of the country, chickens are mainly used for egg production, while in the Southern region inhabited mainly by *Lhotshampas* (Southern Bhutanese people of Nepalese origin), farmers rear a minimum of 15-20 chickens for meat and egg purposes. Eggs produced are seldom consumed but are incubated to produce replacement stocks. Besides, chickens are used for sacrificial rituals in some local communities of Bhutan. For example, some rituals require a particular type or ecotype of native chicken (e.g. plumage of particular colour, Frizzle feathers and Naked neck).

These categories of chicken rearing demand different policies and strategies, which could address the breeding goals and objectives. Participation of local people and use of locally available resources are the two main pillars of sustainability of any development initiative. It is unequivocal that local chickens will have to be used as a basal germplasm in breeding programmes for sustainable chicken production in Bhutan. For this reason, research on the genetics, production parameters, breeding and management in local chickens to improve their productivity will have to be carried out. This will enable the formulation and implementation of sustainable poultry development programmes through appropriate breeding policies and strategies for Bhutan.

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Village poultry, food security and HIV/AIDS mitigation

Robyn Alders*, Brigitte Bagnol, Mohamed Harun and Mary Young

Southern Africa Newcastle Disease Control Project, C.P. 1168, Maputo, Mozambique

*E-mail: <robyn@tropical.co.mz> (Regular) or <robyn_alders@yahoo.co.uk> (Travelling)

[This is the summary of a paper presented at the FAO meeting on HIV/AIDS and livestock in Africa held in Addis Ababa, Ethiopia, 8-10 March 2005. Full paper is available at:

www.kyeemafoundation.org/rural_poultry/publications.html]

HIV/AIDS impacts on farm households by destruction of available labour through reduction in numbers of able-bodied workers, the time and energy available and the knowledge necessary for production. This loss of labour changes the focus of household activity from agricultural production to food security. Following an HIV/AIDS-related sickness or death, food security is maintained through revising the complex division of labour at the household level in accordance with the possibilities presented by the local farming system.

Village chickens are found in all developing countries and play a vital role in many poor rural households. They require the lowest capital investment of any livestock species and they have a short production cycle. Village chickens play an important role in households where there is a lack of able-bodied workers, such as households affected by HIV/AIDS or those that have a disabled family member. In households headed by widows, children or grandparents, chicken represents the easiest species to raise for sale and home consumption, providing a source of high quality protein and micronutrients which play an important role in the nutrition of HIV/AIDS patients. Eggs can be stored for several days under village conditions and require very little energy or time to cook.

Three case studies are presented in the paper: (1) Southern Africa Newcastle Disease Control Project in Malawi, Mozambique and Tanzania; (2) Junior Farmer Field Schools in Zimbabwe; and (3) Improvement of village chicken production by junior farmers and people living with HIV/AIDS in Mozambique. The case studies demonstrate methodologies that contribute to the wellbeing of both households and communities through improved food security and HIV/AIDS mitigation.

Impact of avian influenza outbreaks in the poultry sectors of five South East Asian countries (Cambodia, Indonesia, Laos PDR, Thailand, Vietnam), outbreak costs, responses and potential long term control

Jonathan Rushton^{1*}, Rommy Viscarra¹, Emmanuelle Guerne-Bleich² and Anni McLeod²

¹ CEVEP, La Paz, Bolivia, *E-mail: <rushtonjonathan@yahoo.com>

² FAO, Rome, Italy

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EXTENDED SUMMARY

A review of data on the impact of highly pathogenic avian influenza (HPAI) in Cambodia, Indonesia, Laos PDR (People's Democratic Republic), Thailand and Vietnam was carried out in January 2005 from the country-studies that were conducted in 2004-2005 by the Animal Production and Health Division of FAO, which initially identified that HPAI was important because of:

- the high levels of mortality HPAI causes and the costs of the measures to control it;
- the presence of HPAI restricting national and international trade in live birds and poultry meat products and affecting tourism;
- HPAI's ability to infect other poultry and livestock species;
- HPAI's zoonotic impact; and
- the danger that a new strain of HPAI virus may evolve that could infect humans and be transmitted within the human population in a pandemic form.

A poultry classification system (FAO, 1995) was used in the impact assessment that identifies 4 sectors: sector 1 industrial with high biosecurity, sector 2 commercial with medium biosecurity, sector 3 commercial with low biosecurity and sector 4 backyard systems. In Cambodia and Laos PDR, poultry sectors are dominated by producers with low biosecurity and small-scale production (sectors 3 and 4). Neither country was involved in poultry exports prior to the HPAI epizootic. Vietnam's poultry sector is also dominated by backyard systems (sector 4) both in terms of production and the number of producers, but there are emerging commercial systems (sectors 2 and 3) and some official exports were being reported. Indonesia has a heavily protected poultry industry with a high proportion of its production in large industrial systems (sector 1) and in smaller commercial systems (sectors 2 and 3). In addition, there were a large number of producers with backyard systems (sector 4). Indonesia was not an important exporter and its industry did not have any significant competitive advantages. Thailand has a large proportion of its poultry population and production in sector 1, but the majority of its producers are from sectors 3 and 4. The country has the most advanced breeding, production and processing systems in the region and was an important world exporter of poultry meat prior to the HPAI epizootic.

HPAI had a very minor impact in Cambodia in terms of direct deaths and control measures of stamping out, but the initial HPAI epizootic had a negative impact on egg and poultry meat markets, including chickens and ducks. In Laos PDR, HPAI had a major impact in the chicken layer and quail systems (sector 3) in the Vientiane Capital province. The HPAI impact on the backyard systems in Vietnam was very severe, with very high mortality rates. In Indonesia, it was reported that the most important impact was on the small-scale commercial producers (sectors 2 and 3). There were no data available on the micro-level impact of HPAI in Thailand, but it is reported that 25.9 million birds were culled in control measures during 2004. In summary, HPAI has had important micro-level impacts in all study countries, important macro-level impacts in the countries with export potential and/or tourism, and Vietnam reported HPAI human deaths. Data available at this time did not allow an accurate quantification of the impact of the disease. However, the analysis indicates that certain regions within these countries are more badly affected than others and there is a need for the prioritisation of scarce resources in these areas.

In order to develop plans of control and future eradication, determining more precise micro-level impacts of the disease is critical. There needs to be an understanding of the winners and losers in an outbreak situation in order to set policies and actions that will motivate all actors to become actively involved in a control campaign. The epidemiological role of the different sectors also needs further clarification. Value chain analysis of the formal sectors would allow the identification of key control points and important actors in the movement of eggs, day-old chicks, live birds and products. Experiences of studying Newcastle disease in backyard systems in 1980s and 1990s (Copland, 1987; Spradbrow, 1992) and participatory appraisal methods (Mariner, 2001; Rushton and Viscarra, 2003) would be a useful starting point for determining the epidemiology in this sector, having a more complete basis to examine economic impact, and for determining the risks to human health. An analysis of the socio-economic circumstances of those who have died and their relationship with poultry systems would be of great use in developing risk factors and prioritising scarce resources.

There is also a need for information on regional movements of birds and poultry products, which can then be used to plan regional strategies of control. At present, it would appear imperative to implement regionally supported campaigns to eradicate HPAI in countries that export poultry and/or poultry products (officially or unofficially) in order to eliminate the risk of continued movement of the disease to neighbouring countries. Such eradication efforts, combined with the need for the poor or middle income countries affected by HPAI to take on international responsibilities in order to reduce the risks of a human influenza pandemic (WHO, 2004a; 2004b), deserve consideration for regional or international finance.

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Abstracts of selected papers on poultry production presented at the 11th International Conference of the Association of Institutions for Tropical Veterinary Medicine & 16th Veterinary Association Malaysia Congress in Petaling Jaya, Malaysia

[These two scientific events took place from 23 to 27 August 2004 at Sunway Pyramid Convention Centre in Petaling Jaya, Malaysia. The events, which had “Animal Health: A Breakpoint in Economic Development?” as general theme, were structured upon sessions and workshops. Selected papers whose abstracts are reprinted in the present issue of INFPD Newsletter were presented on poultry production. Full papers can be requested from the authors. Proceedings of the events can be obtained from the AITVM (Association of Institutions for Tropical Veterinary Medicine) website: www.aitvm.org/conference – ED]

Economics of smallholder commercial poultry production in Sefwi-Wiawso District

A.N. Akunzule

Ghana Poultry Network, P.O. Box CT 5505, Accra, Ghana

E-mail: <akunzule@yahoo.co.uk> or <gapnet_ghana@yahoo.com>

Smallholder commercial poultry production is an important economic activity in the agricultural sector in Ghana. It provides farm income and employment for many households. Unlike, other animal species, smallholder poultry can be owned and managed by all, without any gender discrimination. Factors of production for a smallholder commercial poultry farm are effectively and efficiently managed because of close personal involvement, supervision, and monitoring, that enhances productivity. Such factors include family labour, costs of construction materials, drugs and feed. These factors are used cost-effectively at the smallholder poultry farm level. Eggs are the main output of smallholder commercial poultry production. The demand for eggs in the district is inelastic due to limited supply levels. *Ricerca and Cooperazione*, an Italian non-governmental organisation, uses the approach of smallholder commercial poultry production as a viable economical activity for women groups to increase their family incomes in the Sewfi-Wiaso District. The non-governmental organization provides poultry inputs, training in poultry management techniques and constant monitoring to some women to raise 100 layers per beneficiary. This paper discusses the economics of smallholder commercial poultry development as a source of income for household families in the Sewfi-Wiawso District of Ghana.

Key words: Commercial, economics, gender, monitoring, poultry, smallholder

The economy of different poultry production systems under Kenyan conditions

S.W. Njue

Kabete Veterinary Research Laboratories, P.O. Kabete, 00625 Kangemi, Nairobi, Kenya

E-mail: <sophycate@hotmail.com>

The poultry sub-sector in Kenya consists of commercial and traditional poultry production. The commercial sub-sector is highly specialised and consist of 4.44 million broilers and 2.89 million layers which are raised in the peri-urban areas. The traditional poultry system consists of scavenging and semi-scavenging birds. There are 21.77 million local chickens, which are kept by rural households. Sixty questionnaires were administered to commercial and rural poultry farmers in a survey undertaken in 2002 in Kiambu and Machakos districts of Kenya. The two districts are located in the peri-urban and rural areas, respectively. The return on investment was 1.51, 1.72, 1.09 and 1.63 for intensive layer, broiler, semi-scavenging and scavenging production systems respectively which shows they are all economically viable. However commercial layer and broiler production systems had higher profit margins/bird/year of US\$5.84 and US\$1.33 respectively, which could be attributed to better disease control measures and overall management. The profit margin of the semi-scavenging system (US\$0.57/bird/year) was almost half of that of the scavenging system due to the high cost of feed. To increase the profit margin of the traditional poultry production systems, there is need for improved health and use of locally available cheap feed resources.

Key words: Economy, health, poultry, production systems

Constraints to peri-urban poultry production in Senegal

M. Cissé^{1α}, E. Cardinale¹, C. Ly², E.F. Guèye¹, A. Dieng³, A. Sow¹

¹ *Senegalese Institute of Agricultural Research, P.O. Box 2057, Dakar RP, Senegal*

² *Inter-States School of Science and Veterinary Medicine, P.O. Box 5077, Dakar, Senegal*

³ *National School of Agronomy, P.O. Box 296, Thiès, Senegal*

^α *E-mail: <maicisse@refer.sn>*

The high growth rate of population and the low livestock productivity in Senegal have resulted in a regular decrease of meat consumption *per capita*. In this context, promoting short-cycle species production is considered as a priority in both politics and economy. The main constraints to modern peri-urban poultry production result from globalization and the institutional environment like the lack of legislation and quality control of commercial poultry food, meat and eggs, and of farmer's technicity and organization. High mortality rate is observed in farms, due to the uncaring of hygienic rules and the relative protection potency of vaccine against Gumboro disease. Strategies to improve performances of poultry farming are also formulated.

Key words: Aviculture, competitiveness, feeding, health, quality,

The "Pros" and "Cons" of a sustainable approach to increase income from rural poultry production

K. Benabdeljelil^{1α}, P. Johnston², T. Arfaoui¹ and E. Karari¹

¹ *Institute of Agronomy & Veterinary Medicine Hassan II, P.O. Box 6202, Rabat 10101, Morocco*

² *Benson Agriculture and Food Institute, 110 B-49 Provo, Utah 84602, U.S.A.*

^α *E-mail: <k.jelil@iav.ac.ma>*

Backyard poultry farmers still contribute 25 to 40% to poultry meat and egg output in Morocco. Among several factors hindering the economic viability of this production is the inability of birds to access sufficient supply of inputs. Scarcity of feed, lack of protective housing, poor disease control, and improper marketing are some of the main constraints to its harmonious development.

Previous investigations aiming to study socio-economic aspects in addition to flock dynamics and performance, feeding systems, health and disease control, marketing and use of poultry products have shown wide variation between households in management and important differences in flock performance. To supply additional income and quality protein, a preliminary trial was conducted in which three week-old meat-type cockerels were sold at production cost to 18 (out of 82) selected households in three villages of the Atlas Mountains. Household managers were let free to take any decision regarding the keeping of 10 to 35 birds they purchased. They kept however records of birds use and destiny during the three months study period.

Overall mortality rate of the flocks ranged from 12.2 to 24.4%. Birds were sold at 1.4 to 1.6 kg of body weight at a price 2.6 to 5.3 times higher than initial purchase. The ratio of profit generated from the sales of birds and the amount invested ranged from 24% to 347% whereas the value of the birds consumed varied from 0 to 232% among participating households. Given the choice, the households had equal chances for consuming or selling the birds (0 to 20 birds on average). Few birds were counted at the end of the trial (1 to 4) in 5 households.

Several reports indicated that smallholder poultry farmers were in need of breeding stocks, concentrate feed, and health cover while large projects needed both output linkage and capital.

The trial reported herein has shown from a practical point of view that nurturing free entrepreneurs with small-targeted inputs in households desirous to improve their income can be a lucrative activity. Those with particular needs can either access micro-credit or work under cooperative systems.

Potential risks of this strategy with regard to the introduction of new diseases; undesired genes to unknown populations may affect long-term sustainability. Once the farmers have tried on hand a lucrative activity, it can be a prelude to improve skills, establish proper training and optimum utilization of local resources in rural or peri urban regions. Few simple targeted low cost and sustainable improvements can help rural poultry systems provide greater contribution to rural economy.

Key words: Chickens, Morocco, poultry, rural poultry production

Epidemiology and control of avian influenza

J.A. Stegeman and A. Bouma

Department of Farm Animal Health, Faculty of Veterinary Medicine, Utrecht University, Yalelaan 7, 3584 CL Utrecht, The Netherlands

Introduction of avian influenza (AI) viruses into poultry flocks usually originates from wild waterfowl or live bird markets that are endemically infected with low pathogenicity (LP) AI virus. Next, if the virus is of the H5 or H7 subtype, it may mutate into a high pathogenicity (HP) AI strain. Consequently, primary introductions of AI viruses into commercial poultry flocks should be prevented by bio-security measures. Moreover, surveillance for antibodies or clinical signs of LPAI may detect virus infection in commercial poultry before mutation to HPAI has taken place. During an epizootic disease, the spread of AI virus between flocks is mainly caused by the transfer of infected birds or faeces attached to persons, equipment or vehicles. Thus, movement of personnel and

equipment must be strictly controlled and strict hygiene enforced. In addition, during epizootics of highly pathogenic AI, infected flocks have to be stamped out. However, this may not be sufficient to stop epizootics in densely populated areas. In such areas either very draconic measures such as pre-emptive culling of contiguous flocks or depopulation of entire areas have to be done to stop an epizootic disease, or emergency vaccination should be applied.

Key words: Avian influenza, control, epidemiology

A new approach in Newcastle disease control in village chickens (Senegal)

A. Missohou^{1α}, P.N. Dièye² and A. Faye³

¹ *Service de Zootechnie-Alimentation, École Inter-Etats des Sciences et Médecine Vétérinaires, B.P. 5077, Dakar, Senegal*

² *Centre de Recherches Zootechniques de Kolda, Institut Sénégalais de Recherches Agricoles, Kolda, Senegal*

³ *Bureau de Coopération Sénégal-Suisse, Dakar, Senegal*

^α *E-mail: <missohou@refer.sn>*

In the Department of Kolda, southern Senegal, 700 km from Dakar, rural poultry raising is an important economic activity. With a mean flock size of 16.4 hens/ household, it contributes up to 13.5% and 75% of income respectively from, agriculture and livestock. Extensively handled, rural poultry production main constraints were diseases (Newcastle, fowl pox, external parasites) and predators. To alleviate these constraints, a project based on improvement of building capacity in Community-Based School (CBS) is implemented in collaboration with animal scientists of the veterinary school of Dakar, the national research institute and an NGO (*OFAD Nafooré*). Ten CBS with an average number of 23, 9-15 years old pupils where animal production workshops traditionally existed will be chosen in this first step of the project. Twenty persons of these CBS (teachers and coordinators) will be trained in rural poultry diseases (Newcastle, fowl pox, external parasites) identification and prevention, and in chick rearing (housing, feeding). This package will be transferred to pupils by teachers. Every year, the CBS will organise in their villages vaccination and control of internal parasites campaigns. Pilot units based on improved chicks brooding (housing, feeding of cost-effective diet) will be implemented in the pupils' households.

Key words: Community-based school programme, Newcastle disease control

Prevalence of *Libyostrongylus douglassii* in commercially reared ostriches in the Highveld Region of Zimbabwe

S. Mukaratirwa, Z.M. Cindzi and D.B. Maononga

Department of Paraclinical Veterinary Studies, Faculty of Veterinary Science, University of Zimbabwe,

P.O. Box MP 167, Mount Pleasant, Harare, Zimbabwe

A total of 339 samples from breeder birds and 96 samples from pre-slaughter grower birds were screened for nematode eggs using the modified McMaster technique before being individually cultured in an incubator at 28°C. Cultures were examined for the presence of *Libyostrongylus douglassii* third stage larvae (L). Using faecal egg counts, 8 of 11 farms (72.7%) were positive for *L. douglassii* in breeders but no eggs were detected in the growers. The faecal culture method detected wireworm larvae in the breeding stock of all farms that were surveyed (100%) and 5 of the 8 farms (62.5%) which had grower birds. *L. douglassii* was detected in all farms

(100%) based on the faecal culture method.

Key words: *Libyostrongylus douglassii*, ostrich, Zimbabwe

Development Report

Yua women's poultry project

[This is the excerpt from an evaluation report by Mss. Jarra Jagne and Mindy Sterling-Houser.]

BACKGROUND

The village of Yua is located in the Upper East Region of Ghana, West Africa. The Upper East Region is in the Sahelian zone, characterized by a hot and dry climate with one rainy season from April to September. As part of *Kindness International's* animal care mandate, a poultry program was set up for the women of Yua in 2003.

Traditionally, chickens and guinea fowls are raised in an extensive village system where birds are allowed to roam during the day and are provided with minimal housing at night to protect against predators. Chickens are utilized as gifts for honoured guests or sold from time to time to supplement the meagre income of farmers. Chickens are usually raised for both meat and eggs (dual-purpose birds). Eggs from chickens are normally used for hatching or eaten by adults. In Yua, it is believed that eggs are not good for kids and that children who eat eggs will grow up to be thieves. With this in mind, one of the project objectives is to improve the protein intake of children through the eating of more eggs. In achieving this objective, the project will at the same time change a traditional practice that is harmful to children. Another objective of the project is to provide additional income for food purchases for the women in the project, especially during the dry season when food supplies dwindle to dangerously low levels. Improving housing and providing healthcare for chickens are also central themes of the project. Some of the women have constructed improved coops that provide enough nesting space and are secure enough to deter predators. All the chickens were vaccinated against Newcastle disease (ND). ND is a viral disease of chickens that causes high morbidity and mortality.

INTERVIEWS WITH TWO PROJECT PARTICIPANTS

To evaluate the relevance and success of the project, interviews were conducted with two of the women, namely, Aboko (AK) and Zampampaka (ZP). They were both asked the same questions and, not surprisingly, both gave very similar answers. Facilitators and translators were Peter Abuga, Ayamdoo, Poke and Timothy, the headmaster of the village elementary school.

What is your overall impression of the project?

Aboko (AK): I am very satisfied with the project so far.

Zampampaka (ZP): The project has helped us obtain eggs as a good source of food for our children. We also have eggs for hatching to produce more chickens.

As you know, one of the aims of the project was to provide comfortable and safe housing for the chickens. What

do you think of the new coop compared to the traditional chicken coop?

AK: The new houses are a good improvement over the traditional houses. They are more stable and durable. They have better nests and better ventilation.

ZP: I think the traditional houses are better. At least in my case, my old chicken coop was much bigger than the new one. The new one is made of better materials, but it is too small.

What supplementary feeding do you provide to the chickens?

AK: I provide corn and millet in the morning and evening. Water is available throughout the day. During the day, the birds move around the village picking up whatever grains and plants they can get.

ZP: I give millet grain three times a day.

How many chickens do you own? How many eggs does each chicken normally lay and how do you use the eggs?

AK: I have 4 hens and one rooster. The hens lay an average of 14 eggs per clutch. We feed half of the eggs to the children and leave the rest for hatching. The last time, out of 28 eggs that hatched, only two chicks survived. The little chicks do not survive well.

ZP: I have 2 hens and one rooster. The hens lay about 10 eggs per clutch. I feed half the eggs to the children and let the other half hatch. Survival of chicks, especially in the rainy season, is difficult. Most of them die.

What are the major problems you have experienced with the poultry project?

AK: Keeping the little chicks alive is the major problem. The problem is worse during the rainy season, especially in September. Lice infestation is also common but we can usually control it well with our local remedy of using tobacco leaves.

ZP: It is difficult to keep the chicks alive when they hatch during the rainy season. They get sores around their mouth and die soon after (one assistant evaluator explained that the chicks were most likely suffering from fowl pox, a viral poultry disease that can be carried by mosquitoes).

What improvements do you want to see with the project?

AK: We have been doing the project for just a short time, so it is hard to come up with improvements. Despite the short period, I do feel that the flock sizes need to be increased. I hesitate to say this because I do not want to sound selfish but we also need help keeping the baby chicks alive.

ZP: The chicken flocks are too small. We need to increase the chicken numbers.

GROUP MEETINGS

Two women' group meetings were organized. They were referred to as Zone 1 (Aboko's group of 17 women) and Zone 2 (Zampampaka's group of 16 women). It was not possible to arrange another meeting with a third group of 7 women from the chief's house.

The questions above were repeated for the group meetings. In summary, both groups echoed the thoughts and concerns of Aboko and Zampampaka. They were impressed with the first phase of the project that provided the participants with an average 2 hens and a rooster. They reiterated that the project is already providing nutritious food (eggs) to children and extra eggs for hatching. The improved chicken houses (four of them were visited)

were another plus from the project. Now women chicken producers had houses with built-in nests that were well protected from vermin. Both groups practiced supplementary feeding of grains (millet and maize). It seemed that the average egg clutch size was 10 eggs per hen. Many voiced the opinion that the flock sizes need to be increased in the future. The major problems experienced by most of the women were related to chick survivability. Diseases such as ND, fowl pox and lice infestation were identified as causing the greatest mortality in both chicks and hens.

Their expectations for the future are that the project will help improve their standards of living, no matter how small. They also hope to improve the nutrition and health of their kids by allowing them to consume eggs. Their hope is that there will come a time when they will have excess of both eggs and chickens that they can sell. The extra money will come in handy during the dry season when food stores are depleted.

RECOMMENDATIONS

a) Housing

- Specific details about building the houses need to be provided. They need not be exactly the same but need to have certain features in common. In the interview with Zampampaka, she said she preferred the traditional chicken coops to the new ones because the traditional coops were bigger. Zampampaka's new and improved coop was the smallest of all the coops visited. The height was too low. The coops must be designed to provide ample room for at least 10 chickens, provide comfortable floor space and have proper ventilation.
- None of the nests observed had any nesting material. Nests should be lined with broken groundnut (peanut) shells, groundnut (peanut) hay or some other locally available material. The floor of the houses should also be covered with similar material to serve as litter. Litter can later be recycled for use as manure and mulch on farms. One assistant evaluator has suggested dry season farming of vegetables as an offshoot of the project that can use the litter.
- Most of the houses had entrances but no doors. The entrances need to be boarded up at night to prevent predators from getting in.

b) Nutrition

- It is good to see that supplementary feeding of grains such as millet and maize is practiced. There are more agricultural by-products that can be used to improve overall nutrition of birds. The chaff from rice and millet processing is very nutritious and so is the by-product from production of "*pito*" or millet beer. Provision of water is done using local clay pots with holes around the sides where the chickens can put their heads. This is one example of local innovation that should be encouraged.

c) Management

- Hatching eggs and survival of chicks seem to be a major problem. As most of the problems associated with this seem to be seasonal (i.e. occurrence during the rainy season), eggs should be hatched during the dry season when there are fewer disease problems that will affect chick survival. During the rainy season, eggs should be consumed.
- Vaccination for the control of ND is already part of the program. Fowl pox vaccination should be included

because fowl pox virus seems to be a major cause of chick mortality. Both chicks and adults should be vaccinated against both diseases. Chicks can be vaccinated as early as 2-3 weeks of age when maternal antibodies are no longer protective.

- Lice infestation is being controlled well using a local remedy of tobacco powder. This is a natural, safe and inexpensive treatment that works a lot better than insecticides.
- One of the measures that can be done to improve chick survival is to do collective brooding of chicks. One house can be used to confine the chicks for up to 8 weeks of age to allow them to build up better immunity.
- With more chickens, some rudimentary selection of good breeding stock should be introduced. Hens that lay more eggs per clutch should be kept for breeding and poor producers can be sold for meat.

d) Future improvements

- As the women suggested, size of chicken flocks should be increased from the present two hens and one rooster per person to ten hens and one rooster per participant. The numbers can be increased slowly over the course of a year. An increase in flock size will turn the project into a more economically viable activity.
- Record keeping should be encouraged. Hen and chick numbers, number of eggs laid, number of eggs hatched and mortality of chicks and hens should be recorded regularly. Without these numbers, there will be no tangible evidence of the project's success.
- Children should be encouraged to participate in taking care of the flocks at home. The elementary school can even start their own flock with the children being the primary caretakers.
- Women should be encouraged to organize themselves more formally with election of a President and Treasurer to begin with.

e) General project management

- *Kindness International* should set expectations and guidelines for managing the project. For example, the project coordinator must provide quarterly progress reports; provide details on chicken numbers, egg production etc. and the progress in building new chicken coops.
- The project coordinator must identify people who will do the day-to-day supervision of the project.
- The project coordinator must hold meetings with the women's groups at least 4-6 times a year. At these meetings, direct training of women in various aspects of poultry production such as housing, nutrition, vaccination, etc. can be done. The use of visual aids must be encouraged as most of the women are illiterate.

CONCLUSIONS

This is one project that is working well and one that has the potential to improve the lot of the women of Yua. The interviews revealed the enthusiasm and dedication of the women and their keen observation skills. Participation in the project as well as participant satisfaction are high. The newer and improved chicken houses visited were all painstakingly decorated using geometric designs that are commonly seen in village housing of that region. This is a sign that attitudes towards the comfort of animals is changing and taking center stage. Everything possible must be done to continue the good work with the women.

Further information relating to this project can be obtained from:

Anthony N. Akunzule, Project Coordinator

Publications

Prevention and Control of Avian Flu in Small-scale Poultry: A Guide for Veterinary Paraprofessionals in Cambodia

Teams of 'Agronomes et Vétérinaires Sans Frontières' (VSF-CICDA, or Agronomists and Veterinarians without Borders) in Vietnam and Cambodia with cooperation of the Food and Agriculture Organization of United Nations (FAO, www.fao.org) prepared this new guide for village animal health workers or paravets. The manual consists of eight chapters: (1) Introduction, (2) The Disease (3) What is Biosecurity? (4) What to do to protect a farm when there is no outbreak in the province or in the country? (5) What to do to protect a farm when there are outbreaks reported in the country or in the province? (6) What to do when there is high mortality on the farm? (7) Protection of human beings, and (8) Paravets and District Veterinary Office: a key partnership to fight avian flu. The manual is expected to be translated in languages of several countries of South East Asia and will be distributed to veterinary para-professionals. This practical guide should enable paravets to better deal with avian influenza in backyard or small-scale poultry units. The full document will be available at:

www.fao.org/ag/againfo/subjects/documents/ai/AI-paravets-guide.pdf

Proceedings of Workshop for the Dissemination of Research and Development Results on Small Ruminants and Traditional Poultry Farming in West Africa

This workshop took place in Bobo-Dioulasso, Burkina Faso, from 23 to 25 March 2004. It was organized by the *Centre International de Recherche-Développement sur l'Élevage en Zone Subhumide* (CIRDES, www.cirdes.org, or International Centre for Research and Development on Livestock in Sub-humid Area). The objective of this scientific gathering was to disseminate results of research on small ruminants and traditional poultry farming in West Africa carried out within the context of the *Programme Concerté de Recherche-Développement sur l'Élevage en Afrique de l'Ouest* (PROCORDEL, or Concerted Research and Development Programme on Livestock in West Africa). The workshop is part of technical and scientific information exchange means set up by CIRDES to make use of various PROCORDEL assets.

The meeting gathered CIRDES / PROCORDEL scientists, and small ruminants and poultry research programmes leaders or their representatives from National Agricultural Research Systems (NARS) of CIRDES member and associate countries (Benin, Burkina Faso, Ghana, Mali, Niger and Togo). Its objective was to point out the state of knowledge on these short-cycle animal species and to identify future research needs for a sustainable development of their production systems.

These proceedings contain the abstracts of review papers, contributions of participants on the research and development status and policy of small ruminant and local poultry production in different countries, discussions and

recommendations given at the end of this meeting.

This Publication (113 pages, July 2004), with papers either in French or in English, may be obtained from:
Centre International de Recherche-développement sur l'Élevage en Zone Subhumide (CIRDES), 01 B.P. 454, Bobo-Dioulasso 01, Burkina Faso, Tel. (+226) 20 97 20 53 / 20 97 26 38, Fax (+226) 20 97 23 20, E-mail: <cirdes@ird.bf>
Contact person: Dr. Mamadou Sangaré, URPAN/CIRDES, E-mail: <mamadousangare@hotmail.com> or <sangare_mamadou2003@yahoo.fr>

Participatory Livestock Research: A Guide

This book, written by Czech Conroy and published in February 2005, is the first to offer an introduction to participatory research for livestock development. Despite the attention paid to participatory research methodologies in other areas of agricultural development, participatory livestock work has been relatively neglected despite its evident relevance and demand for such approaches. It will bring livestock researchers and practitioners up to date with the latest and best practice in participatory research.

By bringing together the author's expert knowledge of livestock research issues and participatory research, *Participatory Livestock Research* will help researchers and practitioners to overcome the potential difficulties associated with participatory livestock research. Using examples from many different projects around the world, the book shows how a participatory approach to technology development can be successful. It also shows how to undertake needs assessment using participatory approaches, and how to avoid the problems associated with on-farm livestock experiments.

Participatory Livestock Research is essential reading for all those involved in livestock research and will also be of interest to workers and researchers interested in wider agricultural development issues in universities, national agricultural research systems and NGOs, and extension workers and practitioners in agricultural service agencies.

In addition to the introduction, the publication consists of four parts:

- ✚ Part 1: Participatory Situation Analysis [General aspects of participatory situation analysis; Getting an overview of livestock-keeping; Feeding systems and resources; Animal health; Analysis of constraints, problems, and opportunities.]
- ✚ Part 2: Participatory Technology Development [When to do participatory trials; Getting started; Designing trials & experiments; Monitoring and evaluation of experiments; Achieving wider impact.]
- ✚ Part 3: Case Studies [Learning about the control of Newcastle disease with village chicken farmers in Mozambique; Participatory development of mange treatment technology in Kenya; Participatory validation of medicinal plants for livestock diseases of pastoralists in Kenya; Improving the efficacy of concentrate usage by smallholder dairy farmers in Kenya; Tree pods as a supplement to improve the productivity of female goats in India; Women, livestock and innovation: campesino experimentation in Mexico; Adoption and scaling out: experiences of the *Forages for Smallholders Project in South-east Asia*; Development of herbage forage legume technologies in central Kenya; Development of the Kebkabiya donkey plough in

Western Sudan; Tzotzil shepherdesses and Chiapas wool sheep in Mexico.]

✚ Part 4: Conclusions [Maximizing the contribution of participatory livestock research.]

The book (Publisher: ITDG Publishing; ISBN: 1-85339-577-3; Format: 246x172mm; Extent: 256 pages; Price: £14.95) can be ordered from:

ITDG Publishing (www.itdgpublishing.org.uk), Bourton Hall, Bourton-on-Dunsmore, Rugby, Warwickshire, CV23 9QZ, U.K., Tel: +44 (0)1926 634501, Fax: +44 (0)1926 634502, E-mail: <orders@itpubs.org.uk>

You can also order online at: www.developmentbookshop.com

The author, Czech Conroy, can be contacted at the following address:

Natural Resources Institute, University of Greenwich, Central Avenue, Chatham Maritime, Kent, ME4 4TB, U.K., Tel: (+44) 1634 883057; Fax: (+44) 1634 883377, E-mail: <M.A.Conroy@greenwich.ac.uk>

News

4th International Poultry Show and Seminar in Dhaka, Bangladesh

The 4th International Poultry Show and Seminar-2005 of the Bangladesh Branch of World's Poultry Science Association (WPSA-BB, www.wpsa-bb.com) was held in March 10-12, 2005 at the China-Bangladesh Friendship Conference Centre, Dhaka, Bangladesh. The theme of the seminar was "Poultry Industry in Bangladesh: Challenges and Opportunities". The show and seminar were divided into four major parts; inaugural ceremony, closing session, seminar and exhibition. The gracious event of inaugural ceremony was opened by the Honourable Prime Minister, Begum Khaleda Zia, the Government of the People's Republic of Bangladesh as chief guest. This is the first time the head of the state inaugurated the Bangladesh poultry show and seminar, and this was the biggest event in Bangladesh on poultry. She assured the Government support on different issues of poultry industry of Bangladesh. The Honourable Minister of Fisheries and Livestock, Mr. Abdullah Al Noman was a special guest in the opening ceremony. He spoke on effectiveness of poultry policy on the development of poultry industry in Bangladesh. About three hundred delegates from home and abroad participated in the seminar and show. Countries represented included Australia, Austria, Belgium, Canada, China, Denmark, Ethiopia, France, Germany, Indonesia, India, Italy, South Korea, Malaysia, Myanmar, Netherlands, New Zealand, Singapore, Sri Lanka, Switzerland, Thailand, Turkey, USA, U.K. and Vietnam. The closing session was honoured by two Honourable Ministers of the Government of the People's Republic of Bangladesh, namely Mr. M. Saifur Rahman, Minister of Finance and Planning and Mr. Mirza Fakrul Islam Alamgir, State Minister of Agriculture, who were special guests at the occasion. Both events were chaired by Mr Moshiur Rahman, the President of the WPSA-Bangladesh Branch. As special guest, Dr. Piet Simons, Secretary General of the World Body of World's Poultry Science Association (WPSA, www.wpsa.com), graced the ceremony and spoke on the importance and function of the WPSA. During the closing session, Prof. Bob Pym, from Australia, Chairman of Organizing Committee of the 23rd World's Poultry Congress presented the announcement and video show regarding the next World's Poultry Congress.

The 4th International Poultry Show and Seminar-2005 of WPSA-BB was bigger than the last events both in
INFPD Newsletter Vol. 15, No. 1

seminar and exposition. The exposition was decorated with different items of poultry and its allied business including machineries and techniques. There were 160 stalls represented from 18 foreign participating countries, and the rest was from local exhibitors. More than 10,000 visitors attended the show.

Poultry scientists from home and abroad presented 37 papers (including the Keynote paper) in 11 disciplines such as (1) Poultry Industry and its Prospect, (2) Advancement in Feed and Nutrition, (3) Breeds, Breeding and Genetics, (4) Waste Management, (5) Poultry Health and Hygiene, (6) Disease Diagnosis and Biologics, (7) Biosafety and Biosecurity, (8) Poultry Housing and Management, (9) Processing and Marketing and Export Possibilities, (10) Quality and Safe Poultry and Poultry Products, and (11) Small-scale Family Poultry Farming. The seminar was divided into six sessions chaired by different dignitary scientists from home and abroad. Very important presentations were given in avian influenza, family poultry, and biosecurity & biosafety. The WPSA-BB provided all local cost of the foreign paper presenters and exempted the registration of the scientific delegates. The seminar creates an opportunity for the delegates to exchange the latest knowledge and experience among the local and foreign scientists. The participation of Dr. Piet Simons, Prof. Bob Pym, Dr. Peter Hunton, Dr. Michael Evans and Mr. Allan Gibbins along with other foreign scientists enriched the seminar presentations.

The WPSA formed Federation of Asian Pacific Branches to promote more knowledge and activities of the poultry in the highly populated developing world of Asia. Under this Federation, the first Working Group on Small-scale Family Poultry Farming (SSFPPF) was initiated during the Gold Coast Conference of Federation in Australia. The first meeting of the Working Group (WG) on SSFPPF was held in Dhaka, Bangladesh, simultaneously with seminar program. The meeting was initiated and chaired by Mr. Alan Gibbins, President of the Asian Pacific Federation. He handed over to Dr. Quazi M. Emdadul Huque, Chairperson of the WG on SSFPPF and Secretary of WPSA-BB. In the beginning of the meeting, Dr. Huque thanked Dr. Michael Evans from Australia to accept the Secretary position of the WG. The meeting was started with one minute silence after the death of thousands people caused by the Tsunami. Brief reports on Tsunami impacts on some participating countries were presented. Dr. Bob Pym discussed the framework of future activities of the WG, and Dr. Piet Simons made various suggestions. After a threadbare discussion, the committee finalized objectives and future program of the WG.

General objective of the WPSA-BB is to support family poultry farmers and entrepreneurs in order to increase their efficiency and skills with the aim of producing high quality products. WPSA-BB is arranging seminars, symposia, campaigns, open discussions and promotional activities to educate farmers and people with a view to increasing production and consumption of eggs and poultry meat. The support of the WPSA world body was highly acknowledged by the local members of the WPSA-BB. Dr. Piet Simons spoke on the activities of WPSA both in opening and closing ceremony. He also thanked the WPSA-BB for its activities and for organizing seminar and show biannually. The Treasurer of the WPSA-BB, Mr. A.K.M. Alamgir offered a special dinner to the scientific delegates where Dr. Piet Simons announced 25 free memberships of WPSA-BB for the year 2005 as a result of good performance of the Branch. The President of the WPSA-BB, Mr. Moshir Rahman, invited all foreign delegates as well as members of WPSA-BB Executive Committee along with many other personalities in a grand dinner. The WPSA-BB is expecting to hold the next international poultry show and seminar in 2007.

This report was written by:

Dr. Quazi M. Emdadul Huque, Secretary, WPSA-BB
Bangladesh Livestock Research Institute, Savar, Dhaka -1341, Bangladesh
Tel: 8802 - 7708326; Fax: 8802 - 7708325
E-mail: <dgbfri@bangla.net> or <qmehuque@bangla.net> or <techcom@wpsa-bb.com>

Providing travel assistance for young WPSA members and students to participate in regional and global WPSA conferences

[Source: *World's Poultry Science Journal*, Vol. 61, March 2005, p. 168]

It is generally agreed that enhancing the educational, research and experience opportunities of young poultry science professional and technical people is critical to the pace of development of more efficient poultry production, whether it is in an intensive technological industry or in small-scale, family production systems. It should also be stressed that any travel assistance we can provide should be independent of and in addition to that currently provided by World's Poultry Congresses, Regional Conferences or individual Branches. It should target and benefit additional students and young members, including young poultry producers from developing countries and students from developed countries. A scheme of open competition for such WPSA (World's Poultry Science Association) Travel Scholarships now is available. Applicants must be a member of WPSA for at least half a year before they can apply for a Travel Grant. Applications must be accompanied by a short CV.

DEADLINES

You must submit your application by December 31 for meetings in March-September and by August 31 for meetings in October-February.

APPLICATION FORM

Full details and application forms can be obtained from Dr Piet Simons or you can download the application form from the WPSA website (www.wpsa.com).

Please send the application form accompanied by a letter of recommendation from a well-known member of your Branch to the general secretary of WPSA, Dr Piet Simons, P.O. Box 31, 7360 AA Beekbergen, The Netherlands, Fax: +31 55 506 4858, E-mail: <piet.simons@wur.nl>.

ISA Warren for free-range systems

A new brown egg layer – the *ISA Warren* – has been developed by ISA (*Institut de Sélection Animale*, or Institute for Animal Breeding) specifically for free-range and other alternative production systems. It has been launched in the United Kingdom by Tom Barron ISA. ISA Poultry introduced new selection criteria into the breeding programme for the *ISA Warren*, including the study of animal behaviour to understand the social relationships between birds. It has been selected over a period of eight years and takes its name from the renowned Warren lines.

The *ISA Warren* has been developed to be a tough, resilient layer while also being easy to manage. In alternative systems, this new line peaks at 92-95% production at 25 weeks of age. It lays eggs weighing 60 g each at 28

weeks of age. Average egg weight increases gradually thereafter to attain 62-64 g at 76 weeks of age. Production reaches 320-330 eggs per hen housed to 76 weeks (egg mass of 20.0-20.8 kg over the laying period), with an average daily feed consumption of 120-125 g. Target body weight is 1.54-1.60 kg at 18 weeks of age and 1.90-2.05 kg at depletion.

Further details on and availability of day-old chicks can be obtained from:

ISA, 5 Rue Buffon, 22003 Saint-Brieuc Cedex 1, France, Tel: +33 2 9677 4600; Fax: +33 2 9677 4601

E-mail: <info@isapoultry.com> or <josie.arman@isapoultry.com> (to contact Josie Arman)

Website: www.isapoultry.com or www.tombarronisa.co.uk

International Diary

International Smallholder Poultry Workshop in Copenhagen, Denmark [30-31 August 2005]

The Danish Network for Smallholder Poultry Development (www.poultry.kvl.dk) and its many partners abroad have learned many important lessons during the last 8 years with regard to the use of poultry as a tool in poverty reduction, food security and women's empowerment. Many successes as well as failures have been documented, and the Danish International Development Assistance (DANIDA) and the Network thus decided that it was time to present and discuss experiences and to reflect on the different approaches utilised in many different social, cultural, economic and environmental contexts. With this in view, an International Smallholder Poultry Workshop will be held in Copenhagen, Denmark, from 30 to 31 August 2005. The general theme of the workshop, which has English as official language, is "Does Poultry Reduce Poverty and Assure Food Security? - A Need for Rethinking the Approaches".

The aim of the workshop is to review experiences, to rethink approaches and to discuss among other questions:

- If rural development is about creating opportunities for the poor - is poultry production then the right tool?
- Will the poor benefit from privatisation of animal health and extension services?
- How will global markets affect the marketing strategies of poor poultry farmers?
- Does poultry alleviate poverty and create food security?
- Does poultry and micro-credit go hand in hand?
- Who will benefit from research on smallholder poultry?
- What are the best approaches for livestock development for the poor?
- Will poultry Farmer Field Schools make extension more demand-driven?

The two-day workshop will compose of following 4 sessions:

- Session 1: Creating opportunities for the poor – is poultry production the right tool?
- Session 2: Extension services – from supply to demand driven.
- Session 3: Income generation and marketing of poultry production.
- Session 4: Higher education and poverty-related research – who will benefit?

The two-day programme will include invited presentations from scholars and implementers from the Network's

partners in Bangladesh, Benin, Burkina Faso, Kenya, Senegal, Tanzania, Uganda and Vietnam as well as invited participants from DANIDA and the multilateral organisations such as the International Livestock Research Institute (ILRI, www.ilri.org), the Food and Agriculture Organization of United Nations (FAO, www.fao.org), the International Fund for Agricultural Development (IFAD, www.ifad.org) and the World Bank (www.worldbank.org).

REGISTRATION

Please fill out the registration form to be requested from Ms. Dea Seeberg and send it to her by e-mail at <dss@kvl.dk> or by Fax: +45 3528 3762 no later than 1st of August 2005. Registration fee is DKK 200 or EUR 30 with 50% reduction for students. Fee is payable upon registration on 30th of August 2005.

Detailed information relating to registration, accommodation, scientific and cultural programmes, etc. can be obtained from:

- *Jens Christian Riise, Director*
Fjerkrænetværket / Network for Smallholder Poultry Development, Dyrslægevej 2, DK-1870 Frederiksberg C, Denmark, Tel: +45 35 28 37 61; Fax: +45 35 28 37 62; E-mail:<poultry@kvl.dk>

You can also visit the following websites:

- www.poultry.kvl.dk
- www.poultry.kvl.dk/research/workshops/w25/workshop_aug2005.htm

4th All Africa Conference on Animal Agriculture in Arusha, Tanzania [20-24 September 2005]

The 4th All Africa Conference on Animal Agriculture will be held at Arusha International Conference Centre (AICC) in Arusha, Tanzania, from 20 to 24 September 2005. The All Africa Society for Animal Production is organizing this conference in association with the Tanzania Society of Animal Production (TSAP). The general theme of the conference, which has English as official language, is “The Role of Biotechnology in Animal Agriculture to Address Poverty in Africa: Opportunities and Challenges”.

OBJECTIVES

The overall objective of the conference is to provide an opportunity for African scientists and the broader stakeholder groups of the livestock sector to discuss the potential role of biotechnology in animal agriculture to improve the livelihoods of African people. The broader objective of the conference will be met by attempting, through discussions of a series of papers, to answer the questions: Is biotechnology a menace or an opportunity to address the pressing needs for sustainable livelihoods of poor people? What are the potentials and limitations/threats of biotechnology with a view to improving livelihoods of (rural) poor people in Africa? It is hoped that, at the end of the conference, there will be specific recommendations around the following questions: Are there proven technologies currently available which Africa can immediately take up to address the known constraints? What are the current technical and institutional constraints to livestock biotechnology research and development in Africa? How can Africa organise itself to take full advantage of available opportunities and to minimise possible threats?

CONFERENCE SESSIONS

The conference sessions are listed below:

1. Opening Session (plenary)
2. Biotechnology in Agriculture – Challenges and Opportunities (plenary)
3. Science and Technology Policy (plenary)
4. Institutional Arrangements and Capacities for Biotechnology Applications (plenary)
5. Animal Health (parallel)
6. Human and Environmental Health (parallel)
7. Livestock Genetic Diversity - Characterization and Conservation (parallel)
8. Animal Genetic Improvement (parallel)
9. Animal Feeds and Nutrition (parallel)
10. Trade in Livestock and Livestock Products: National and Regional Policies to Improve Market Access for the Poor (parallel)

IMPORTANT DEADLINES

- Submission of abstracts: May 31, 2005 (extended to April 30, 2005)
- Submission of full papers: July 15, 2005

Detailed information relating to registration, accommodation, scientific and cultural programmes, etc. can be obtained from the Conference Secretariat at the following addresses:

- *Ms. Rosalynn Murithi*
International Livestock Research Institute (ILRI), P.O. Box 30709, Nairobi 00100, Kenya
Tel: + 254 20 4223374, Fax: +254 20 4223001, E-mail: <r.murithi@cgiar.org>
- *Dr. Berno V. Mnembuka*
Department of Animal Science & Production, Sokoine University of Agriculture, P.O. Box 3004, Morogoro, Tanzania, E-mail: <mnembuka@yahoo.co.uk>

6th Global Conference on the Conservation of Domestic Animal Genetic Resources in Magaliesburg, South Africa [9-13 October 2005]

The 6th Global Conference on the Conservation of Domestic Animal Genetic Resources will be held at the Magalies Park Conference Centre in Magaliesburg, North-West Province, South Africa, from 9 to 13 October 2005. The general theme of the Conference, which has English as official language, is “Conservation: The Future”.

TOPICS

The 6th Global Conference on the Conservation of Farm Animal Genetic Resources will provide a forum for the interaction and exchange of information and ideas on all aspects of animal genetic resource conservation as a tool for sustainable development. This scientific meeting will include a session sponsored by the FAO on the First report on the State of the World Animal Genetic Resources. The following topics will be covered:

- *In-situ* and *ex-situ* Conservation
- Research and Application: Farming for the Future
- Indigenous Knowledge Systems, Access and Benefit Sharing of Farm Animal Genetic Resources
- The Family Farm (including Family Poultry) and Conservation
- Marketing Rare Breeds and Products
- Agricultural Innovations involving Indigenous Animals and Traditional Farming Practices
- Breeders / Keepers' Rights

AUDIENCE

A wide audience of conservationists of farm animal genetic resources from around the world, including government representatives, university members and students, veterinary scientists, members of zoological / agricultural and production associations, biodiversity conservation experts, farm animal conservationists, private and public animal owners and breeders, geneticists, ecologists, commercial agriculturalists and providers of products and services is welcome.

IMPORTANT DATES

- Deadline for abstract submissions: 15 June 2005
- Date for early registration: 31 August 2005
- Final date for registration: 30 September 2005

Detailed information relating to registration, sponsorship, accommodation, and scientific and cultural programmes, etc. can be obtained from the Conference Organisers at the following address:

- *Anelja de Bok, Official Conference Organiser*
Go Girl Events, P O Box 736, Douglasdale, 2165, South Africa
Tel: +27 11 781 8611, Fax: +27 11 781 8622, E-mail: <anelja@gogirlevents.co.za>

Participants wishing to present a paper or poster are kindly invited to submit their proposals in English on the above-related topics by 15 June 2005 to:

- *The Conference Coordinator*
ARC Animal Improvement Institute, Private Bag X2, Irene 0062, South Africa
Tel: +27 12 6729027, Fax: +27 12 6729214, E-mail: <akotze@arc.agric.za>

3rd International Waterfowl Conference in Guangzhou, Guangdong Province, China [3-6 November 2005]

The 3rd International Waterfowl Conference will be held in Guangzhou, China, from 3 to 6 November 2005. The Conference, which has English as its official language, will be organized by the World's Poultry Science Association - Chinese Branch (WPSA-CB) and hosted by South China Agricultural University, Guangzhou. The general theme of the Conference is "Sustainable Development of Waterfowl Production".

China is the leading country in waterfowl production of the world, with the annual duck and goose production over two thirds of the world's total. Guangzhou Province has achieved numerous landmarks in waterfowl produc-

tion such as development of the famous breed of *Shitou* geese, invention of waterfowl-rice integrated farming system and famous Cantonese cuisines of roast geese and ducks. The Conference should be the meeting place for all people involved in waterfowl research and production, bridging between academia and industry.

SCIENTIFIC PROGRAMME

- World waterfowl production, trade and marketing;
- Waterfowl genetics, breeding and resources;
- Reproductive physiology and techniques;
- Nutrition and management;
- Disease prevention and control; and
- Product processing.

The conference will organize a full-day visit to farms and countryside to experience waterfowl production, processing and waterfowl-rice co-production eco-farming practices.

IMPORTANT DEADLINES

- Submission of abstracts: May 31, 2005
- Notification of acceptance of papers: July 31, 2005
- Submission of full texts (electronic and printed copies): August 31, 2005

Detailed information relating to registration, accommodation and cultural programmes can be obtained from the Conference Secretariat at the following address:

- *Dr. Xiquan Zhang, Secretary General*
College of Animal Science, South China Agricultural University, Guangzhou 510642, China
Tel: +86 20 8528 5703, Fax: +86 20 8528 0740, E-mail: <waterfowl2005@scau.edu.cn>

For further information on the Conference, please visit the website: www.scau.edu.cn/waterfowl2005

6th Iberoamerican Symposium on Conservation and Utilization of Indigenous Animal Genetic Resources in Chiapas, Mexico [7-10 November 2005]

The 6th Iberoamerican Symposium on Conservation and Utilization of Indigenous Animal Genetic Resources (or 'VI Simposio Iberoamericano sobre Conservación y Utilización de Recursos Zoogenéticos', in Spanish) will be held in the Colonial City of San Cristóbal de Las Casas, Chiapas, Mexico, from 7 to 10 November 2005. This scientific event is co-organized by CYTED, the Spanish Agency of Science and Technology for Development and the University of Chiapas.

The thematic areas for the Symposium are:

- 1) Breed Description, and Zootechnic and Zoometric Characterization;
- 2) Genetic Characterization;
- 3) *In-situ* and *ex-situ* Conservation Programs of Animal Genetic Resources, including Poultry;
- 4) Genetic Improvement Programs of Local Animal (including Poultry) Breeds in Marginal Areas;

- 5) Impact of Animal Genetic Resources (including Poultry) in Sustainable Development; and
- 6) Derived Traditional Products.

During the Symposium, a photograph exhibition will be open to the public. Its theme is 'Rural People and their Indigenous Animals', including Indigenous Poultry. If you are interested in participating, please send an electronic photograph related to this theme in your country, with an appropriate legend. The Organizing Committee will take care of printing selected photos, and the material will be on display during a 3-week period.

This Symposium provides a good opportunity for Spanish- and/or Portuguese-speaking persons to learn about and to share the efforts being carried out in 14 Iberoamerican countries for the conservation and sustainable utilization of autochthonous or indigenous animal breeds, including poultry.

IMPORTANT DEADLINES

- Submission of abstracts (maximum of 300 words): June 15, 2005
- Submission of full texts: September 1st, 2005

For further detailed information, please contact:

E-mail: <cytedchiapas@yahoo.com.mx>

12th International Conference of the Association of Institutions for Tropical Veterinary Medicine in Montpellier, France [August 2007]

The 12th International Conference of the Association of Institutions of Tropical Veterinary Medicine (AITVM, www.aitvm.org), in conjunction with the *Centre de Coopération Internationale en Recherche Agronomique pour le Développement* (CIRAD, www.cirad.fr, or Centre of International Cooperation in Agronomic Research for Development), will be held in Montpellier, France, in August 2007. When available, detailed information will be included in one of the next issues of the INFPD Newsletter.

Detailed information relating to submission of abstracts, registration, accommodation, scientific and cultural programmes, etc. can be obtained from the Organising Committee at the following address:

Dr. Emmanuel Camus

Member of the AITVM Standing Committee and Chairman of the Local Organising Committee of the 12th AITVM Conference, CIRAD-EMVT, Campus International de Baillarguet, 34398 Montpellier Cedex 5, France

Tel: +33 (0)4 67 59 37 11, Fax: +33 (0)4 67 59 37 95, E-mail: <emmanuel.camus@cirad.fr>

Announcements

Bob Pym as FAO Visiting Scientist

We have the joy to announce you that a colleague from the World's Poultry Science Association (WPSA,

www.wpsa.com), Dr Robert A.E. Pym will join the FAO Animal Production and Health Division (AGA) for 6 months, from July to December 2005. He will work with the Livestock Production Systems Group of the Animal Production Service (AGAP) and will be involved primarily in activities that will contribute to AGA's programme entitled "*Contribution of Livestock to Poverty Alleviation*" and the animal production activities associated with FAO's Special Programme for Food Security. Within these programmes, poultry is given a high priority due to their potential for rapidly improving rural livelihoods and income generation. It is possible to expand and intensify family poultry into small-scale commercial enterprise. Poultry farming is also an important activity for women and female-headed households. Dr Pym will be busy with 4 different portfolios, namely:

- 1) Prepare Guidelines for Undertaking National Poultry Sector Reviews
 - Identify and list the likely issues and questions that would need to be addressed by a review of a national poultry sector.
 - List the type of information required (trade, production systems, services, inputs, suppliers, etc.) and indicate how and where such information can be collected, including country specificity.
 - Who should be involved in such a review and how they should be involved?

- 2) Contribute a Poultry Component to the Joint AGAP/BMZ/GTZ/University of Hohenheim "Overall GeneFlow Study"
 - Undertake a literature review of the global poultry sector (genetic material from live birds and poultry products), its principal actors, dynamics and driving forces.
 - Analyze and incorporate information prepared by Dr Dietmar K. Flock, another member of WPSA contracted by AGA at the moment, on (i) the exchange of poultry genetic resources between the commercial breeding sector as well as between developing countries and countries with economies in transition (in both directions); (ii) the implications of the above developments/dynamics in terms of genetic resources (breeding for disease resistance, impact on local genetic resources), Institute for Poultry Research (IPR) and patenting; (iii) the market share of hybrid PoGR (Poultry Genetic Resources) versus local PoGR in selected countries and (iv) the link to the results of the trade data (obtained by Dr Flock from the breeding companies), explain a potential reduction in the importation of PoGR. Such a reduction would not always mean a substitution by increasing production of local or native PoGR, but rather represents a switch from importation of "live PoGR" to dressed products. His duties include also an evaluation of situations where breeding objectives are driven by market preferences that reflect cultural differences, and how such preferences might persist in the future.
 - Develop a methodology to estimate the contribution of each of the main production systems to total production and market supply. The methodology should be able to assess the changes in contribution of the major production systems over the past 20 years.

- 3) Contribute to the development and the strengthening of the AGA poultry website
 - Review the existing AGA poultry website and make recommendations for improving and strengthening it.
 - Collate and review appropriate material (including links to other sites) for inclusion in the website including: material gathered from the review of AGA's role in small-scale poultry production in Africa

- and Asia; post-Avian Influenza rehabilitation and relevant results of the literature review in 2 above.
- Update the existing material associated with the International Network for Family Poultry Development (INFPD) including its multilingual Newsletters; and collate, catalogue and update existing training and extension material on poultry husbandry and diseases and their control in developing countries (members from INFPD who have produced relevant materials and relevant electronic links should be identified).
- 4) Prepare recommendations for the future development of the INFPD
- Explore options for the INFPD to develop, expand its membership and become more self-sufficient.
 - Provide recommendations for AGA's future support for INFPD. Propose recommendations for linking efficiently INFPD with the Asian Pacific Branch of WPSA and its working group that was created in 2004 during the World's Poultry Congress in Istanbul, Turkey, for the support of small-scale poultry production in this region.

Dr Emmanuelle Guerne Bleich, Animal Production Officer, AGAP/FAO, Rome, Italy

Tel: +3906-570-56660; Fax: +3906-570-55749; E-mail: <Emmanuelle.GuerneBleich@fao.org>

Search for Collaborators in China

The DANIDA (Danish International Development Assistance) Smallholder Livestock Development Project in Five Southern Districts of Bangladesh is interested in organising a study tour to China, to learn about family poultry there, particularly ducks. This is a request to our colleagues to please let us know if you know of any individuals or organisations involved in family poultry in China whom we might contact to request assistance in the organisation of a tour.

Please contact *Dr. Jonathan Bell, Smallholder Livestock Development Project, Department of Livestock Services, Farmgate, Dhaka-1215, Bangladesh, Tel: (+880) 2 912 7846 (GMT+6h)*

E-mail: <sl dp2@cyberbangla.com> or <jgbell@proshikanet.com>