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PERFORMANCE AND CONSTRAINTS OF THE POULTRY PRODUCTION SYSTEM AMONG FFS FARMERS IN PEMBA ISLAND, TANZANIA

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ACRONYMS

APA	Associate Poultry Advisor
ASDP-L	Agricultural Sector Development Programme-Livestock
ASSP	Agricultural Service Support Programme
CAHW	Community Animal Health Worker
FFS	Farmer Field School
IFAD	International Fund for Agricultural Development
INFPD	International Network for Family Poultry Development
NCD	New Castle Disease
MALE	Ministry of Agriculture, Livestock and Environment
SFRB	Scavengeable Feed Resource Base
RGoZ	Revolutionary Government of Zanzibar

EXECUTIVE SUMMARY

The ASSP/SDP-L project promotes the development of family poultry development throughout Pemba Island, Tanzania. The Project encourages poultry farmers to adopt a semi-intensive system of production with introduction of improved breeds. Through this Project farmers are trained in improved poultry management using a Farmers' Field School (FFS) approach. So far, good progress has been reported in adoption of the acquired knowledge. However, while adopting the new technologies and knowledge, farmers experienced various constraints and setbacks.

I was sent on a field mission to the ASSP/ASDP-L project in Pemba Island, Tanzania as an Assistant Poultry Advisor (APA) of the International Network for Family Poultry Development (INFPD) from August to December, 2010. The main aim of the mission was to advice the project on performance of the poultry production system and possible solutions to the production constraints among FFS farmers. A field survey was conducted among FFS farmers to assess the performance of the production system and constraints to poultry production. This technical paper reports and discusses the findings from the field survey.

The poultry production system among FFS farmers could be classified as semi-intensive where birds were given feed supplements in addition to scavenging. However, there was variability in type and quantity of feed supplement among farmers. The choice of feed type seemed to be influenced by the cost implication. Most farmers used kitchen wastes and self-mixed rations. Generally the feed rations used were of poor quality. Disease control was also lacking. Under this system, production of both the local and crossbred birds was low. However, performance of crossbred was higher than that of the local chicken. Chick losses accounted for the largest loss in productivity among these farmers. Higher chick losses were reported in crossbreds. Lack of control of Newcastle Disease (NCD), predators and poor nutrition seemed to be responsible for the bulk of these losses. Poor hatchability was also reported as constraint by some farmers. Improper cock: hen proportion and inadequate feed were important causes of poor hatchability.

The author recommends that the project should ensure an effective NCD vaccination programme and develop a practical feed supplementation strategy for FFS farmers based on estimates of the Scavengeable Feed Resource Base (SFRB). Crossbreds should be encouraged along with an effective disease control programme, better nutrition and improved hygiene.

1. INTRODUCTION

Family poultry is important for food security and poverty alleviation in developing countries (Gueye, 2005) where it is mainly under the traditional small-scale system. This system is faced with many challenges including diseases, predators and inadequate feed (Kitalyi, 1998). Presently, this traditional system is a focus for pro-poor programmes (Mack et al., 2003). And its development is promoted through improved housing, feeding, health care and introduction of higher yielding breeds (Branckaert and Guèye, 1999).

In Zanzibar, family poultry represents 98% of the total poultry keeping and consists mainly of chicken and a small proportion of ducks. It is an important source of income and protein for many households (RGoZ, 2003). Development of family poultry is one of the poverty reduction strategies of the Revolutionary Government of Zanzibar (RGoZ) (RGoZ, 2007). This has led to the initiation of the Agricultural Sector Service Programme/Agricultural Sector Development Programme- Livestock (ASSP/ASDP-L) Project which has a component on Family Poultry development.

The ASSP/ASDP-L Project was started in 2007 by the Zanzibar Ministry of Agriculture, Livestock and Environment (MALE) in collaboration with IFAD. The 15 years Project seeks to increase the income and food security of poor agricultural communities in rural districts of Zanzibar. To achieve this, farmers are empowered through a Farmer Field School (FFS) approach. Here farmers come together in a group and are given specific technical training. In the family poultry development component, the Project promotes a semi-intensive production system through training of farmers in improved management and introduction of high yielding birds. Initially the Project was to facilitate a three-monthly New Castle Disease (NCD) vaccination using the I-2 vaccine which was not possible due to unavailability of the vaccine (MALE, 2005). Currently there are 115 poultry FFS in Zanzibar whose members have already been trained. While adopting the acquired knowledge on improved poultry management, farmers have reported many constraints (MALE, 2010; IFAD, 2010). Furthermore the performance of the production system among these farmers as they adopt the acquired knowledge has not yet been quantified. I was sent to the ASSP/ASDP-L project in Pemba Island, Tanzania as an Associate Poultry Advisor (APA) of the International Network for Family Poultry Development (INFPD)

from August to December, 2010. The aim of the mission was to advice the project on possible solutions to some specific poultry production constraints among FFS farmers and the performance of the production system as spelt out in the Terms of Reference (TOR) (see Annex 1). This paper summarizes and discusses findings from the mission and attempts to give recommendations from those findings.

2. MATERIALS AND METHODS

Pemba Island is an Island of Zanzibar in the United Republic of Tanzania. It covers an area of 988 square kilometers and lies off the east coast of Africa in the Indian Ocean directly east of Tanga on the Tanzanian mainland. It is densely populated with the population estimated at 400,000. About 61% of the population survives on less than a dollar a day. Gender disparity is evident with women being disadvantaged in terms of access to health, education, employment, land and capital (RGoZ, 2006; RGoZ, 2007). Due to land scarcity, livestock production especially of dairy cattle and poultry is currently tending towards intensification (RGoZ, 2003). The ASSP/ASDP-L Project covers the four districts of Pemba Island and has 54 poultry FFS groups with approximately 1080 members who have already been trained. An estimated 47% of these farmers have already adopted the acquired knowledge in individual poultry flocks (MALE, 2009).

Data used in the study was collected among poultry FFS farmers in the four districts of Pemba through field survey. The survey included interviews of farmers and direct observations of their flock, poultry houses and surroundings. Only FFS farmers with a poultry flock were included in the study. A total of 73 FFS farmers were interviewed Information collected included feeding, housing, production parameters, chicken mortality, common diseases, disease control and other management practices see questionnaire in Annex 2. Data on input and output costs was also collected from 13 farmers with reliable records. Data was analysed using descriptive methods. To compare the profitability of poultry production among respondents with local chicken versus those with crossbreeds for the period January to December 2010, gross margin analysis (Rushton, 2009) was done. Here gross margin estimates were calculated using mean production parameters and chicken mortality of the two types of poultry units as obtained from the questionnaire interview.

Assumptions were made on feed quantity, drug and vaccine costs based on input and output costs collected from 13 farmers with records.

3. MAIN FINDINGS

3.1 Characteristics of the poultry farms in the survey

The distribution of poultry farms involved in the survey is presented in the map of Annex 3. Most (90%) of the farm owners were poor and relied heavily on small-scale mixed farming (including livestock and crops) for their livelihoods. Only 10% of these farmers owned other livestock including cattle and goats. 59% of the interviewed farmers were female while 41% were male. Most of them were 25years and above.

3.2 Characteristics of the poultry production system

The respondents had a semi-intensive production system and chicken were the most popular poultry species kept. The birds were housed in a specifically constructed house with a fenced chicken run. By the time of the study, 80% of respondents had kept their poultry flock in this system for one year. Table 1 shows the management practices among respondents. 37% of respondents practiced crossbreeding while 63% preferred keeping the local bird. Black Australop cocks were used for crossbreeding. Chicken obtained their feed from scavenging and supplementation. Feed supplements consisted mainly of kitchen wastes and self-mixed feed (Table 1). Kitchen wastes were remnants from household meals mainly bananas, cassava and rice with little or no protein. Self-mixed dry feed consisted of ingredients bought separately and mixed by individual farmers. Such ingredients included; rice bran, coconut cake, fishmeal and oyster shells. The frequency of supplementation per day varied from twice to ad libitum and the quantity of feed given was not measured. Variability was observed regarding the time that birds were allowed to scavenge per day. While 31% of respondents kept their birds indoors and only let them out in the evening for 2 hours, 69% let their birds scavenge for 7-11 hours in the day coming back 2-3 times for feed supplements.

About 28% of the respondents totally confined the chicks to 2 months of age compared to 72% who let them out to scavenge with the mother hen and compete for the same supplement with adult

birds *(Table 1).* 20% of respondents practiced programmed hatching using mother hens. Here the respondents synchronized 4-6 broody hens to hatch on the same day.

Disease control was limited to the use of herbal medicines such as among others pepper and leaves of the Aloe plant (locally known as 'Mshubili'). Respondents reported that these herbal products were ineffective in treating NCD. Only few farmers (19%) seemed to vaccinate regularly against NCD *(Table 1)* using the La Sota live vaccine. Reasons given for not vaccinating included; vaccine shortage, high cost of a vial of vaccine to an individual farmer (Tsh 4000), doubt about the efficacy of the vaccine, inadequate follow-up visit and advice from extension workers. 30% of respondents used veterinary products such as antibiotics, Vitamin and mineral pre-mixes on their poultry flock. Simple disease control measures such as good hygiene and isolation of sick birds were not adhered to. Slaughter and sale of sick birds was a common practice.

Table 1: Proportion of respondents by poultry management practices in Pemba Island

Variable	Definition	N=73	Proportion of respondents (%)
Cock breed	Hybrid only	3	4
	Local only	46	63
	Hybrid and local	24	32
Chick rearing method	Semi-confined	53	72
	Totally confined	20	28
Type of feed	Kitchen wastes and leftovers	36	50
	Self mixed feed(rice bran, coconut cake, fish meal)	33	45
	Concentrates	4	5
ND vaccination programme	Present	13	19
	Absent	60	81

3.3. Performance of the poultry production system among FFS farmers

Population parameters of the poultry units among respondents are found in *Table 2*. There was variation in flock sizes among respondents ranging from 1 to 235 with an average flock size of 41.

Moreover, the hen to cock ratio also varied from 1 to 25 but on average, respondents kept 6 hens to 1 cock. On average, 11 hens were kept per poultry unit.

Table 3 shows the performance of the chicken flocks among respondents. A lot of variation in egg production of individual birds was observed even within the same farm. Crossbred hens were reported to lay up to 30 eggs per clutch while the local hens lay between 7 and 15 eggs per clutch. Sexual maturity in pullets was attained at 5-7 months with crossbreeds attaining maturity earlier than local birds. The number of clutches/hen/year was reported to be 3-5 for the crossbreed and 2-3 for the local birds. Thus, the annual egg production per bird was higher for crossbred than local hens. The largest proportion of eggs was incubated; eggs were eaten or sold when in surplus. In both breeds more deaths were reported in young chicks compared to older birds. However, mortality seemed higher in crossbred than local birds. Nevertheless, the annual bird output per hen was reported to be higher for crossbred than local birds *(Table 3).*

Table 2: Population parameters of poultry units among respondents

Trait	n	Mean	Median	Range	95% CI
Flock size	73	41.3	27	1-235	32.1-50.6
Hens (layers and non-layers)	73	11.2	7	0-80	8.2-14.2
Cocks	73	1.9	1	0-17	1.3-2.5
Hen: cock ratio	58	6.1	5	1-25	4.9-7.4

Figure 1 shows the lower and upper gross margin estimates for farmers who kept local chicken versus those who kept crossbreeds for the period Jan-Dec 2010. These estimates were calculated using production parameters obtained from the questionnaire interviews and variable costs based on the assumptions deduced from the input/output costs records of 13 farmers. The lower estimate was calculated using higher variable costs (30g/bird/day and drug cost of Tshs 100/bird/year for poultry units with local birds and 50g/bird/day of feed supplement; and drug cost of Tsh 300/bird/year for poultry units with crossbreeds). The upper estimate was calculated using lower

variable costs (10g/bird/day and drug cost of Tshs 300/bird/year for poultry units with local birds and 35g/bird/day of feed supplement and Tsh 400/bird/year in drug costs poultry units with crossbreeds. From the figure, farmers who kept crossbred chicken seemed to have higher gross profits than those who kept local birds. However, there was variability in input costs and hence gross margins of these farmers.

Table 3: Mean (Range) performance of local and crossbreed chicken among respondents

Trait	Local breed	Crossbreed
Eggs per clutch (number)	10(7-15)	15(10-30)
Clutches per year (number)	2(2-3)	4(3-5)
Eggs set per hen (number)	8(7-10)	10(9-12)
Hatchability (%)	85(50-100)	92(85-100)
Mortality (%)		
0-8 weeks	44(8-90)	60(52-83)
8 weeks-6months	11(0-50)	16(0-52)
Older birds(> 6 months)	8(0-16)	8(0-25)
Mature chickens per hen per year (number)	2(0-11)	14(10-18)

Table 4 represents the gross margin estimates of 7 different FFS farmers (F1-F7) from chicken production for the period Jan to Dec 2010. These estimates were calculated based on input and output costs obtained from the records of these farmers F1-F7. F1 & F6 who used chick mash to raise chicks up to 8 weeks of age and other cheaper supplements for older birds had the highest gross margins. F1 kept crossbreed chicken while F6 kept the heavy breed local game chicken 'the Kuchi'. F4, who exclusively used concentrates for supplement, recorded negative gross margin.

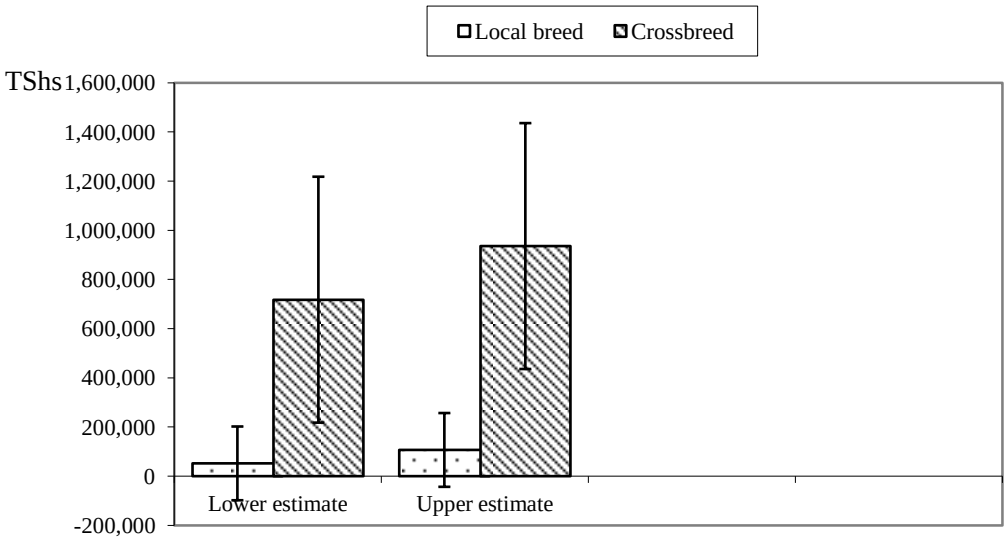

Figure 1 : Estimated average gross margins from chicken production among respondents for the period Jan-Dec 2010

Table 4: Estimates of gross margin (Tshs) of 7 poultry units of FFS farmers in Pemba Island for the period January to December, 2010.

Output in the year	**F1**	**F2**	**F3**	**F4**	**F5**	**F6**	**F7**
Breed	Crossbreed	Local	Local	Crossbreed	Local	Local[h]	Local
Bird output	240,000	32,000	8,000	416,000	32,000	80,000	64,000
Egg output	250,400	44,800	42,600	98,000	10,400	316,000	22,200
Change in flock value	472,000	107,000	40,000	612,000	114,000	836,000 [e]	124,000
Total output	**962,400[d]**	**183,800**	**90,600**	**1,126,000**	**156,400**	**1,232,000**	**210,200**
Feed costs	432,600[a]	67,400	1,200[c]	1,069,600[b]	262,560	506,800[a]	191,000
Drug costs[g]	43,500	18,000	2,000[f]	70,000	9,000	45,500	24,500
Total variable costs	**476,100**	**85,400**	**3,200**	**1,139,600**	**271,560**	**552,300**	**215,500**
Gross margin (Tshs)	**486,300**	**98,400**	**87,400**	**-13,600**	**-115,160**	**679,700**	**-129,300**

a- Feed consists of chick marsh for chicks up to 8 weeks; self-mixed feed (maize bran, rice bran, fish meal, coconut cake) for other birds
b- Feed consists of concentrates for all birds.
c- Feed consists of kitchen wastes and occasionally bought millet
d- Balanced total output from sale and consumption of eggs, birds and replacement of flock.
e- Bulk of bird output goes into flock replacement
f- Drugs bought as a group
g- Drug costs consisted of ND vaccines, antibiotics and vitamin supplements
h- Kept heavy breed of local game chicken 'Kuchi'

3.4. Constraints to poultry production among FFS farmers

All respondents mentioned high chick loss in the first 2 months of life as the major constraint to poultry production. Poor hatchability and high cost of feeds were also mentioned as important constraints.

On average, 50% of chicks were lost before 2 months of age. Disease and predators were reported as the main causes of chick loss *(Figure 2).* Other causes included poor nutrition and external parasites. Of the disease causes, NCD (commonly known as 'Magwa') was identified as the major problem. Higher losses were reported in crossbreed than local chicks *(Table 3).*

On average, respondents reported hatchability of 87%. However, 29% of respondents mentioned hatchability as a problem among their flock. For these respondents, average hatchability was 75%. Egg infertility and poor nutrition of the broody hen accounted for 41% and 23% respectively, of the causes of poor hatchability. External parasites also contributed to poor hatchability. The hatchability for crossbred and local chicken was similar *(Table 3).*

Poultry feed on the Island was reported to be expensive with the price of concentrates (commercially mixed feed) ranging from Tshs 500 to Tshs 600 per kilogram. The concentrates were imported from the Tanzania mainland as the Island is lacking poultry feed factories. A majority of respondents used kitchen wastes and self-mixed feed ratios. *Table 5* shows the usage by respondents, price and proportion of various ingredients in the self-mixed feed. Rice bran, whose price was relatively low, was used by most respondents and constituted the bigger portion of the feed. On the other hand, cassava, which was a human food and costly, was used by fewer farmers. Fishmeal was used by 15% few respondents while coconut cake was used by 50% of respondents.

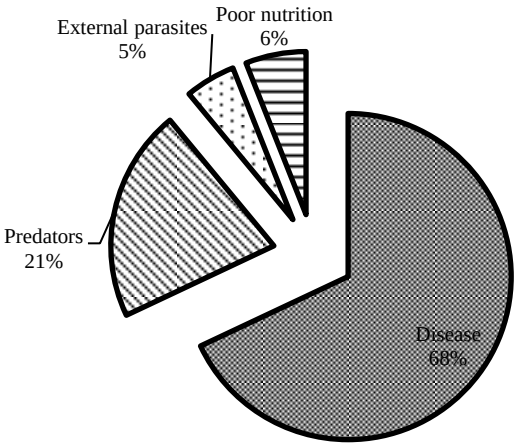

Figure 2 : Factors contributing to loss of chicks below 2 months of age

Table 5: The price and composition of self-mixed feed as used by respondents

Ingredient	% of respondents (N=33)	% of ingredient in feed*	Price per Kg
Rice bran	95%	95-100%	Tsh 50
Cassava	10%	80-90%	Tsh 500
Fish meal	15%	1-2%	Tsh 300
Coconut cake	50%	1-5%	Tsh 200

***** Estimate based on farmer information on mixing of the feed.

4. DISCUSSION

The poultry production system among FFS farmers could be characterized as semi-intensive. However, there was a lot of variation in feed quantity and type. There seemed to be improvement in poultry housing compared to reports of the traditional system in Tanzania (Mwalusanya *et al.,* 2001). The mean flock size of 41 reported in this study was higher than that reported in Tanzania and other parts of Africa (Kitalyi, 1998; Mwalusanya et al., 2001). However, this flock size is comparable to those recorded from areas that have benefitted from poultry development

programmes (Farooq et al., 2000). The ASSP/ASDP-L Project promotes rearing of crossbreed chicken semi-intensively. However, most respondents kept local birds. Farmer's preference for local birds rather than crossbreeding could result from the high level of management required (Hajima Nebata, 1997).

In this study, the performance of the local chicken seemed low. For instance, the average number of eggs per clutch was similar to that reported in the traditional system in Tanzania (Mwalusanya et al., 2001) and below the expected local bird egg production level in the semi-intensive system in Africa (Kitalyi, 1998). In addition, the average number of mature birds per local hen during the period Jan- Dec 2010 was low *(Table 3).* However, there was variability observed in egg production of the local hens which could be attributed to the different varieties of local birds and feeds. The differences in individual chicken in egg production point to the potential for genetic improvement through selection. In comparison to the local chicken, the performance of the crossbred chicken seemed higher. For instance, the average annual egg production per crossbred hen was higher than that of the local breed *(Table 3).* This could be attributed to the more productive chicken strains obtained by crossing the exotic breeds with local chicken (Farooq et al., 2000). There were variations in the egg production of crossbred chicken with some hens producing as high as 30 eggs per clutch and others as low as 10 *(Table 3).* This could be attributed to the variability in management among these farmers; and points to the potential performance of the crossbred under good management. Although somewhat improved, the management of these farmers did not seem adequate enough to allow for maximum production. Generally, the farmers in this study used poor quality feed supplements and disease control was lacking. Even (?) with the use of higher yielding breeds, proper management including balanced feeding and disease control are important to achieve the desired production (Ershad, 2005).

In this study, farmers reported high chick losses as the main constraint to poultry production. It was not surprising that NCD was reported as the main cause of loss in chicks as only few farmers (19%) regularly vaccinated for it. In the traditional system, it is considered the main constraint (Kitalyi, 1998) and it's control is therefore imperative in any programme seeking to improve family poultry in endemic areas (Branckaert and Gueye, 1999). Until the time of the study, the

project had not initiated an NCD vaccination programme and it was left to the farmers to vaccinate on their own initiative which was not feasible for most of them. With reports of high chick losses especially of the crossbred type, the Project has realized the need to facilitate regular NCD vaccination for the FFS farmers. The ASSP/ASDP-L project has now finalized plans for a regular supply of I-2 vaccine from the Temeke production unit. The approach of the Project is that the Livestock Department, MALE will organize and coordinate the vaccination programme while the Project team oversees and lobbies for regular supply of I-2 vaccine on the Island. Farmers will be expected to pay for the vaccination. Such an approach, where farmers pay for vaccination and where extension is an integral part of the vaccination programme is thought to ensure sustainability (Alexander *et al.,* 2004). However, since extension workers are few on Pemba Island, alternatives such as strengthening the role of Community Animal Health Workers (CAHWs) in organizing vaccination would be useful. Some FFS farmers can also be trained for this purpose.

A majority of farmers let their chicks scavenge with the mother hen from the first day. This explains the losses reported from predation in this study. The main reason given for not confining the chicks as recommended by extension was the lack of feed for the mother hen and the chicks. Chick confinement has been known to reduce losses from predators; however, it comes at a cost to the farmer in terms of increased feed (Sonaiya and Swan, 2004).

While poor nutrition was not directly mentioned as a major cause of chick losses, it seemed to underlie other factors such as disease and predation. This was owing to the poor quality of feeds supplements used by a majority of farmers. For example, rice bran, constituted more than 90% of self-mixed feed *(Table 5)* against the recommended proportion of not more than 20% due to it's anti-nutritional factors that cause growth depression in chicks (Gallinger *et al.,* 2004) Generally, the feed supplements seemed to lack protein and were inadequate in energy. Unlike older birds, who might get additional protein from insects when they scavenge, chicks need a well-balanced ration that is high in protein to increase their survival rates (Roberts *et al.,* 1994). On the other hand, poor nutrition increases susceptibility of chicks to disease and predators (Gunaratne *et al*., 1993). In this study, high cost of feed was reported to constrain production. Although concentrates could be purchased from various feed stores on the Island, the price was

prohibitive for most farmers. Moreover, the production of the poultry units of these farmers did not seem to support the exclusive use of concentrates (For example, F4 in *Table 4)*. Only minimal use of concentrates to raise chicks up to 8 weeks seemed profitable (F1 & F6 in *Table 4*). Farmers sought cheaper feed irrespective of their quality as poultry feed *(Table 5)*. This resulted in poor nutrition for the birds and low productivity. The conventional sources of poultry feed are limited in Pemba Island which relies on cereals and grain imports from the Tanzania mainland. On the Island, cassava, sweet potatoes, bananas, rice, sea-fish and fruits are common but their use is limited to human consumption. Tree crops such as rubber and coconut palm tree are also common. Roberts (1999) suggested the use of unconventional sources such as byproducts from local industries including of fruits and tree crops as poultry feed. This alternative could be explored on the Island. In addition, since the Scavengeable Feed Resource Base (SFRB) varies with season and location, its contribution should be estimated in order to develop appropriate feed supplementation strategies.

In this study, the main cause of poor hatchability seemed to be egg infertility as a result of improper proportion of cocks to hens. The recommended hen to cock ratio in confinement is 10:1. The hen to cock ratio kept by most farmers in this study seemed appropriate for maximum fertility. However, farmers who reported poor hatchability had a hen to cock ratio above 10:1 with some having up to 25 hens to 1 cock. This agrees with the findings of (Malago and Baitilwake, 2009) that egg fertility is affected by improper ratio of males to females.

5. CONCLUSIONS AND RECOMMENDATIONS

Generally, the adoption of the semi-intensive system by the trained farmers has been impressive. However, this may not last if the high chick losses are not dealt with. The performance of both the local and crossbred birds varied widely due to variations in management and pointed to higher production with a little more improvement in management in terms of nutrition and disease control. With such improved management, indications are that the crossbreed may perform better than the local bird. Thus to ensure higher productivity and profits from a semi-intensive system in Pemba Island, farmers should be encouraged to keep crossbreeds supported by an effective disease control programme, better nutrition and rearing conditions.

Loss of productivity among the FFS farmers was mainly from high chick losses. Lack of control of NCD, predators and poor nutrition seemed to be responsible for the bulk of these losses. The project therefore needs to ensure an effective NCD vaccination programme. Development of a practical feed supplementation strategy for FFS farmers based on estimates of the SFRB is also necessary.

The ASSP/ASDP-L training curriculum on improved poultry husbandry is appropriate. However, farmer follow-up should be strengthened to advice and give support to farmers.

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ANNEX 1

Terms of Reference

(i) Determine the chicken mortality at brooding stage

(ii) Assess performance of hybrid cocks with local hens

(iii) Assess semi intensive system of keeping local poultry

(iv) Assess the nutritive value of feeds given to chicks at early stages

(v) Determine the causes of poor hatchability of eggs

(vi) Provide technical advice to other livestock based farmer field schools

(vii) Submit final report on her findings and recommendations to Programme Coordinator

ANNEX 2: QUESTIONNAIRE

Introduction

Village poultry are an important part of rural life in Pemba. In order to assist village poultry farmers increase their production, we would like to know more about the major problems associated with raising village poultry. Your responses to this questionnaire will assist the ASSP/ASDP-L and livestock department to prepare an assistance package.

Interviewer:	Questionnaire number:

A: Identification and characteristics of sample household

1. Characteristics of household	
Date:	Name of respondent:
District:	Male ☐ Female ☐
Village:	Age:
GPS coordinates:	FFS group:

Animal numbers and flock management

2. List animals owned			
Livestock kept	Number	Breed and source	Who takes care of them?
Cattle			
Goats			
sheep			
Chicken			
ducks			
Others. What?			

3. Number of chicken owned	

Category	number
Adults females	
Adult males/ cocks	
Growers (1-6 months)	
Chicks(day old to 1 month)	

4. Did the number of birds in your flock change during the last year? ☐ No, remained the same ☐ yes, increased ☐ yes, decreased
4.1 Does the number of birds in your flock change with season? ☐ Yes ☐ No (go to q 4.2)
4.1a If yes, which months are chicken numbers highest?
4.1b Which months are chicken numbers lowest?
4.2 Do you buy birds for your flock? ☐ Yes ☐ No (go to q 4.3)
4.2a If yes, where do you buy birds? ☐ Market ☐ Neighbour ☐ Other……
4.2b Which birds do you buy ☐ local ☐ improved ☐ young birds ☐ adult birds
4.2c Do you use any criteria to select the birds you buy? ☐ Yes ☐ No (go to q 4.3)
4.2d If yes, which criteria? Describe
4.3 Do you try to get better birds for your flock? ☐ Yes ☐ No
4.3a If yes, from where do you get these better birds? ☐ Market ☐ Neighbour ☐ My own flock ☐ Other
4.3b What criteria do you use to select these better birds? Describe

Production technology

5. Housing
5.1 Are your birds housed? ☐ 1 Yes, day and night ☐ Yes, in the night only ☐ No (go to q5.1b)
5.1a If your birds are housed, please describe the housing type ☐ Simple construction with on farm material

☐Simple construction with purchased material Other……..
5.1b If your birds are not housed, give a reason ☐ Not enough money to construct ☐ Not necessary, birds can do without Other……..

6. Feeding

6.1 What type of feed do you give your chickens?		
Category	Type of food	Frequency per day
Chicks : day old-1 month	☐ Nothing ☐ Rice ☐ Food scraps. What? ☐ Concentrates ☐ Others…….	
Growers : 1- 6 months	☐ Nothing ☐ Rice ☐Food scraps. What? ☐Concentrates ☐ Others…….	
Layers	☐ Nothing ☐ Rice ☐Food scraps. What? ☐Concentrates ☐ Others…….	
Other birds	☐ Nothing ☐ Rice ☐Food scraps. What? ☐Concentrates ☐ Others…….	
6.2 Do you purchase feed for your birds? ☐Yes ☐No (go to q 6.2b)		
6.2a If yes, describe the source of purchased feed for your birds ☐ Market ☐ Neighbour other……		
6.2b If no, where do you get feed for your birds? Describe		
6.3 Do you provide water for your birds? ☐ Yes ☐No		

7.Hatching techniques

7.1 Do you incubate eggs from your chickens ? ☐Yes ☐ No (go to q7.7)
7.1a If yes, which hatching techniques do you use ? ☐ Natural ☐ Programmed hatching ☐ Others……..
7.1b If you use mother hen to incubate the eggs, do you have a nest ? ☐ Yes ☐ No (go to q 7.2)
7.1c If yes, what type of material do you use to make the nest ? describe
7.2 Where do you store eggs for incubation ? describe ☐Under a shade ☐In the nest ☐In a box on the floor of the house ☐Other……
7.3 For how long do you keep the eggs before incubation ? ☐ > 14 days ☐ 10-14days
7.4 Do you select the eggs to be incubated ? ☐ Yes ☐ No (go to q 7.5)
7.4a If yes, what criteria do you use ? describe
7.5 In the last batch/clutch how many eggs per hen a. Did you incubate ……. b. Hatched into chicks…….
7.6 Is hatchability a problem in your flock ? ☐Yes ☐No(go to q8)
7.6a If yes, what do you think is the cause ? explain

7.7 If you do not incubate your eggs, where do you get your chicks ? ☐ Market ☐ Neighbour ☐ Others……

Chick rearing

8.1Do you rear your chicks separately from the flock ? ☐ Yes ☐ no
8.1a If yes, how do you rare your chicks ? explain

9. Production parameters

Parameter	Number
9.1 At what age do your chickens first lay eggs?	
9.2 In the last year, how many times did each of your hens lay?	
9.3 a In the last batch how many eggs did each hen lay ?	
9.3b How many eggs from each hen were i. Eaten? ii. Sold?	
9.4 In one batch, how many chicks survive the first 2 months per mother?	
9.5 In one batch , how many chicks survive the first 6 months per mother?	
9.6 In the last year (from the last Ramadhan to this Ramadhan), how many birds did you Eat?	

Sell? Give away as gifts?	

9.7 Are you satisfied with the production of your chickens?

☐ Yes ☐ No

9.8 Please explain

10. Chicken mortality

10.1 Is chicken mortality a problem in your flock? ☐ Yes ☐ No (go to q 10.2)

10.1a If yes, how many birds have died in the last six months

Adults ……

Growers (1-6 months)……..

Chicks (day old- 1 month)……

10.1b In your flock, what is the most important reason for death/losses of

Adult birds ……. Growers…….. Chicks……..

10.2 Is disease a problem in your flock? ☐ Yes ☐ No(go to q 10.3)

10.2a i. If yes, which are the common diseases in your flock? Describe

10.2a ii. Which are the common symptoms of this disease you observe in your flock? Describe

10.3 Do you have disease control measures on your farm? ☐ Yes ☐ No

10.3a If yes, What are they? Explain

10.4 Do you do regular vaccination of your birds? ☐ Yes ☐ No(go to q 11)

10.4a If yes, which disease do you vaccinate against? ☐ ND ☐ Fowl pox ☐ gumboro ☐ don't know other(specify)…….
10.4b In the last year, how many times did you vaccinate For ND?..... Fowl pox …… gumboro……. Others……..
10.4c Who vaccinates your flock? ☐ Self ☐ extension worker ☐ other(specify)…….

11 FFS Training

11.1 Has your FFS training on poultry rearing been useful? ☐ Yes ☐ No
11.1a In what way? Please explain
11.2 Have you adopted what you have learnt on poultry rearing on your flock? ☐ Yes ☐ No(go to 11.2b)
11.2 a If yes, what have you adopted? Describe
11.2b If no, why have you not adopted? explain
11.2c In your opinion, do you need more training? ? ☐ Yes ☐ No
11.2d If yes, In which areas do you think you need more training?
11.2e In which other areas do you think the ASSP/ASDP-L Project could assist you?

Thank you for your cooperation

ANNEX 3

The distribution of some of the interviewed farmers in Pemba Island, Tanzania