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Skill Gap Analyses of the Farmers and Agricultural Development Technicians on Indigenous Poultry Production in Nkonkobe Municipality Eastern Cape Province, South Africa

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ABSTRACT Skills are ingredients of productivity. Acquiring technical skills within the framework of farming activities trigger development and innovation. The paper focused on the skill gaps and training needs of indigenous poultry farmers (IPFs) and Agricultural Development Technicians (ADTs) in indigenous poultry production in the Nkonkobe Municipality, Eastern Cape Province, South Africa. Data were collected from 312 households rearing indigenous poultry from 14 villages and from 33 ADTs. Thirty-two skills items were used as a checklist of competency levels using the Likert rating scale from poor (1) to excellent (5). Descriptive statistics and exploratory Principal Component Analysis (Orthogonal rotation technique) was performed on the data collected for the IPFs. Findings revealed that, IPFs showed competencies in nine skill items that included ability to identify chicken predators (x=3.92); use of ethno veterinary drugs to treat chicken diseases and pests (x=3.72), and identify signs of diseases (x=3.69), amongst others. However, the ADTs did not show any competency in any of the 32 skills items. Six factors with the eigen value of >1, which accounted for 77.317% were extracted, with each factor loading ranging from 0.523 to 0.93. Factor loading after rotation were described as brooding, shelter and care of the chicks; Predators and Healthcare; Hygiene and Litter Management; Feeds and Feeding Stuff; and Record Keeping and Marketing. It is recommended that intensive training isneeded for both the IPFs and the ADTs for up-scaling in the indigenous poultry production.

INTRODUCTION

Achievement in a farming enterprise (whether small or large) scale depends on skills at the disposal of the farm entrepreneur. Skills or competencies according to Vreyens and Shaker (2005) are observable abilities that are manifestedby an individual indicating how to do something. Skills are obviously important means to increasing incomes and sustainable livelihoods for the poor (World Bank 2004).In the views of Eskola and Gasperini (2010) skills development "is central to improving rural productivity, employability and income-earning opportunities, enhancing food security and promoting environmentally sustainable rural development and livelihoods''.

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Indigenous poultry production is an age-old farming activity that enjoys wide acceptance among the rural poor, and is regarded as domain for women (Gueye 2009; Kingori et al. 2010; Mtileni et al. 2009; Ochieng 2012) hence, it is at the bottom end of livestock ladder. Many farmers regard chicken production as a secondary or tertiary enterprise, best suited to the time after the real day's work (Sonaiya and Olori 1990). The knowledge of its production and management is usually passed from one generation to the other. This gives some of the farmers' better local technical skills in indigenous poultry production. Importantly, local technical skills are crucial for farmers' survival, but it is not enough to make the resource poor compete in an ever expanding market (Asenso-Okyere 2009). New challenges are also emerging daily which do not discriminate against the rural space. There are challenges relating to health (the recent outbreak of avian flu), the scourge of Newcastle disease, the need to look inward for local materials as sources of feeding, housing, breeding, genetic erosion and an effective management intervention of indigenous poultry production are some of the contending issues.

South Africa has been classified as having two groups of critical skills demand (Daniels 2007). This according to the author, are the generic skills and particular occupation skills required for performance within a specified enterprise. A successful farming enterprise requires that farmers be wellequipped with new knowledge, skills and competencies even at the 'low'-level end of the job skills spectrum (Williams 2010). McElwee (2005) asserted that the development of the entrepreneurial skills of farmers is a significant issue which needs to be addressed by all stakeholders in the agricultural socio-economic network.

The effort of government at reducing poverty in South Africa has taken several dimensions. At the provincial level, among the programs implemented to reduce poverty, are: the Integrated Development Plan (IDP), the Provincial Growth and Development Plan (PGDP) and the Local Economic Development (LED) Framework. However, the report of the Public Service Commission (PSC) (2007) identified flaws, the lack of capacity, and poor skills development of personnel handling projects as some of the reasons responsible for the failure of the programs at various stages. Also Gichohi (1992) and Ochieng (2011) identified the lack of capacity and skills as key factors responsible for the "missing link'' in economic development and transformation within the society or in communities. Caillods (2003), Fluitman (2005) and Palmer (2007) identified the neglect of skills development as a step in poverty reduction programs as a big gap, while Nuthall (2006) and Palmer (2007) criticized the neglect of skills development in the informal economy that illuminates the rural environment as worrisome. The literature revealed that, many poverty reduction strategy papers (PRSPs) lack skills development initiatives (Palmer 2007), while the International Labor Organization (ILO) (2003) averred that "a striking feature of most poverty reduction strategies is the absence of vocational education and training''. As a result of these lapses, Phiri (2009) concluded that with the implementation of various programs aimed at poverty reduction, the economic life of an average person in the rural areas worsened.

Indigenous poultry production (IPP) has not featured in the Eastern Cape Province's (ECP) poverty reduction program. The effort of the government has largely been on livestock that include cattle, sheep, goats, pigs and exotic poultry. However, 'many village chicken based projects have demonstrated that it is possible to build on the scavenging system and to organize interventions that have an impact on poor households' (Alders et al. 2010). Notable among these are the Bangladesh Rural Advancement Committee (BRAC) Model (Dolberg 2003), Research-Into-Use (RIU) Indigenous Chicken (IC) projects in Tanzania (MUVEK Development Solutions 2010), and Rakai Model in Uganda (Roothaert et al. 2011). Skills and capacity development of farmers and extension workers are part of the success factors in all the models. Dolberg (2003) deduced that research and training were identified as precursors to scaling up at using poultry production as a tool in poverty reduction. This assertion was supported by Asenso-Okyere (2009) that, agricultural productivity will continue to decline if the capacity of farmers and other actors in the agricultural value chain remain undeveloped, preventing them from innovating. However, the research focus on IPP in ECP has majorly been on the socio-economic factors of production (Mtileni et al. 2012; Mwalusanya et al. 2002), ethno-veterinary practices (Chulayo et al. 2012; Mwale and Masika 2009); chicken genetic resources (Mtileni et al. 2011; Norris et al. 2007); Veterinary microbiology (Abolnik et al. 2006; Bwala 2009), and food quality and preference (Dyubele et al. 2010). Very scanty information is available on skill competencies and capacity development of the indigenous poultry farmers (IPFs) and the Agricultural Development Technicians (ADTs) in IPP. A critical review of the pillars of the Extension Recovery Plan (ERP) indicates that "re-skilling and orientation'' of extension workers is paramount (Mudau et al. 2009). However, no conscious effort has been devoted to the skill audit required for up scaling, thereby creating a missing gap.

In an attempt to design developmental programs for IPP, it is important to determine the current level of the local technical skills of IPFs and the knowledge and skills audit of the ADTs to ascertain their strengths and weaknesses. This will lead to the identification of skills gaps and where resources and energy need to be channeled for training. Thus, the present research paper aims at identifying the indigenous technical skills of the IPFs and the level of skills

of the ADTs in IPP in an attempt to design a skill training program.

METHODOLOGY

The population for the paper was made up of 312 IPFs taken from 14 villages (Woburn, Dyamala, Bergplaas, Ncera, Ntselamanzi, Msobomvu, Melani, Khayalethu, Kwezana, Gqumahashe, Hala, Alice, Hopefield and Mbizana LHP) in the Nkonkobe Municipality (NM) and all the ADTs were the target population from the Department of Rural Development and Agrarian Reform (DRDAR), in the NM. Data were collected using the snowball technique for the IPFs. Questionnaires for the ADTs were distributed at the DRDAR offices in Alice, Middle drift, Bisho, and the Cape College in Fort Beaufort. Retrieval of the questionnaires was through the same route.

The skills competency measurement for both the IPFs and the ADTs was a Likert scale questionnaire developed from a review of the relevant literature on skills essential to IPP. A total of 32 skill items were identified within the production activities, comprising of housing, feeding, breeding, health care, marketing and record keeping. The questionnaires consisted of questions eliciting information on the basis of the skill assessment competency level from poor (1), fair (2), good (3), very good (4) and to excellent (5). Total and mean perception scores were computed for each skill item, after which a cut-off means score of 3.5 [(1+2+3+4+5) /5+0.5)] was used to differentiate between the skills gap for both the IPFs and the ADTs at $x \geq 3.5$ rated competent and $x<3.5$ rated skill deficient.

Content and face validity of the questionnaire were established by an expert on IPP and an agricultural extension expert in the Agricultural and Rural Development Research Institute (ARDRI) and the Department of Agricultural Economics and Extension, University of Fort Hare respectively. The Cronbach's alpha reliability coefficient was 0.92. Questionnaires were administered from May to November 2012.

Data Analysis

A descriptive statistics analysis was used, while an exploratory Principal Component Analysis (PCA) (Orthogonal rotation technique) was performed on the data collected for the IPFs using the SPSS version 20 (2012). A PCA could not be performed on the ADTs because the population sampled was below the acceptable sample size of 300 (Tabachnick and Fidell 2001) and 150 (Field 2009).

RESULTS

Demographic Distribution of Agricultural Development Technicians (ADTs) and Indigenous Poultry Farmers (IPFs)

Data was collected from ADTs (the extension officers) consisting of 15 males (45.45%) and 18 females (54.54%). Sixty-three percent of the extension workers were married, and the mean age was 40.97 years (SD=7.393). The majority (57.59%) were holders of a diploma in agricultural extension, and 42.42% were degree holders in agricultural extension. The IPFs are made up of 237 (76%) female and 75 (24%) male. The mean age was 47.61 years (SD 1.220) (Table 1). Most (45.5%; n=312) were married, and the literacy level of the total population was 97.1%. Most

Table 1: Demographic characteristics of the ADTs and the IPFs

	Fr	*%*	*Mean*	*S D*
ADTs				
Sex				
Male	15	45.45		
Female	18	54.54		
Total	33	100		.506
Marital Status				
Married	21	63.61		
Single	12	36.4		
Education				
Diploma	19	57.6		
Degree	14	42.4		.489
Age				
25-30	5	15.2		
31-35	1	3.0		
36-40	9	27.30		
41-45	5	15.3		
46-50	13	39.20	40.97	7.393
IPFs				
Gender				
Male	75	24.0		
Female	237	76.0		
Total	312	100.0		.428
Age				
25-35	34	10.9		
36-45	54	17.3		
46-55	88	28.2		
56-65	86	27.6		
66 and above	50	16.0		
Total	312	100.0		1.220

(35.2%; n=312) learnt the indigenous technical skills of managing chickens from their mother. There were no (99.7%; n=312) extension packages on IPP for the farmers in the study area (Table 2).

Indigenous Poultry Farmers (IPFs) and Agricultural Development Technicians' Skills Assessment Competency Level

Pest and Diseases Management Skills

Table 3 indicates the pest and diseases management skills competency levels amongst the IPFs and the ADTs. The table revealed that IPFs had competencies in five out of the eight skills examined, while the ADTsdisplayed competency below the critical value of $x \geq 3.5$ in all the eight parameters evaluated. IPFs showed high competencies in the ability to identify chicken predators (x=3.92), methods of ethno veterinary drug treatment for chickens (x=3.72), and control of predators (x=3.77), amongst others.

Feeds and Feeding Material

Table 4 indicates that both the IPFs and the ADTs lacked the ability to identify local feeding

Table 2: Sources of Knowledge and Extension services support to farmers

Sources of knowledge in IPP by the respondents	*Fr*	*%*
Mother	110	35.2
Parent (both father and mother)	95	30.4
Self learning	54	17.3
From friends and neighbors	7	2.2
Parent and further self learning	43	13.8
Brother/family member	3	1.0
Total	312	100.0
Extension support to farmers on local chicken by public extension services	*Fr*	*%*
No	311	99.7
Yes	1	.3
Total	312	100.0

Table 3: Pest and disease management skills

Items		*Mean IPFs n=312*	*SD IPFs*	*Remarks IPFs*	*Mean ADTs n=33*	*SD ADTs*	*Remarks ADTs*
1	Identify signs of diseases in birds	3.69	.824	CO	3.31	.855	NCO
2	Identify ecto parasites in birds	3.51	.935	CO	3.15	.376	NCO
3	De-worm birds	2.12	1.146	NCO	3.46	.519	NCO
4	Administer drugs to sick birds	3.22	.971	NCO	2.69	.630	NCO
5	Identify chicken predators	3.92	.928	CO	3.15	.987	NCO
6	Control of predators	3.77	1.066	CO	2.85	1.144	NCO
7	Disposing dead birds	3.16	1.395	NCO	2.54	.776	NCO
8	Methods of ethno-veterinary drugs to treat diseases and parasites	3.72	1.160	CO	2.31	.480	NCO

Keys: CO=Competency Observed, NCO=No Competency Observed

Table 4: Feeds and feeding stuff skills

Items		*Mean IPFs n=312*	*SD IPFs*	*Remarks IPFs*	*Mean ADTs n=33*	*SD ADTs*	*Remarks ADTs*
1	Use of local feeding stuff to feed birds of different age groups	2.55	.944	NCO	2.85	.899	NCO
2	Identify local feedstuffs at different period of the year to feed birds	2.34	.894	NCO	3.00	.000	NCO
3	Use of supplementary feeding for birds of different age group	2.21	1.037	NCO	2.54	.519	NCO

materials, apart from maize, that could be used to prepare supplementary rations. Indigenous poultry farmers actually depended on maize or rice grains to feed the birds as supplements that have both economic and food security implications.

Selection and Management of Flocks and Chicks

Out of all the parameters assessed in Table 5, IPFs were competent in the ability to identify high yield birds (x=3.79) and the protection of chicks against diseases, pests and predators (x=3.52). Findings indicate that there was no breeding program in place. The stock breeding system relied on chance. The level of competence displayed by the ADTs was very low in all the parameters.

Housing and Equipment Skills

Most of the IPFs showed competence in the ability to use local materials to make nest boxes (=3.66) and improvising for drinkers and feeders (=3.61). Other factors that are essential to housing and directly proportional to the health care of the birds were very low (Table 6); for example, knowledge of litters and management (x=1.98) and disinfecting the pen after the brooding period (x=1.87). There was no skills competence displayed by the ADTs in any of the items assessed under housing and equipment.

Record Keeping and Marketing Skills

The importance of record keeping and access to markets are very crucial in any agricultural enterprises. Record keeping is an effective indicator of whether the farming business is moving in the right direction or not. However, Table 7 indicates that both the IPFs and the ADTs lack the prerequisite skills in record keeping. The IPFs displayed poor knowledge of the local market for the IC which could be attributed to the fact that the majority (69.5%; n=312) reared the chickens for home consumption.

Table 5: Selection and management of flocks and chicks skills

Items		*Mean IPFs n=312*	*SD IPFs*	*Remarks IPFs*	*Mean ADTs n=33*	*SD ADTs*	*Remarks ADTs*
1	Ability to identify high yielding birds	3.79	2.524	CO	2.85	.555	NCO
2	Care of chicks against diseases and pests and predators	3.52	1.039	CO	3.15	.689	NCO
3	Artificial brooding	2.93	2.189	NCO	2.00	.913	NCO
4	Supplementary feeds for brooding hen and chicks	2.88	1.176	NCO	2.85	.555	NCO
5	Identify laying conditions in hen	3.45	1.019	NCO	2.92	1.038	NCO
6	Culling as a result of diseases	3.01	3.125	NCO	2.92	.760	NCO
7	Culling due to old age of birds	3.04	3.100	NCO	2.08	.760	NCO
8	Culling due to poor productivity	2.88	1.176	NCO	2.62	.768	NCO

Table 6: Housing and equipment skills

Items		*Mean IPFs n=312*	*SD IPFs*	*Remarks IPFs*	*Mean ADTs n=33*	*SD ADTs*	*Remarks ADTs*
1	Shelter construction with local materials	2.99	1.181	NCO	2.85	.689	NCO
2	Cleaning poultry house	2.03	1.300	NCO	3.00	.707	NCO
3	Knowledge of litters and management	1.98	1.155	NCO	2.85	.801	NCO
4	Disinfecting pen after brooding period	1.87	1.274	NCO	3.15	.801	NCO
5	Prepare brood for hens	2.82	1.137	NCO	3.00	.577	NCO
5	Make perches	3.12	1.139	NCO	3.31	.480	NCO
6	Make nesting boxes using local materials	3.66	1.352	CO	2.85	.801	NCO
7	Improvise drinkers and feeders with local materials	3.61	1.347	CO	2.54	.660	NCO

KMO and Bartlett's Test for the 32 Skills Components

The 32 skill items were subjected to the Principal Component Analysis (PCA) (Orthogonal rotation technique). Prior to performing the PCA, a test was performed for the suitability of the data for factor analysis. Inspection of the correlation matrix revealed the presence of many coefficients of .4 and above. The Kaiser-Meyer-Olkin (KMO) value was .914 exceeding the recommended value of .5 (Field 2005). Bartlett's test of Sphericity was significant at $p<0.001$, supporting the factorability of the correlation matrix.

A principal component analysis (PCA) with varimax rotation was performed to ascertain the dimensionality of the skill items measures. The eigen value and the Scree plot suggested a 6-factor skill items (Table 8). The six factors accounted for 77.317% of the variance scores. The item loadings on the factor ranged from 0.523 to 0.93. The six components that had the eigen value of >1 were extracted. They are:

1. Identify signs of diseases in birds
2. Identify ecto-parasites in birds
3. De-worm birds
4. Administer drugs to sick birds
5. Identify chicken predators
6. Control of predators

Before the rotation, the main component (ability to identify signs of diseases in birds) accounted for more variance than the remaining five (36.785% compared to 11.681, 9.727, 7.956, 6.168 and 5.174 respectively).

Using the Kaiser criterion, six components were extracted. The Scree plot indicates a clear cut between component 1, which captured more of the variance scores and the remaining five components. To determine the number of components to retain, parallel analysis was conducted. The result (Table 9) suggests that only five components be retained.

Table 9: Comparison of Eigen values from PCA and criterion values from parallel analysis

Component number	*Actual eigen value from PCA*	*Criterion value from parallel analysis*	*Decision*
1	11.771	1.720033	Accepted
2	2.778	1.631054	Accepted
3	2.153	1.539073	Accepted
4	1.906	1.487967	Accepted
5	1.334	1.304664	Accepted
6	1.016	1.387546	Rejected

Table 7: Record keeping and marketing skills

Items		*Mean IPFs n=312*	*SD IPFs*	*Remarks IPFs*	*Mean ADTs n=33*	*SD ADTs*	*Remarks ADTs*
1	Record keeping of flocks, sex, hatching period and age	1.44	.850	NCO	2.77	.927	NCO
2	Sales of eggs	1.16	.520	NCO	2.92	.954	NCO
3	Sales of chicken	1.53	1.008	NCO	3.38	.650	NCO
4	Slaughtering and dressing of local chicken for markets	1.74	1.115	NCO	3.00	.707	NCO
5	Knowledge of markets for local chickens outside the village or in the cities	2.38	1.439	NCO	3.23	1.092	NCO

Table 8: Total variance of the Eigen values from the 32 skills items

Component	*Total variance explained*					
	Extraction sums of squared loadings			*Rotation sums of squared loadings*		
	Total	*% of variance*	*Cumulative %*	*Total*	*% of variance*	*Cumulative %*
1	11.771	36.785	36.785	5.178	18.182	18.182
2	2.778	11.681	48.466	5.079	17.871	36.053
3	2.153	9.727	58.193	3.625	13.327	49.380
4	1.906	7.956	66.149	3.190	11.969	61.349
5	1.334	6.168	72.317	2.870	10.969	72.318
6	1.205	5.174	77.491	2.528	5.173	77.491

Extraction Method: Principal Component Analysis.

Table 10 shows the factor loadings after rotation. The skills item that clustered on the same component suggests that component 1 represents Brooding, Shelter and Care of the chicks; Component 2, Predators and Healthcare; Component 3, Hygiene and Litter Management; Component 4, Feeds and Feeding stuff, and Component 5 represents Record Keeping and Marketing.

DISCUSSION

The research aims to identify the indigenous technical skills (ITS) possessed by indigenous poultry farmers (IPFs) and Agricultural Development Technicians (ADTs) in the wake of baseline studies of knowledge and skills audit on indigenous poultry production (IPP). The IPFs were competent ($\bar{x} \geq 3.5$) in nine out of 32 skill items analyzed. The majority (35.5%; n=312) of the IPFs claimed to have learnt the technical skills from their mothers, while a substantial number (30.4%) attributed their skills acquisition to both father and mother. Parents are the first and most enduring teachers of children (Kaiser and Hancock 2003), transferring family enterprising skills heritage to the young ones through informal education. The findings identified low capacity among the farmers and the lack of motivation from the extension workers, as there was no extension information disseminated to the farmers (99.7%; n=312) on IPP in the study areas.

Poor skills development has been reported as a hindrance to profitable and sustainable IPP. Findings by Mlozi et al. (2003) confirmed a lack of the skills and training required for chicken management to improve household chicken

Table 10: Factor loadings

Rotated component matrix[a]

	Component				
		1	*2*	*3*	*4*	*5*
Supplementary feeds for brooding hen and chicks	.719	.706				
Make perches	.701	.706				
Prepare brood for hens	.721	.688				
Care of chicks against diseases and pests and predators	.703	.665				
Artificial brooding	.444	.602				
Make nesting boxes using local materials	.576	.585				
Shelter construction with local materials	.645	.573				
Identify laying conditions in hen	.568	.554				
Improvise drinkers and feeders with local materials	.652	.551				
Culling due to poor productivity	.566	.542				
Ability to identify high yielding birds	.234	.541				
Identify chicken predators	.769		.840			
Control of predators	.756		.826			
Identify ecto parasites in birds	.741		.739			
Identify signs of diseases in birds	.672		.671			
Administer drugs to sick birds	.616		.660			
Methods of ethno-veterinary drugs to treat diseases and parasites	.687		.651			
Disposing dead birds	.417		.469			
Culling as a result of diseases	.154					
Cleaning poultry house	.786			.840		
Disinfecting pen after brooding period	.732			.809		
Knowledge of litters and management	.792			.764		
De-worm birds	.524			.492		
Identify local feedstuffs at different period of the year to feed birds	.812				.824	
Use of supplementary feeding for birds of different age group	.721				.787	
Use of local feeding stuff to feed birds of different age groups	.778				.781	
Culling due to old age of birds	.140					
Sales of eggs	.642					.765
Slaughtering and dressing of local chicken for markets	.750					.756
Sales of chicken	.673					.736
Record keeping of flocks, sex, hatching period and age	.548					.625
Knowledge of markets for local chickens outside the village or in the cities	.702					.571

Extraction method: principal component analysis. Rotation method: Varimax with Kaiser normalization.

production. The lack of proper chicken husbandry skills (Safalaoh 2001), limited technical skills, knowledge and appropriate technologies (Alders et al. 2009; Morrison et al. 2006), technical inefficiency (Keramidou and Mimis 2011) and poor education and training of farmers involved in family poultry (Gueye 2005) are some of the challenges negating the good performance of the IPP industry. The findings have further justified the widening gap between the farmer's indigenous technical skills and the required scientific knowledge skills for improvement (Gueye 2009). However, skills training and capacity development of the farmers have been confirmed by various studies as capable of improving the production scale in IC farming (Natukunda et al. 2011; Roothaert et al. 2011).

The findings on the Agricultural Development Technicians indicate poor skill development in relation to indigenous poultry production. The poor skills of extension workers have been confirmed in the literature (DAFF 2008; ECP Report 2010/2011). However, their poor skills in IPP may not entirely be the fault of the ADTs if their training at Colleges or Universities does not cover indigenous poultry management. In Addition, the lack of IC content in the capacity development training program of ADTs does not help. Taylor (1999) mentioned a study of agricultural education and training in sub-Saharan Africa (Wallace et al. 1996) which indicated that many agricultural education curricula have serious shortcomings. The paper found that many curricula are unresponsive to the socio-economic and technological changes in the rural sector and are inappropriate for the local context. Further, many curricula do not involve any form of systematic training needs analysis and often adopt delivery modes and mechanisms that fail to suit the reality of rural dwellers who are mostly farmers (Rodríguez and Bang 1999).

In an attempt to identify the critical skill items in designing a training program for indigenous poultry farmers, attention should be placed on the factors extracted from the components. Therefore, a suggested road map of activities was designed (Table 11).

CONCLUSION

Indigenous poultry production has remained largely unsophisticated, as farmers have no in-depth technical knowledge or skills required for good production. There has not been any conscious effort either by the extension services or institutions towards the capacity development of the IPFs. The poor skills of the ADTs were also observed. This situation has created multiple challenges, which as a result, has created a limited expansion program for production because farmers make use of only local skills. Other challenges such as limited scavenging feed resource base (SFRB), predators and poor hous-

Table 11: Training road map

Critical factors identified	*Suggested activities for the road map*
Brooding, shelter and care of the chicks	Advice on designing an appropriate chicken housing structure made of local materials, designed to be appropriate and flexible chicken runs. Training area to include a breeding program. The concept of artificial incubation using simple incubators and hatcheries.
Predators and healthcare	Research into ethno-vaccination and ethno-veterinary concoctions is suggested. A simple housing using local materials for the chicks and fenced chicken runs to guide against predators. The use of oral rehydration therapy as prophylactic treatment for day-old-chickens as practiced by some farmers with success should further be investigated
Hygiene and litter management	Advice on materials for litter, and sanitation. The constituents of litters, management, a preventative rather than curative program through good hygiene.
Feeds and feeding stuff	Scavenging Feed Resource Base (SFRB) assessment of the province. Training on the establishment of protein banks through the cultivation of leguminous crops adaptable to the climatic conditions that could serve as plant supplements to the chickens. Advice on locally available feed ingredients and mixing, the making of feeders, and drinkers; regular provision of feed and water.
Record keeping and marketing	Training of farmers in simple record keeping, management and marketing tips.

ing have compelled the farmers to remain stagnant, hesitant to invest and extremely cautious in expansion. Having poor economic capacity, the sector however, remains in the hands of farmers who are unable to take bold steps. They are content with what little benefit the indigenous poultry is able to afford them. With this situation persisting, IPP may remain crude. If no adequate capacity development program for farmers, extension workers and other actors in the production, management, and marketing lines are put in place, things will not change.

RECOMMENDATIONS

Based on these findings, it is recommended that: A practical training curriculum should be developed and used as training manual for capacity building of both the indigenous poultry farmers and agricultural development technicians.

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