



CLIMATE SMART AGRICULTURAL TECHNOLOGIES, INNOVATIONS AND MANAGEMENT PRACTICES FOR INDIGENOUS CHICKEN VALUE CHAIN

Training of Trainers' Manual



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Foreword

Kenya Climate-Smart Agriculture Project (KCSAP) tasked the Kenya Agricultural & Livestock Research Organization (KALRO) with the implementation of the project Component 2, on ‘Strengthening Climate-Smart Agricultural Research and Seed Systems’. The component activities are geared towards the development, validation, adoption and delivery of context specific climate smart agriculture (CSA) technologies, innovation and management practices (TIMPS). The other responsibility was development of sustainable seed production and distribution systems for priority value chains to enhance availability and access to seed, breeds and fingerlings by target beneficiaries under Components 1 (Up scaling Climate-Smart Agricultural Practices). Against this background, KALRO and her NARS partners have developed, validated and availed CSA TIMPS for dissemination and adoption. The TIMPS have further been unpacked during the development of Training of Trainers (ToT) Manuals for use in training public and private extension service providers and lead farmers.

The ToT Manuals are instructional guides to be used for teaching and learning step-by-step procedures of implementing CSA innovations for each of the 13 value chains being addressed. The training content is drawn from the CSA TIMPS that support respective value chains. The content are arranged in progressive modules supported by extensive information from research information and background data drawn from the TIMPS. Their relevance are based on the needs teased out of the value chains and the project objectives. The ToT Manuals training design takes into consideration the delivery system, the partners and their roles, the duration of training and logical flow of the sessions. Similar content requiring similar delivery systems are grouped together while the roles of the partners are tapped in the training and planning of the training sessions.

The Manual is divided into modules, which have a uniform outline that ensures every aspect of the TIMPs are fully covered in way that the trainees can absorb and relate to. Various delivery methods are deployed and where possible demonstrations and practical work are incorporated to enable the trainees learn by participating in the actual field activities. Furthermore, to ensure that the training across various groups is standardized, trainers guidelines, detailed descriptions of the trainees, program, training methods and a training evaluation have been provided in the manual. Adhering to these guidelines, therefore, enables possibility to replicate the training in several locations without loss of details regardless of whether conducted by different trainers.

It is highly advised that the ToT Manuals should be used in conjunction with the respective value chains’ TIMPs documents and facts sheets in order to provide valuable resource for both public and private extension service providers. The use of this Manual is expected to enable achievement of the envisaged ‘Triple Wins’ of increased productivity, enhanced resilience and reduction of greenhouse gases emission.

I am greatly indebted to the value chain leaders and all those who participated in the

preparation of the Manual, which is expected to herald a new way of delivering training content in a changing agricultural environment.

Eliud K Kireger, PhD, OGW

Director General, KALRO

Preface

The Kenya Climate-Smart Agriculture Project (KCSAP) is a Government of Kenya project with support from both the World Bank and the government. It is a five-year project implemented in 24 counties, mainly in the arid and semi-arid lands (ASALs), at a cost of Ksh. 25B. The project development objective (PDO) is “to increase agricultural productivity and build resilience to climate change risks in the targeted smallholder farming and pastoral communities, and in the event of an Eligible Crisis or Emergency, to provide immediate and effective response.” This objective is to be achieved through the implementation of five key components, which are 1) Up scaling Climate-Smart Agricultural Practices, 2) Strengthening Climate-Smart Agricultural Research and Seed Systems, 3) Supporting Agro-weather, Market, Climate, and Advisory Services, 4) Project Coordination and Management and 5) Contingency Emergency Response.

Component 1 involves facilitating the empowering of farmers and communities to adopt technologies, innovations and management practices (TIMPs) to achieve the Climate Smart Agriculture (CSA) triple-wins of; increased productivity, enhanced resilience (adaptation), and reduced Greenhouse gas (GHG) emissions (mitigation). Component 2 is charged with the responsibility of providing the TIMPs. Therefore, it supports the development, validation, and adoption of context specific CSA TIMPS to target beneficiaries under Components 1 and 3 as well as development of sustainable seed production and distribution systems.

To catalyze uptake of TIMPs, Kenya Agricultural & Livestock Research Organization (KALRO) in conjunction with partners in the National Agricultural Research Systems (NARS) and Consultative Group for International Agricultural Research (CGIAR) compiled inventories of TIMPs for each of the 13 prioritized value chains (cassava, green grams, sorghum, millet, pigeon peas, bananas, tomatoes, potatoes, apiculture, indigenous chicken (meat and eggs), dairy (cattle and camel), red meat (cattle, sheep and goats) and aquaculture and 3 cross cutting value chains (natural resource management, pastures and fodder and animal health). The TIMPs were categorized into those ready for upscaling, those that needed validation and gaps that required further research. Training of Trainers’ (ToT) manuals focusing on TIMPs that are ready upscaling for each of the value chains were subsequently developed and form the basis of training county extension staff, service providers and lead farmers. They are in turn expected to cascade this training to beneficiaries in the targeted smallholder farming, agro-pastoral and pastoral communities in the 24 project counties of Marsabit, Isiolo, Tana River, Garissa, Wajir, Mandera, West Pokot, Baringo, Laikipia, Machakos, Nyeri, Tharaka Nithi, Lamu, Taita Taveta, Kajiado, Busia, Siaya, Nyandarua, Bomet, Kericho, Kakamega, Uasin Gishu, Elgeyo Marakwet and Kisumu.

KALRO having the mandate of implementing of activities under Component 2, has been instrumental in using its information resources and those of partners and collaborators to come up with the inventories of TIMPs and corresponding ToT Manuals. The use of

these information resources coupled with the accompanying training and the contribution of the other project components, will go a long way in enabling the KCSAP to meet its development objective.

The National Project Coordination Unit is grateful to all who participated in the development and production of this *Training of Trainers' (ToTs) Manual for Indigenous Chicken Value Chain*. It is my hope that counties and other users will put this resource to good use as they transform and reorient their agricultural systems to make them more productive and resilient while minimizing GHG emissions under the new realities of a changing climate.

Francis Muthami

National Project Coordinator

Kenya Climate-Smart Agriculture Project

LIST OF ABBREVIATIONS

TIMPs	Technology, Innovation and Management Practices
FFBS	Farmer-led Field Business Schools
GAP	Good Agricultural Practices
CSA	Climate Smart Agriculture
ASAL	Arid and Semi-Arid Lands
PME	Participatory Monitoring and Evaluation
KALRO	Kenya Agricultural and Livestock Research Organization
KCSAP	Kenya Climate Smart Agricultural Productivity
MoALFC	Ministry of Agriculture, Livestock, Fisheries and Cooperatives
NPCU	National Project Coordination Unit
CPCU	County Project Coordination Unit
CCT	County Coordination Teams
LFs	Lead Farmers
CIG	Common Interest Group
CTT	Core Team of Trainers
ToT	Training of Trainers
NCD	
IBD	



PART 1

This part consists of four sections including the background, module training content, training design and facilitator guidelines.



SECTION 1: BACKGROUND

1.1 The Role of Indigenous Chicken in the Kenyan Economy

The poultry industry in Kenya is dominated by chicken, with a population of 31.4 million birds. The indigenous chicken are the largest group with 25.5 million birds followed by exotic layers 3.1 million, broilers 2.1 million and others (turkeys, ducks, geese) 0.7 million birds. Although indigenous chicken (IC) are the most abundant their productivity is low. The IC produces 50% of the eggs and 60% of the poultry meat in Kenya. Over 80% of the households in Kenya keep IC which are generally owned by women and children who also control the benefits accrued. IC are therefore a good enterprise for increasing incomes for women and the vulnerable and marginalized groups. A major proportion of incomes for women goes to food items therefore directly addressing household food security

1.2 The Role of Indigenous Chicken in Food and Nutrition Security

Over 30% of children below 5 years of age are stunted in Kenya. This negatively affects the weight, height and cognitive learning among others. Provision of small amounts of animal protein in the diet would alleviate this problem that. An egg a day and some chicken meat in the diet would address the protein requirement of growing children. Indigenous chicken is majorly associated with women, youth, and the vulnerable and marginalized groups due to their natural small sizes compared to other livestock species. Chicken is conveniently produced and consumed at household level or sold to generate income. This in return increases the nutritional, economic and living standards of women and vulnerable groups in the society.

1.3 Indigenous Chicken as a Climate Smart Innovation

Unlike ruminants, IC are less affected by environmental variations caused by climate change. They are resilient and will survive extreme environmental fluctuations such as drought in which ruminants would not survive. Indigenous Chicken produce less (0.259 kg) greenhouse gases (GHG) compared to dairy cattle which generate 122.9 kg.

This Manual approaches the Climate-Smart Agriculture (CSA) concept from the Indigenous Chicken perspective. The Kenya Climate Smart Agriculture Project (KCSAP) aims to validate and upscale Indigenous Chicken Technologies, Innovations and Management Practices (TIMPs) through (1) improving efficiency in the use of resources to produce chicken for food; (2) maintaining the resilience of Indigenous Chicken systems and the dependent communities; and (3) gaining an understanding on how to reduce the vulnerability of communities negatively impacted by climate change in Kenya.

1.4 Objectives of the Training

The purpose of this training is to provide farmer trainers with knowledge and skills on how to facilitate and support Farmer Field and Business Schools (FFBSs) for increased productivity through adoption of Good Agriculture Practices (GAPs). Specifically, the objectives of this training are:

- a) To provide farmer trainer's knowledge and skills on Indigenous Chicken breeds including establishment and management of innovative climate smart Indigenous Chicken rearing technologies;
- b) To provide farmers trainers with knowledge and skills on formulation and production of high quality low-cost Indigenous Chicken feeds for improved Indigenous Chicken production;
- c) To provide farmer trainers with knowledge and skills on Indigenous Chicken health management and biosecurity for enhanced productivity and resilience to environmental stressors;
- d) To provide farmers trainers with relevant knowledge and skills on Indigenous Chicken post-harvest preservation techniques and value addition technologies for increased profitability through market linkages and distribution outlets;
- e) To provide farmers trainers with relevant knowledge and skills in Indigenous Chicken farming as a business and market assessment techniques through consumer driven market demand and supply trends;
- f) To provide farmer trainers with knowledge and skills in participatory techniques for empowerment of women, youth and vulnerable marginalized groups through development of inclusive stakeholder partnership programs.

SECTION 2: MODULE TRAINING CONTENT

2.1 Orientation of the Module

This section of the training manual deals with the training content.. It outlines the orientation of the 16 modules which have 41 sessions covering 73 hours 15 minutes hours spread over an 8 day training period excluding the travelling day. The modules are orientated to ensure Good IC Practices are adopted and up scaled to improve productivity, resilience and mitigation of harmful greenhouse gases through application of content specific climate smart TIMPs.

The purpose of these modules is to enhance the knowledge, skills and capacities of trainers in understanding and applying the climate smart Indigenous Chicken practices in their daily activities.

2.2 Module Outline

Each of the sixteen modules has the same outline consisting of eight parts. These parts are:

1. Introduction to the module – context and background to training needs, knowledge and skills gaps being addressed
2. Module learning outcomes – what trainees are expected to learn
3. Module target group-trainee categories
4. Module users –facilitators
5. Module duration –minimum number of hours of exposure to materials
6. Module summary –sequence of sessions, training methods, materials and duration
7. Facilitators’ guideline –detailed sessions, training methods, materials and session guides
8. Participants’ handouts – detailed notes and reference materials for trainees.

The outline of each of the sixteen modules is presented in Table 1.

Table 1: Summary outline for 16 modules of the Indigenous Chicken value chain

No.	Module Name	Need Addressed	Expected Training Outcomes	Duration
1	Module 1: Poultry Industry in Kenya and Role in GDP	Understanding of the poultry industry	Knowledge on the poultry industry enhanced and understood	2 Hours
2	Module 2: Climate Smart Agriculture and Poultry Production	Demand for chicken and chicken products in current changing climatic scenario	• Climate change and its causes understood • Adaptation and mitigation measures identified.	4 hours 30 minutes
3	Module 3: Poultry Housing and Equipment	Appropriate IC housing	Trainee should be able to: • Demonstrate how to site a chicken house • Explain the various designs of chicken houses. • Outline the importance of proper housing of chicken. • Demonstrate the construction of proper housing using locally available materials • Outline different equipment used in a chicken house.	4 hours
4	Module 4: Indigenous chicken health management	Mortality in IC birds	• Vaccinations required and their administration understood • Indigenous Chicken hygiene and disease control understood	4 hours
5	Module 5: Brooding of indigenous chicken	Mortality of chicks from day old to four weeks	• Importance of brooding appreciated; • Skills on how to manage chicks from day old to four weeks of age learnt	2 hours 20 minutes

6	Module 6: Production systems in indigenous chicken	Inadequate knowledge on commercialized production systems	● Major production systems and management practices understood ● Breeds for commercialization identified ● Advantages and disadvantages of different types of production systems understood	2 hours 20 Minutes
7	Module 7: Feeds and feeding of indigenous chicken	● Reducing IC underfeeding and feed wastage thus reducing cost of production ● Poor quality feeds ● Reducing cost of commercial feeds ● Improve knowledge on alternative protein feed resources for feeding poultry (BSF)	● Different types of feeds for different classes of chicken identified ● Types of poultry feed ingredients and their nutritional values understood ● Production of black soldier fly larvae for use as an alternative protein source in feeding IC understood. ● Formulation and mixing feeds for different classes of chicken using locally available feed ingredients demonstrated ● Estimation of, feeding levels (quantities) for different classes of birds understood. ● Feeding equipment to use for the different classes of chicken understood ● Know how to make a good feed budget	10 hours 30 minutes

8	Module 8: Breeding and selection of indigenous chicken_____	Improvement and production of IC performing breeds	• Breeds for egg and meat production Identified; • Productive birds in different classes of chicken characterised • Organization of mating flocks for increased fertility understood	5 hours 30 minutes
9	Module 9: Indigenous chicken breeder flock management_____	• Improving egg production and fertility • Improving hatchability of eggs	• Manage breeding flock effectively	4 hours 30 minutes
10	Module 10: Poultry Processing and Value Addition_____	• Improve value addition and processing of IC products • Improve shelf life of chicken and chicken products • Meliorate price of unprocessed chicken and eggs.	• Importance of Good product handling practices appreciated • Hygiene requirements for chicken product handlers understood • How to assess chicken meat and egg freshness demonstrated • Chicken and egg preservation methods understood • Value addition for eggs and chicken meat appreciated	4 hours 30 minutes
11	Module 11: Waste management in indigenous chicken production_____	Poor waste management and pollution	• Risks of poor waste management understood • Best practices in waste management and disposal understood	4 hours 45 minutes

12	Module 12: Incubation and Hatchery Management	● Improve hatchability of eggs ● Meliorate performance of incubators and hatcheries	● Hatchery location, site, biosecurity and cleaning procedures understood. ● Grade and select eggs for incubation ● Candling of eggs and calculation of fertility/hatchability demonstrated; ● Critical control points in a hatchery understood	6 hours 20 minutes
13	Module 13: Vices in chicken	Improving skills and knowledge for detecting vices in chicken	● Chicken vices identified and understood; ● Monitoring of good and bad behavior in chicken understood; ● Best management practices in production understood ● Practical skills of managing stress/vices in chicken e.g. debeaking demonstrated	4 hours
14	Module 14: Record keeping in a poultry enterprise	Introduction and improvement of record keeping in chicken farming enterprises	● Production, breeding and financial records keeping appreciated	2 hours
15	Module 16: Indigenous Chicken Agri-business	Enhancing knowledge in economics of IC production	● Costs of production built ● Production based revenue levels determined ● Break even points calculated	4 hours 30 minutes

16	Module 15: Indigenous Chicken Market Assessment	Enhancing knowledge in market assessment and market access.	● Dynamics of organized marketing systems understood ● Market entry points understood ● Market data analysis understood ● Development of a market plan demonstrated	7 hours 30 minutes
Total Duration				73 hours 15 minutes

SECTION 3: TRAINING DESIGN

3.1 Delivery System

The delivery system designed for this training consists of two stages

3.1.1 Partners and Their Roles

- A Core Team of Trainers (CTT) trains farmer trainers (service providers and public and private extension agents and lead farmers) as facilitators of a TOT course. This is done using this manual and modules contained therein.
- Each of the Master trainers will facilitate farmers trainers to acquire knowledge and skills in facilitating Farmer-led Field and Business Schools through PowerPoint presentations, videos, practical demonstrations and provision of illustrated training notes/brochures.

3.1.2 Up scaling –This will be done through farmer field and business school (FFBS) training and demonstrations, participatory on-farm validation trials and demonstrations, ASK and NARS shows and by selecting lead farmers (LF) to be trained in facilitation skills.

3.2 Partners and Their Roles

The partners envisioned in this training plan are:

3.2.1 Core Team of Trainers – Master trainers drawn from KALRO, Universities, Tertiary Institutions offering poultry courses (Kenyatta University) and State Department of Livestock will facilitate initial training of farmer trainers. They also provide mentorship to farmers’ trainers during the first year of LF training. They should also be available in the evaluation of the first round of LF training.

3.2.2 County Government Department of Livestock –Master trainers and their supervisors referred to as County Coordination Teams (CCT) will take the role of LF trainers, mentors and coordinators at sub county level.

They will assist FFBS’s to form partnership and networks with other stakeholders for sustainability.

3.2.3 Lead Farmer Networks-Association of LFs in the counties will take up farmer training and upscaling in the future. Lead farmer networks and groups will conduct exchange visits to learn best practices in other project implementing counties.

3.2.4 Private Sector Service Providers – Inputs suppliers, financial and business development service providers, market players and processors to partner and support growth of individual or Indigenous Chicken farmer groups.

3.3 Training Duration

The TOT course for the 16 modules in the indigenous poultry value chain shall take a total of 73 hours 15 minutes within a training period over the eleven (11) day training period (Annex 1). This does not include break hours of mid-morning, afternoon and lunch breaks.

3.4 Logic of Design and Flow of Session

The logic of design and flow of each module is that the facilitator, paying attention to the proposed methods and sessions guidelines shall: (1) Introduce the module; (2) Draw out the participants' expectations; (3) Relate participants' expectations with module objectives or learning outcomes; (4) Explore the concept and content, switching to different methods of delivery of the content(group exercise, brainstorming, excursions, plenary discussions, role plays) as the session progresses; (5) Review the module at the end using participatory approaches like one participant reads one summary message and its application; and, (6) Distribute the participants' handouts.

SECTION 4: FACILITATOR GUIDELINES

4.1 Preparation of Training Materials

The training materials suggested require adequate preparations and should be available before the actual training dates. Furthermore:

- a) The facilitators should familiarize themselves and internalize the guidelines provided by this manual prior to the training;
- b) The stationery required should be available within the training institution 3 days before the training. These include name tags, writing materials, paper punch and medium size box files for participants' handouts filling;
- c) Flip charts and good quality felt pens could be used interchangeably with LCD projections. Each participant will require one felt pen while the trainers will require two sets of felt pens;
- d) Visual aids, field equipment and tools should also be arranged in time before the sessions start;
- e) There should be adequate copies of participants' handouts (one per participant) to be distributed at the end of each session or as may be suitable; and
- f) Copies of the modules shall be distributed at the end of each module.

4.2 Preparation of Training Venue and Sites

The training venue should have adequate training rooms, field demonstration sites and market areas..

- a) Training Room – should have adequate space for 25 participants seated in a semi-circle or U shape arrangement ensuring access and unobstructed view of the front. There should be adequate space for a desk and seats for 3 trainers preferably at the sides or at the back of the training room. There should also be a desk for the trainer, their training materials and LCD projector, a flip chart holder and white wall to act as a projector screen.
- b) Demonstration Site – Should be within walking distance with at least 2 poultry units for practicals during poultry house construction and design exercises. Live specimens (hens, pullets and cocks) and eggs should be available for training demonstrations on egg and hen selection.
- c) Market Areas – these include poultry retail outlets (Kiosks, stalls, shops and supermarkets), wholesale and aggregation points and processing sites if any. The operators should be informed in advance about the visits. These should not be very far away preferably less than 10 minutes' drive away.

4.3 The Trainees

The trainees who will participate in the ToT training include service providers, public and private extension agents, lead farmers, County technical officers with an elaborate

training background in extension and advisory services.. The trainer should therefore, act more of a facilitator than a lecturer and draw out and build on their knowledge, skills and experience that they shall bring in. As a golden rule, facilitators should not lecture participants but facilitate and listen and allow participatory interaction for the trainees to feel like equals to each other and to the CTT team.

4.4 Training Program

The training program proposed consists of the actual training modules. Health breaks should be considered when drawing the training program. The training program should preferably be based on the outline presented in Annex 1 to allow flow of ideas and topics. However, should the situation demand, the sequence and day of coverage for whole or parts of the modules can be modified to suit emerging situations. The training program assumes that the trainees report on Sunday evening as the first day and leave thirteen days later on Friday afternoon or Saturday morning.

4.5 Training Methods

The training methods proposed for each session are suitable for adult learners and appropriate for addressing knowledge, skills and attitudes of the participants. The choice of the methods has been informed by the competency issues being addressed, time available and experiences of the author of this manual. Depending on time available, the facilitator can modify these training methods but as a golden rule no presentation by the facilitator should take more than 30 minutes continuously; but should be separated by the other participatory training methods.

The list of available training methods and activities is presented in Table 2. Table 2: Description of training methods during ToT trainings

Training Method	Description of Method
Plenary presentations	Use of PowerPoint or flip charts and plenary discussions in situations where knowledge and opinion or consensus is required
Group exercises, buzz groups, visits and demonstrations	To be considered where skills are an issue requiring sharing and trying
Role plays and problem-solving exercises	Plenary discussions have been considered as training methods where attitude is an issue
On-farm practical demonstration	To be considered where hand-on practical skills are acquired through sharing and demonstration

4.6 Planning Schedule and Guidance for ToT preparation

While planning for this training, the CTT leader should ensure the activities outlined in Table 3 are done before the training

Table 3: Duration of activities to be done before training as part of the preparation

Duration to Training	Activities to be Done
Six weeks	Recruit master trainers, compose CTT, identify the practical demonstration sites
Four weeks	Send out invitation letters to participants and special guests detailing purpose, venue and program. Follow up on demonstration sites. Brief CTT members
Two weeks	Confirm names of participants; reproduce training materials for facilitators and package, confirm preparedness of the field sites to be visited. Hold briefing of CTT members to finalize training plans. Confirm special guests if any
Four days	Confirm training sites preparedness, prepare sitting arrangements, and brief assistants
One day	Arrange training room furniture, place materials, equipment and stationery on the tables. Arrange for reception of trainees at residence proposed
On first day	Arrange for reception of trainees at the training venue. Ensure climate setting is done before the course is officially opened. This includes: ● Registration ● Welcome to venue by host ● Elaborate introduction of CTT and participants ● Ground rules ● Group formation

4.7 Evaluation of Training

A whole half day has been allocated for planning for way forward and evaluation of the TOT on the last day of the training. This is as presented in the training program (Annex 1).

The evaluation strategy should take two directions. The first being the individual evaluation where each of the trainees evaluates the training using provided evaluation forms without discussing with any other trainee (Table 4). The individual evaluation forms are then collected and analysed by the CTT members.

Table 4: Sample individual Evaluation Form

Aspect / Module	Rating		
	Very useful (3 marks)	Useful (2 marks)	Least useful (1 mark)
Poultry Industry in Kenya and Role in GDP			
Climate Smart Indigenous Chicken Production Systems and Best Management Practices			
Main Indigenous chicken Production Systems			
Poultry Housing and Equipment			
Indigenous chicken health management			
Brooding of indigenous chicken			
Production systems in indigenous chicken			
Indigenous chicken Feed Formulation and Feed Management			
Breeding and selection of indigenous chicken			
Indigenous chicken breeder flock management			
Poultry Processing and Value Addition			
Waste management in indigenous chicken production			
Incubation and Hatchery Management			
Record keeping in a poultry enterprise			
Indigenous Chicken Agri-business			
Indigenous Chicken Market Assessment			

The second direction for evaluation is the trainee's group evaluation. They retreat to one room and elect a chair and a secretary. They are then asked to objectively and constructively evaluate the training in about 45 minutes in the absence of the CTT members. They then present their evaluation to the CTT members and as they present, the CTT members should only give points of clarification if any misunderstanding occurred but should not try to be defensive. The CTT members should then use the two evaluation results to write a report highlighting aspects that went on well and can be replicated, challenges that were encountered, and opportunities for future ToT's improvement.

4.8 Facilitator reference materials

4.8.1 Key references

Two key references should be provided for each module plus a list of other relevant publications for reference. The detailed list of all references is summarized in Annex 2.

4.8.2 Guide on use the information

The trainers will be advised to issue to farmers at most 2 publications for each of the training sessions. This is because if they go away with 10 publications in one visit, they may be overwhelmed with the material load and thus limit knowledge uptake. Also, some will just take away as many as they can if allowed. Also, some will just take away as many as they can if allowed.

The list of all individual publications will be stored and available as electronic copies – mainly PDFs. The service providers are strongly advised to keep these electronic copies on a memory stick, CD or portable hard drive – so that farmers can easily access and if necessary print any of them out at a local internet café.

The trainers will be advised to issue one General Indigenous Chicken Farming Manual to be accompanied by 2 other publications in each session .g. information sheets, brochures, factsheets and poster. With subsequent training modules, they can then develop their collection of publications .



PART II

This part consists of 16 modules namely: Poultry Industry in Kenya and Role in GDP, Climate Smart Agriculture and Poultry Production, Poultry Housing and Equipment, Indigenous chicken health management, Brooding of indigenous chicken, Production systems in indigenous chicken, Feeds and feeding of indigenous chicken, Breeding and selection of indigenous chicken, Indigenous chicken breeder flock management, waste management in indigenous chicken production, Incubation and Hatchery Management, Vices in chicken, Record keeping in a poultry enterprise, Indigenous Chicken Agribusiness and Indigenous Chicken Market Assessment .

The 16 modules are divided into the following sections:-

- Introduction to the module
- Module learning outcomes
- Module target user group
- Module users
- Module duration
- Module Summary
- Facilitators' guidelines
- Participants' handouts and Training References



MODULE 1

POULTRY INDUSTRY IN KENYA AND ROLE IN GDP

1.1 Introduction to the Module

This module summarizes the current status of the chicken industry in Kenya and its potential in generating employment, incomes, food and nutrition security. The contribution of the industry to GDP is also specified in relation to other livestock sub-sectors and the overall agricultural sector. It is envisaged that the industry will continue to experience increased demand driven by urbanization, population growth, economic growth and the current viability of chicken production systems. To meet this expected demand, chicken production is expected to increase by more than 50 percent by 2030. It is therefore important to unlock/upgrade the chicken value chain for increased productivity, profitability and resilience.

1.2 Module Learning Outcomes

By the end of the module, the following will have been achieved:

- Current status of the chicken industry in Kenya understood
- The potential value of the industry as a driver of the livestock sector appreciated and understood
- Projected demand for chicken products understood
- Chicken as a start-up livestock for food and nutrition security at household level recognized

1.3 Module Target Group

This module targets service providers, public and private extension agents and lead farmers.

1.4 Module Users

This module is intended for use by master trainers who are members of the Core Team of Trainers (CTT). The module user should thoroughly familiarize themselves with the participant's handouts and training reference materials.

1.5 Module Duration

The Module is estimated to take 2 hours.

1.6 Module Summary

Chicken Industry in Kenya and its contribution to GDP			
Sessions	Training methods	Training Materials	Time
1. Module learning outcomes and expectations	• Personal introductions • Power point Presentation	• Flip charts • Felt pens • LCD projector	5 minutes
2. National and County chicken population	• Power point Presentation • Plenary Discussions	• Handouts • Flip charts • Felt pens • LCD projector	30 minutes
3. Contribution of Chicken to the Livestock GDP	• Power point Presentation • Plenary Discussions	• Flip charts • Felt pens • LCD projector • Handouts	30 minutes
4. Projected demand for chicken products	• Power point Presentation • Plenary Discussions	• Flip charts • Felt pens • LCD projector • Handouts	30 minutes
5. Global outlook in chicken production	• Power point Presentation • Plenary Discussions	• Flip charts • Felt pens • LCD projector • Handouts	25 minutes
TOTAL			2 hours

1.7 Facilitator's Guidelines

Chicken Industry in Kenya and its contribution to GDP	
1. Introduction, objectives and expectations (15 minutes)	Session Guide
Introduction (5 minutes) The facilitator introduces the module and invites participants to introduce themselves and state their expectations. The facilitator presents learning outcomes and expectations	• Summarize participants “expectations” using cards • Power point presentation • Distribute handouts to participants at the end of every session
2. National and County chicken population Chicken (30 minutes)	Session guide
The facilitator discusses an overview of the National and County chicken populations which includes indigenous chicken, broilers and layers using relevant charts.	• Q&A sessions • PowerPoint presentation • References and Handouts
3. Contribution of Chicken to the Livestock GDP (30 minutes)	Session guide
The facilitator gives presentation on estimated contribution of chicken to the livestock and agricultural GDP and discusses the hidden economic potential of indigenous chicken	• PowerPoint presentation • Handouts • Q & A session
4. Projected demand for chicken products (30 minutes)	Session guide
The facilitator guides participants and discusses factors that will contribute to increased demand for chicken products that include population growth, urbanization and increased incomes among others.	• PowerPoint presentation • Handouts • Q&A session
5. Global outlook in chicken production	Session guide
The facilitator give PowerPoint presentation on advances in global chicken production systems that include breeds, efficiency in feed utilization and current animal welfare issues affecting the industry.	• PowerPoint presentation • Handouts • Q&A session

1.8 Facilitator's Handouts Training and Reference Materials:

1.8.1 Participants' Handouts

1. Handout on Chicken Industry in Kenya and its contribution to GDP

1.8.2 Training Reference Materials

1.8.1 KALRO Chicken Manual 2nd Edition

1.8.2 2019 Kenya Population and House Census

MODULE 2

CLIMATE SMART AGRICULTURE AND POULTRY PRODUCTION

2.1 Introduction to the Module

Climate change and variability in Kenya

Climate change has become an impediment to sustainable development globally. It has a range of positive and negative impacts on agriculture depending on the regions of the world. The negative impacts are expected to be more adverse in developing countries, particularly those in sub-Saharan Africa such as Kenya which has experienced increasing temperatures from the 1960's coupled with increased frequency and intensity of extreme weather events such as El Niño and La Niña. Effects of the negative impacts include declining agricultural productivity; land degradation; loss of crop, livestock and fish due to changing temperatures and precipitation regimes and increased frequency and intensity of extreme weather events.

The country's agriculture sector is predominantly rain-fed and therefore vulnerable to climate change. The sector is not only impacted upon by climate change but also contributes to the problem through human activity. It is the largest source of greenhouse gas (GHG) emissions; responsible for one-third of Kenya's total emissions in 2010 which is envisaged to increase from 20 Mt CO₂e in 2010 and to 27 Mt CO₂e by 2030. Apart from the threat of climatic change, the agriculture sector is affected by increasing population pressures and demand for natural resources. In their quest to boost incomes, enhance food security, increasing overall productivity and market competitiveness, agricultural households face the challenge of maintaining an efficient natural resource base.

In Kenya, poultry are among the most widely reared livestock, providing valuable disposable income for poor households in general, and for women and youth in particular. They thrive in a range of environments, are efficient in converting feed into high-quality food, and have smaller environmental footprints than most other livestock. At the same time, chickens are believed to be susceptible to shifting weather patterns although, with the right breeds, it should be possible to enhance their potential to adapt to a changing climate. This calls for climate smart agricultural practices that sustainably increases productivity; resilience or adaptation to changing climatic conditions; reduces/removes greenhouse gases; and enhances the achievement of national food security and development goals.

CSA as a response to climate change

Climate-Smart Agriculture (CSA), contributes to the achievement of sustainable development goals. It integrates the three dimensions of sustainable development (economic, social and environmental) by jointly addressing food security and climate challenges. It is composed of three main pillars:

- Sustainably increasing agricultural productivity and incomes;
- Adapting and building resilience to climate change;
- Reducing and/or removing greenhouse gases emissions, where possible.

Why is CSA needed?

There are several reasons that call for the rapid transition of the present agricultural production system to a more climate-smart and resilient production system in the backdrop of increasing climatic risks. The following are the six important reasons.

1. The demand for food is increasing against the same resources base such as the land, water and capital.
2. There is an overall depletion and degradation of natural resources that sustains agriculture production.
3. Subsistence farmers are highly vulnerable to the impacts of climate change and there is urgency for a more sustainable approach for adaptation.
4. There is a need for enhancing food security while mitigating climate change and preserving the natural resource base.
5. Agricultural production systems need to be more productive, efficient, less variable, show greater stability in their outputs and more resilient to risks, shocks and long-term climate variability.
6. Limited awareness and understanding of the farming communities on the potential impacts of climate change on agriculture calls for the urgent need to create awareness and build their capacity for adaptation.

This module on climate smart agriculture practices aims to indicate from basic principles of climate science the basis of the current climate change scenario and the factors underlying the negative impacts of climate change on agricultural productivity. Also, the module aims to indicate that positive interventions made through the application of appropriate TIMPs, can result in increased adaptation to climate change and mitigation against its negative effects, resulting in enhanced resilience and food security.

Specifically, this module intends to answer the following questions:

- What is climate change and what are its causes?
- How will climate change affect agriculture and pastoral practices?
- What is climate smart agriculture?
- What are practical solutions that agricultural and pastoral producers can put into practice to deal with climate change effects?

By the end of the module, participants should be able to:

- Define climate change
- Explain the causes of climate change
- Describe the principles of climate-smart agriculture
- Identify climate change impacts on agriculture and food security
- Define indigenous chicken TIMPs and some basic approaches to their validation and dissemination
- Describe some climate smart agriculture practices in the indigenous chicken value chain e.g. value addition and renewable energies
- Indicate using clear examples how climate smart agriculture practices indigenous chicken value chain result in increased adaptation and resilience to climate change; and, in the reduction of GHG emissions.

2.3 Module Target Groups

This module is intended for service providers, public and private extension agents and lead farmers.

2.4 Module Users

This module is intended for use by trainers who are members of the Core Team of Trainers (CTT) and Farmer Trainers. The module user should thoroughly familiarize themselves with the participant's handouts and training reference materials.

2.5 Module duration

The Module is estimated to take 4 hours 30 minutes

2.6 Module Summary

Climate Smart Agriculture Practices			
Sessions	Training methods	Training materials	Time
2.6.1 Introduction, outcomes and expectations	• Personal introductions • Power-Point presentation	• Flips charts • Felt pens • LCD Projector	15 minutes
2.6.2 Understanding climate change	• Power-Point presentations • Plenary discussion	• Flips charts • Felt pens • LCD Projector • Handouts	45 minutes

2.1.6.3 Climate change impacts on agriculture and food security	• Power-Point presentations • Plenary discussion • Group formation and exercise	• Flips charts • Felt pens • LCD Projector • Handouts	45 minutes
2.1.6.4 TIMPs definition and approaches to their validation and dissemination	• Power-Point presentations • Plenary discussion • Group work	• Flips charts • Felt pens • LCD Projector • Handouts	1 hour 15 minutes
2.6.5 Climate smart agriculture and indigenous chicken value chain -specific practices	• Power-Point presentations • Plenary discussion • Group work	• Flips charts • Felt pens • LCD Projector • Handouts	1 hour 15 minutes
2.6.6 Module review	• Power-Point presentations • Plenary discussion	• Flips charts • LCD Projector • Handouts	15 minutes
TOTAL			4 hours 30 minutes

2.7 Facilitator's Guidelines

Climate Smart Poultry Systems and Best Management Practices	
2.7.1 Introduction, outcomes and expectations (15minutes)	Session Guide
<i>The facilitator introduces the module and invites participants to introduce themselves and state their expectations. The facilitator presents modules learning outcomes and expectations</i>	• Summarize participants "expectations" using cards or any appropriate method. • PowerPoint presentation • Distribute training notes and handouts at the end of the module

2.7.2 Understanding climate change (45 minutes)	Session guide
<i>The facilitator makes a presentation on climate change; - causes, effects and mitigation) (30 minutes)</i> Plenary discussion (15 minutes) The participants recall what they learnt and discuss any issues that may arise. Any questions are also answered during this session.	• Powerpoint presentation • Plenary discussion
1.7.3 Climate changes impacts on agriculture and food security (45 minutes)	Session guide
<i>The facilitator makes a presentation on the effects of climate change on agriculture and food security and guides the participants in discussing the impact of climate change on food security (30 minutes)</i> • Effects of climate change on agriculture • How does agriculture contribute to climate change? • The link between climate change and food security Plenary discussion (15 minutes) The participants ask questions on the presentation, which are answered by the facilitator. Also, they discuss practical experiences on the effects of climate change on agriculture in their local context, how it has affected food security and some of the intervention taken.	• Powerpoint presentation • Plenary discussion
1.7.4 Climate Smart Agriculture TIMPs Definitions and Context-Specific Practices (1 hour 15 minutes)	Session guide

Climate smart agriculture TIMPs definitions and context specific practices (30 minutes)

(The facilitator makes a PowerPoint presentation highlighting definitions of TIMPs and their validation through adaptive research and their dissemination. The presentation will also cover some of the CSA practices that ameliorate climate change effects in indigenous chicken husbandry integrating approaches encompassing the project thematic areas namely Agroforestry, Soil and Water Management, Irrigation systems, Crop Livestock integration, Post-harvest Management and Value addition and Renewable energy and energy management).

- Background and characteristics of the Kenyan agriculture
- Definitions and examples of the different TIMPs
- Methods of validation and dissemination of TIMPs
- Characteristics of CSA and why CSA?
- Principles of climate-smart agriculture (Triple wins)

Plenary discussion (15 minutes)

Group Work (30 minutes)

Participants to conceptualize and provide examples of CSA TIMPs and climate smart indigenous chicken practices

- PowerPoint presentation
- Flip charts
- Group work
- Plenary discussions

1.7.5 Module review (15 minutes)

(The facilitator leads the participants in reviewing the module).

Summarize and review the main points of the training with the participants about climate-smart agriculture practices

- What new things did you learn from this module?
- What are some of the problems and issues that you have become more aware of in the module?
- What is your main take-home message?

Session guide

Recap of the key take-home points using any of the following participatory methods:

- Q & A session
- Discussions
- Questionnaires
- Any other

2.8 Participants' Handouts and Training References

1. FAO (2019). Climate Smart Agriculture Curriculum/Module for Training of Trainers in Myanmar. (Angon 28 pp). Food and Agricultural Organization of the United Nations and AVSI Foundation, Naypyidaw, 2019. Licence: CC BY – NC – SA 3.0 IGO
2. FAO (2018). Climate Smart Agriculture Training Manual: A reference manual for agricultural extension agents. Food and Agricultural Organization of the United Nations. Rome 2018 (106 pp).
3. GIZ-SLM (2017). Climate Smart Agriculture: A Manual for Implementing the Sustainable Land Management Programme (SLMP). Ethiopia and GIZ, Addis Ababa, 2017.
4. Denmark (2017). Climate Smart Agriculture Manual for Agricultural Education in Zimbabwe, Climate Technology Centre and Network, Denmark, 2017.
5. FAO (2013). Climate Smart Agriculture Sourcebook. Food and Agricultural Organization of the United Nations Rome, 2013.

MODULE 3

POULTRY HOUSING AND EQUIPMENT

The module consists of the following 8 components:

3.1 Introduction to the Module

Suitable chicken houses are important for efficient production and management of birds. They also contribute positively to disease control. Therefore, housing will determine the success or failure of the enterprise. A functional poultry house protects chicken against predators, thieves, adverse weather (rain, sun, cold winds, and low night temperatures) and provides shelter for egg laying and broody hens. Chicken houses and shelters vary depending on availability of construction materials, weather and traditions. Type of housing should be based on cost, durability and usage. The simplest housing is a basket system. The number of chicken housed in the basket will depend on the age of the chicken and basket size.

This module is designed to expose trainers to the construction and equipping of chicken houses. The use of locally available construction materials and factors that determine the type of house to be constructed are discussed.

3.2 Learning Outcomes

By the end of the module, to the following will have been achieved

1. How to prepare and plan for construction of indigenous chicken structures for different environments
2. Construction of a functional indigenous chicken house
3. Equipment required in an indigenous chicken house

3.3 Module Target Group

This module targets service providers who include county extension staff and private service providers and lead farmers.

3.4 Module Users

This module is intended for use by master trainers who are members of the Core Team of Trainers (CTT) and farmer trainers. The facilitator using this module should thoroughly familiarize themselves with the participant's handouts and training reference materials

3.5 Module Duration

The Module is estimated to take 4 hours 15 minutes

3.6 Module Summary

CONSTRUCTION OF INDIGENOUS CHICKEN STRUCTURES			
Sessions	Training Methods	Training Materials	Time
3.6.1 Introduction, outcomes and expectations	PowerPoint presentation	LCD Projector	15 minutes
3.6.2 Preparation and planning for construction of Indigenous Chicken structures	• Discussion • Presentation • Practice by the trainee • Direct instruction	• LCD Projector • Flip charts, felt pens	2 hour
3.6.3 Construction of Indigenous Chicken structures IC house layout IC house foundation Construction of Secure and biosecure structures 3.6.4 Construction of accessory structures for chicken Factors to consider in installation of accessory structures Site clearing and Work inspection	• Presentation • Discussion	• LCD Projector • Flip charts, felt pens	1 Hour

3.6.5. Equipping Indigenous chicken houses Equipment and material necessary in a I C house Factors determining the choice of equipment Installation of equipment and materials Testing-running of the equipment	PowerPoint Presentation Group exercise	LCD projector Flip chart, participants handouts Exercise guide	1 Hours
TOTAL			4 hours 15 min

3.7 Facilitators Guidelines

Construction of Indigenous Chicken Structures	
3.7.1 Introduction, outcomes and expectations (15 minutes)	Session Guide
<i>(The facilitator introduces the module and invites participants to introduce themselves and state their expectations).</i> By the end of this module, the trainee should be able to: • Demonstrate how to site a chicken house • Explain the various designs of chicken houses. • Outline the importance of proper housing of chicken. • Demonstrate the construction of proper housing using locally available materials • Outline different equipment used in a chicken house.	• Summarize participants “expectations” using cards or any appropriate method. • PowerPoint presentation • Distribute training notes and handouts at the end of the module
3.7.2 Preparation and planning for construction of Indigenous Chicken structures (2 hours)	Session guide
<i>The facilitator makes a presentation on Preparation and planning for construction of Indigenous Chicken structures (1 hour 15 minutes)</i> Construction of Indigenous Chicken structures • IC house layout • IC house foundation • Construction of Secure and biosecure structures • Construction of accessory structures for chicken • Factors to consider in installation of accessory structures • Site clearing and Work inspection Plenary discussion (15 minutes) The participants recall what they learnt and discuss any issues that may arise. Any questions are also answered during this session.	• Powerpoint presentation • Plenary discussion

3.7.3 Construction of Indigenous Chicken structures and accessories (1 hour) Session guide	
<i>(The facilitator makes a presentation on construction of Indigenous Chicken structures and accessories) (1 hour)</i> Factors to consider in installation of accessory structures • Site clearing and Work inspection Plenary discussion (15 minutes) The participants ask questions on the presentation, which are answered by the facilitator. Also, they discuss practical experiences on construction of Indigenous Chicken structures and accessories.	• Powerpoint presentation • Plenary discussion
3.7.4. Equipping Indigenous chicken houses (1 Hour) Session guide	
Equipping Indigenous chicken houses (30 minutes) <i>The facilitator makes a PowerPoint presentation highlighting:</i> • Equipment and material necessary in a I C house • Factors determining the choice of equipment • Installation of equipment and materials • Testing-running of the equipment Group Work (15 minutes) Participants to conceptualize and develop a list of equipment for a chicken house, to be presented in plenary Plenary Presentation (15 minutes)	• PowerPoint presentation • Flip charts • Group work • Plenary discussions • Distribute • Participants handouts

3.7.5 Module review (15 minutes)	Session guide
<i>(The facilitator leads the participants in reviewing the module)</i> Summarize and review the main points of the training with the participants about climate-smart agriculture practices • What new things did you learn from this module? • What are some of the problems and issues that you have become more aware of in the module? • What is your main take-home message?	Recap of the key take-home points using any of the following participatory methods: • Q & A session • Discussions • Questionnaires • Any other

3.8 Key References

1.1.1 KALRO Chicken Manual 2nd Edition

MODULE 4

INDIGENOUS CHICKEN HEALTH MANAGEMENT

4.1 Introduction to the Module

Biosecurity and vaccinations are key in disease control in poultry. The construction of the poultry structures in module 1 should include biosecurity considerations. The control of pests and parasites is an important element of IC production.

This module specifies the competencies required to manage poultry health. It involves farm biosecurity, acquisition of health control equipment and materials, parasite and predator control, vaccination, disease and vices control.

4.2 Module Learning Outcomes

By the end of the module, the following will have been achieved

- a) Management of indigenous chicken biosecurity understood and articulated.
- b) Indigenous chicken health equipment and materials identified.
- c) The Management of indigenous chicken vaccination procedures demonstrated
- d) Control of indigenous chicken parasites and predators demonstrated.
- e) Management indigenous chicken diseases and vices understood.
- f) Keeping and management of health records understood and demonstrated

4.3 Module Target Group and categories

This module targets agricultural extension staff and extension service providers based at county level and lead farmers.

4.4 Module duration

This module is estimated to take 4 hours

4.5 Module Users

This module is intended for use by trainers who are members of the Core Team of Trainers (CTT) and Farmer Trainers. The module users should thoroughly familiarize themselves with the relevant participant's handouts and training reference materials.

4.6 Module summary

Indigenous Chicken Health Management			
Sessions	Training Methods	Training Materials	Time
41.6.1 Introduction, module outcomes and expectations	• PowerPoint presentation	• Flips charts • Felt pens • LCD Projector	15 minutes
4.6.2 Manage indigenous chicken biosecurity	• Powerpoint presentation • Discussions • Case study	• LCD projector • Flip charts, felt pens • flash cards • Participant handouts	40 minutes
4.6.3 Acquisition of indigenous chicken health equipment and materials	• Powerpoint Presentation • Discussions	• LCD projector • Flip charts, felt pens • Case study, flash cards • Participant handouts	30 minutes
4.6.4 Manage indigenous chicken vaccination	• Powerpoint Presentation • Demonstration by trainer • Discussions	• LCD Projector • Flip charts, felt pens • Participant handout • Vaccination schedule • Vaccination equipment	45 minutes
4.6.5 Control indigenous chicken parasites and predators	• Powerpoint Presentation • Discussion	• LCD projector • Flip chart, felt pens • Participant handout	30 minutes
4.6.6 Management of indigenous chicken diseases and vices	• Powerpoint Presentation • Plenary discussion on experiences on diseases and vices • Case study • Demonstration by trainer	• LCD projector • Participants handouts • Flash cards	60 minutes

4.6.7 Maintain health records	• Powerpoint Presentation • Discussion • Participant's questions and comments • Facilitator's summary	• LCD projector • Participant handouts	30 minutes
TOTAL			4 hours

4.7 Facilitator Guidelines

4.7.1 Introduction and Levelling Expectations (15 minutes)	Session Guide
<i>(The facilitator welcomes participants to the module, indigenous chicken health management and introduces him/herself by stating his/her profile and experience of working with farmers).</i> 4.1 Introduction The facilitator invites the participants to state their expectations for the module. 4.2 Module Objectives The facilitator introduces the module objectives. By the end of the module facilitators should be able to: • Identify important diseases of indigenous chicken and their causes, modes of spread, signs and economic importance on chicken productivity. • Identify important pests/parasites of indigenous chicken and management options • Recommend appropriate disease and pest/parasite management practices for increased productivity. • Explain the indigenous chicken biosecurity measures for disease prevention and control of important diseases chicken • Recommend safe use and handling practices of veterinary drugs and pesticides.	List the participants' expectations on a flip chart and pin at a strategic place for reference during module review session Distribute and discuss Participants' Handouts on: Module objectives.

4.7.2. Overview of causes and spread of diseases of indigenous chicken (30 minutes)	Session Guide
<i>(The facilitator guides the participants in understanding the causes and spread of diseases in indigenous chicken flocks)</i> 2.1 Presentation PowerPoint presentation on the causes of diseases and their modes of spread in indigenous chicken. 2.2 Discussion <i>In plenary discussion ask the participants to share their experiences on causes of diseases in indigenous chicken and their mode of spread.</i>	List the causes of diseases in indigenous chicken and their mode of spread
3. Major bacterial diseases of indigenous chicken (60 minutes)	Session Guide
<i>(The facilitator guides the participants in identifying major bacterial diseases, transmission, clinical signs, prevention and control options)</i> Presentation Present in PowerPoint notes and images to describe the diseases and their management options. Inform the participants that major diseases to be covered in this session are: • Fowl typhoid • Avian salmonellosis • Infectious Coryza • Avian colibacillosis <i>In plenary discussion ask them to share the farmers' experience on recognition and management of these diseases.</i>	List the major bacterial diseases of indigenous chicken and how they are transmitted in chicken flocks, treatment, prevention and control options Distribute participants' handouts: (notes and images of disease signs)
4. Major viral diseases of indigenous chicken (90 minutes)	Session Guide
<i>(The facilitator guides the participants in identifying major bacterial diseases, transmission, clinical signs, prevention and control options)</i>	List the names of diseases and how to treat, prevent and control them

4.1 Presentation Present in PowerPoint notes and images to describe the diseases and their management options. Inform the participants that major diseases to be covered in this session are: ● Newcastle Disease ● Fowl pox ● Gumboro ● Infectious bronchitis	Distribute participants' handouts: (notes and images of disease signs)
4.2 Discussion <i>In plenary discussion ask them to share the farmers' experience on recognition and coping strategies during outbreaks</i>	
5. Pests/parasites of indigenous chicken (60 minutes)	Session Guide
<i>(The facilitator guides the participants in identifying common pests/parasites affecting productivity of indigenous chicken and their management options)</i>	List the names of pests/parasites and how to prevent and control them
5.1 Presentation PowerPoint presentation on identification of the pests/parasites, symptoms and their management options.	
Inform the participants that the issues to be covered in this session are: 1. External parasites (soft ticks, mites, fleas and lice) 2. Internal parasites (worms and coccidia) 3. Prevention and control methods 5.2 Discussion <i>In plenary discussion ask them to share the farmers' experience in managing pests/parasites in farmer flocks</i>	Distribute participants' handouts: (notes and images of disease signs) and images of pests)

6. Vaccination against diseases of indigenous chicken (45 minutes)	Session Guide
<i>(The facilitator guides the participants on use of vaccines for preventing and controlling infectious diseases in indigenous chicken).</i> 6.1 Presentation PowerPoint presentation on vaccine handling and administration . Inform the participants that the issues to be covered in this session are: • Vaccine handling • Vaccine administration • Schedule of vaccinations for different diseases affecting indigenous chicken 6.2 Plenary Discussion <i>In plenary discussion ask them to give their experience on the effectiveness of vaccination in controlling diseases in indigenous chicken</i>	Distribute handout: Vaccines and vaccination program for indigenous chicken
7. Module Review: Presentation and Discussion (20 minutes)	Session Guide
<i>(The facilitator lets the participants to present their views on each of the sessions covered under indigenous chicken health management module. On flip chart list and summarise the key points they should emphasize when training farmers)</i> Let's review together the main points about health management of indigenous chicken • What new things did you learn from this Module? • What are some of the issues that you have become more aware of in indigenous chicken health management? • What questions do you still have about indigenous chicken health management? • Who can explain the first point-the message and its application? The second message? The third message? And so on. Thank participants	

4.8 Key references

1. Vaccination Guidelines
2. Disease Factsheets (Maleks disease, NCD, IBD)
3. KALRO Chicken Manual 2nd Edition

MODULE 5

BROODING OF INDIGENOUS CHICKEN

5.1 Introduction to the Module

Handling of day-old chicks and management of the brooding program have a direct relationship to chicken productivity. A newly hatched chick cannot regulate its body temperature. In traditional production systems the mother hen provides the heat for the chicks. As the IC enterprise moves towards commercialization artificial brooding becomes necessary as the number of chicks involved is large. In artificial brooding the farmer provides heat and therefore a heat source must be identified. Heat regulation is key to make sure the right temperature for the chicks is maintained.

This module specifies the competencies required to manage Indigenous chicken brooding. It involves preparing chick brooder, acquiring day-old chicks, feeding brooder chicks, managing brooder house micro climate, maintaining brooder hygiene, performing chick vaccination, controlling poultry vermin, controlling poultry predators and monitoring chick performance.

5.2 Module Learning Outcomes

By the end of the module to the following outcomes should be achieved:

- (a) Preparation of chick brooder recounted
- (b) Accredited hatchery, quality chicks and proper means of transportation identified
- (c) Feeding of chicks explained.
- (d) Enable the learner adequately management of brooding house micro-climate explained
- (e) Management of brooder hygiene articulated.
- (f) Standard vaccination procedures described.
- (g) Monitoring of chick performance demonstrated.

5.3 Module Target Groups and Categories

This module targets agricultural extension staff, extension service providers based at County level and .

5.4 Modulation duration

This module is estimated to take 2 hours and 20 minutes

5.5 Module Users

This module is intended for use by trainers who are members of the Core Team of Trainers (CTT) and Farmer Trainers. The module users should thoroughly familiarize themselves with the relevant participant's handouts and training reference materials.

5.6 Module Summary

Manage Indigenous Chicken Brooding			
Sessions	Training Methods	Training Materials	Time
5.6.1 Introduction, module outcomes and expectations	• PowerPoint presentation	• Flips charts • Felt pens • LCD Projector	15 minutes
1. Preparing brooder	• Powerpoint slides Presentation • Demonstration	• LCD Projector • Flip charts, felt pens • Demonstration by trainer • Practice by the trainees • Discussions	60 minutes
2. Acquiring day old chicks	• PowerPoint Presentation • Discussion	• LCD Projector • Flip charts, felt pens	15 minutes
3. Feeding brooder chicks	• Demonstration • Presentation • Discussion	• Flip charts, felt pens • LCD projector	40 minutes
4. Managing brooder house micro-climate	• Power point presentation • Demonstrations • Discussion	• LCD projector • Flip charts, felt pens • Brooder equipment	40 minutes

5. Maintain brooder hygiene	• Powerpoint • Presentations • Group work presentation • Discussions	• Participants handouts • LCD Projector • Flip Chart felt pens	15 minutes
6. Perform chick vaccination	• Powerpoint presentations • Demonstration by trainer • Practice by the trainees • Discussions	• LCD projector • Flip Chart & felt pens	15 minutes
7. Monitor Chick performance	• PowerPoint presentations • Discussions	• LCD projector • Flip Chart & felt pens	15 minutes
TOTAL			2 hours 20 minutes

5.7 Facilitators Guidelines

Brooding in Indigenous Chicken	
Introduction And Levelling Expectations (15 minutes)	Session Guide
<i>(The facilitator welcomes participants and introduces him/herself. Facilitator then introduces the module and invites participants to give their expectations).</i> By the end of this module, the trainee should be able to: • Recount Preparation of chick brooder • Identified accredited hatchery, quality chicks and proper means of transportation • Explain Feeding of chicks. • Explain management of brooding house micro-climate. • Articulate management of brooder hygiene. • Describe standard vaccination procedures . • Demonstrate Monitoring of chick performance.	• Project/Highlight Participants expectations • Distribute Participant Handouts by the end of the training • Share the module Objectives. • Session Guide
Types and reason for brooding (30 minutes)	Session guide
<i>The facilitator makes a presentation on brooding of chicks (20 minutes);</i> • What is brooding? • Different types of brooding (Natural and Artificial brooding) • Reason for brooding chicks. Plenary discussion (10 minutes) Facilitator demonstrate and discuss TIMPs on brooding The participants recall what they learnt and discuss any issues that may arise. Any questions are also answered during this session.	• PowerPoint presentation • Plenary discussion • Flip charts

Prerequisites for brooding (40 minutes)	Session guide
<i>The facilitator makes a presentation on the requirements for brooding chick in IC production (15 minutes)</i> • Brooding fundamentals • Requirements for brooding Group work (15 Minutes) Participants are divided into groups and demonstrate how to operate a hay box brooder through guidance of the facilitator Plenary discussion (10 minutes) Arising questions are answered during this session.	• PowerPoint presentation • Plenary discussion • Demonstration • Group work • Use of flip charts
Placement and induction of chicks (50 Minutes)	Session guide
<i>The facilitator presents PowerPoint slides highlighting; (20 minutes)</i> • Choice of litter material for brooding • Brooder preparation • Making of a brooder ring • Pre-heating and conditioning of brooder • Placement of chicks • Induction of the chicks to feeds and water Group work (20 minutes) Participants are divided into groups to make a brooder under guidance of the facilitator Plenary discussion (10 minutes) Participants discuss practices related to brooding. Arising questions are answered during this session.	• PowerPoint presentation • Flip charts • Group work • Plenary discussions

Feeding management (30 Minutes)	● Session guide
<i>The facilitator presents PowerPoint slides highlighting the following; (20 Minutes)</i> • Chick feeding and watering equipment • Setting and spacing of feeding and watering trays Plenary discussion (10 minutes) Arising questions or issues raised answered during this session.	• PowerPoint Presentation • Flip chart • Plenary discussion
Lighting and heating Management for chicks (45 Minutes)	Session guide
<i>The facilitator presents PowerPoint slides highlighting the following (30 Minutes);</i> • Importance of lighting • Lighting programme in relation to chicks • Brooding temperature profile for chicks • Effect of temperature variations in chick behaviour • Sources of heat in brooding Plenary discussion (15 minutes) Facilitator demonstrate and discuss TIMPs on heating. Arising questions are answered during this session.	• PowerPoint Presentation • Flip chart • Plenary discussion
Chick Mortality (20 Minutes)	Session guide
<i>(The facilitator presents PowerPoint slides highlighting the following). (20 Minutes);</i> • Reasons for early chick mortality • Prevention of chick mortality	• PowerPoint Presentation • Flip chart • Distribute participants' handouts

Module Recap (15 minutes)	Session guide
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<i>The facilitator leads the participants in reviewing the module</i> Summarize and review the main points of the training with the participants on brooding • What opportunities have you identified from the module? • Main take-home message • Any issue that need clarity or emphasis	• Q & A session • Discussions • Questionnaires
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5.8 Participants’ Handouts

1. Brooding brochure
2. KALRO Chicken Manual 2nd Edition

MODULE 6

PRODUCTION SYSTEMS IN INDIGENOUS CHICKEN

6.1 Introduction to the Module

Indigenous chicken farming can be practiced using different production systems. The choice of production system depends on various factors that the farmer needs to consider. These include: the overall objective in choosing to keep indigenous chicken, whether for commercial or subsistence purposes, and more importantly, the level of resources at the farmer's disposal. Consideration of these factors ensures that the choice is well aligned with the farmer's objective before embarking on the rest of the planning and preparation. There are three main systems to choose from but various adjustments can be made as appropriate.

This module provides information on the three main production systems a farmer may consider before embarking on indigenous chicken production, namely; the traditional free range system, improved semi-free range, and small scale confined systems. It further demonstrates the different types and levels of resources and the respective management aspects that characterize each system

6.2 Module Learning Outcomes

By the end of the module the following outcomes should be achieved:

- a) The main indigenous chicken production systems categorized
- b) The characteristics of the different production systems described
- c) The relevant criteria to consider in choosing a particular production system explained.
- d) The linking of farmer objectives, expected outputs, and the choice of appropriate production system demonstrated
- e) Assessment of suitable types and levels of resources required in choosing a particular system understood
- f) The merits and demerits of each indigenous chicken production system identified

6.3 Module Target Group

This module targets agricultural extension staff, extension service providers based at County level and lead farmers.

6.4 Module duration

This module is estimated to take 2 hours 20 minutes

6.5 Module Users

This module is intended for use by master trainers who are members of the Core Team of Trainers (CTT). This module outlines the learning outcomes, the category of trainees targeted, module summary, and participants' handouts. The facilitator using this module should thoroughly familiarize themselves with the participants' handouts.

6.6 Module Summary

Manage Indigenous Chicken Brooding			
Sessions	Training Methods	Training Materials	Time
1.0 Introduction, module outcomes and expectations	• PowerPoint presentation	• Flips charts • Felt pens • LCD Projector	15 minutes
2.Types of IC production systems	• Demonstration • Power point Presentation	• Flip charts, felt pens • Demonstration by trainer • Practice by the trainees • Discussions • LCD projector	30 minutes
3. Characteristics of each production system	• PowerPoint Presentation • Discussion	• Flip charts, felt pens	30 minutes
4. Merits and demerits of each production system	• Demonstration • Presentation • Discussion	• Flip charts, felt pens • Powerpoint slides	30 minutes

5. Simulation exercises using different criteria and resource levels to determine suitable production system	• Demonstration by trainer • Powerpoint presentation • Practice by the trainees • Discussions	• LCD projector	50 minutes
TOTAL			2 hours 20 minutes

6.7 Facilitators Guidelines

6.8 Participants' Handouts

1. KALRO Chicken Manual 2nd Edition
2. Indigenous chicken farming training manual by KALRO, USDA and Technoserve. Ed. Ann Mumbi and Laurence Ochieng

MODULE 7

FEEDS AND FEEDING OF INDIGENOUS CHICKEN

7.1 Introduction to the module

Feeding is important so as to increase the production of meat and eggs from chicken. Lack of feed or water will reduce resistance to diseases and parasites, and subsequently increase flock mortality (deaths). Indigenous chicken will starve during certain periods of the year (e.g. drought, planting season when in confinement) when left to scavenge without supplementary feeding.

Egg production and growth are limited by access to good quality feed, water and the genetic potential. Local chickens convert feed to eggs despite their low production potential and fluctuating environmental conditions compared to genetically improved breeds. Egg production and growth of indigenous chicken may be improved by giving supplementary feeds. Improved breeds also perform well under rural conditions when given a steady supply of good quality feeds. Under an intensive system, indigenous chicken may not be profitable due to high cost of feeds, however better returns will be attained if the feeding is supplemented alongside the scavenging. A cost-benefit analysis will help in judging the costs involved before choosing the quantity and type of feed. Feeds and feeding costs will vary between free range, semi-intensive and intensive systems of poultry production and hence the profitability will also vary.

This module specifies the competencies required to economically manage and feed chicken. It involves understanding the importance of feeding chicken, what to feed, types of feed, feed mixing and formulation, equipment used in compounding feeds, poultry feed quality and safety, simple techniques of growing termites, maggots and black soldier fly (BSF), how much to feed, how to feed, common feedstuff problems. Feeders and drinkers will also be discussed.

7.2 Learning Outcomes

By the end of the module the following should be achieved:

- Importance of feeding chicken explained.
- What and how much to feed chicken recounted.
- Formulation and compounding of chicken feeds demonstrated.
- The equipment for compounding chicken feeds described.
- Simple production and utilization of termites, maggots and black soldier fly (BSF) recounted.
- Common feedstuff problems and how to avoid/manage the, identified
- Effective use of feeders and drinkers demonstrated

7.3 Target Group and Categories

This module targets agricultural extension officers, extension service providers based at the county level and lead farmers.

7.4 Module Users

This module is intended for use by trainer of trainers (TOT) in poultry production value chain master trainers who are members of the Core Team of Trainers (CTT) . his module outlines the learning outcomes, the category of trainees targeted, module summary, and participants' handouts. The facilitator using this module should thoroughly familiarize themselves with the participant's handouts.

7.5 Module Duration

The Module is estimated to take 10 hours and 30 minutes.

7.6 Module Summary

Feeds And Feeding Of Indigenous Chicken			
Sessions	Training Methods	Training Materials	Time
1.0 Introduction, module outcomes and expectations	• Power-point presentation • Discussion	• Flip charts, felt pens • LCD projector	20 minutes
2.0 Poultry Feeding Guidelines	• Discussion • Power-point Presentation • Audio-visuals • Group exercises	• Flip charts, felt pens • LCD projector • Video clips • Photos	1 hour
2.1 Poultry Feed Categories	• Discussion • Power-point Presentation • Audio-visuals • Group exercises	• Flip charts, felt pens • LCD projector • Video clips • Photos	30 minutes

2.2 Poultry Feed Budgeting •	• Discussion • Power-point Presentation • Audio-visuals • Group exercises	• Flip charts, felt pens • LCD projector • Video clips • Photos	20 minutes
2.3 Poultry Feeding Equipment •	• Discussion • Power-point Presentation • Demonstration	• Flip charts, felt pens • LCD projector • Photos	20 minutes
3.0 Classification of Poultry Feed Ingredients	• Discussion • Power-point Presentation • Group exercises	• Flip charts, felt pens • LCD projector • Photos	1 hour
3.1 Insect Production for use as alternative protein source	• Discussion • Power-point Presentation • Audio-visuals • Group exercises	• Flip charts, felt pens • LCD projector • Video clips • Photos	1 hour
3.2 Problems related to feeds, feeding and the feed ingredients.	• Discussion • Power-point Presentation • Group exercises	• LCD projector • Power-point slides • Photos	30 minutes
4.0 Poultry Feed Formulation	• Discussion • Power-point Presentation • Audio-visuals • Group exercises	• Flip charts, felt pens • LCD projector • Video clips • Photos	30 minutes
4.1 Feed Formulation Methods	• Discussion • Power-point Presentation • Group exercises	• Flip charts, felt pens • LCD projector • Photos • Excel software • Pearson square	2hrs 30 minutes

4.2 Feed Formulation Exercises	• Discussion • Group exercises	• Excel software • Pearson square • Flip charts, felt pens	1 hour
4.3 Equipment for Compounding Poultry Feeds	• Discussion • Power-point Presentation • Group exercises	• Flip charts, felt pens • LCD projector • Photos	20 minutes
4.4 Practical Feed Mixing	• Demonstration • Group exercises	• 3 shovels(spades) • Feed ingredients • Feed packaging materials • Digital weighing scale • Scooper • Feed formulas	40 minutes
5.0 Module Review	• Discussion • Presentation	• Flip charts, felt pens • Power-point slides	30 minutes
TOTAL			10 hours 30 minutes

7.7 Facilitators Guidelines

Feeds and feeding of indigenous chicken	
7.7.1 Introduction, outcomes and expectations (20minutes)	Session Guide
Introduction <i>The facilitator welcomes participants to the module feeds and feeding of indigenous chicken and invites the participants to state their expectation for the module).</i> Module Objectives The facilitator presents modules objectives By the end of the module participants should be able to: ● Explain Poultry feeding guidelines ● Identify Poultry feed categories ● Describe Poultry feed budgeting ● Identify Feeding equipment ● Recount classification of poultry feed ingredients ● Explain insect larvae production as alternative protein source ● Explain importance of feed formulation on-farm ● Recount Feed formulation methods ● Identify Equipment for compounding poultry feeds ● Demonstrate practical feed formulation and feed mixing	Summarize participants “expectations” using cards or any appropriate method. PowerPoint presentation Distribute training notes and handouts at the end of the module
1.0 Poultry feeding guidelines (1 hour)	Session guide
<i>The facilitator makes a presentation on the poultry feeding guidelines</i> Presentation(40 minutes) <i>The facilitator presents:-</i> ● Importance of feeding IC ● Estimated feed intake for IC ● Feeding of IC under different production systems ● Cafeteria feeding system Plenary discussion (20 minutes) The participants recall what they learnt and discuss any issues that may arise. Any questions are also answered during this session.	● Powerpoint presentation ● Plenary discussion

1.1 Poultry feed categories (30 minutes)	Session guide
<i>The facilitator guides participants to understand the different categories of poultry feeds while focusing on availability in the participants' locality</i> Presentation (20 minutes) <i>The facilitator explains about and when to use:-</i> ● Chick mash ● Growers mash ● Layers mash ● Breeders mash ● Kienyeji mash Plenary discussion (10 minutes) The participants ask questions along the discussions and from the presentation, which are answered by the facilitator..	● Powerpoint presentation ● Plenary discussion
1.2 Poultry feed budgeting (20 minutes)	Session guide
<i>The facilitator leads participants in understanding how make a simple poultry feed budget. Exercises are then given to participants with respect to the presented examples.</i> Plenary discussion (10 minutes) <i>The facilitator guides the participants on learn how to make a budget for the following feeds using any number of birds:-</i> ● Chick mash ● Growers mash ● Layers mash Exercises (10 minutes)	● Powerpoint presentation ● Flip charts ● Group work ● Plenary discussions
1.3 Poultry feeding equipment (20 minutes)	Session guide
<i>The facilitator gives a PowerPoint presentation highlighting different Equipment used in feeding chicken.</i> Presentation (10 minutes) <i>The facilitator presents and explains the following:-</i> ● The different chicken feeders in the market ● The different chicken drinkers in the market ● How to make KALRO-Naivasha long feeder ● How to make KALRO Jerry Can drinker Plenary discussion (10 minutes)	● Powerpoint presentation ● Plenary discussions

2.0 Classification of poultry feed ingredients (1 hour)	
<i>The facilitator leads the participants in discussion on the different classification of feeds with focus on availability in the participant's locality</i>	● Powerpoint presentation ● Plenary discussions
Presentation	
Module Review (30 minutes)	
<i>The facilitator leads the participants in reviewing the module</i> Summarize and review the main points of the training with the participants about feeding indigenous chicken ● What new things did you learn from this module? ● What opportunities have you identified from the module? ● What is your main take-home message?	Recap of the key take-home points using any of the following participatory methods: ● Q & A session ● Discussions ● Questionnaires ● Any other

7.8 Participants' handouts

7.8.1 Feeding IC brochure

7.8.2 BSF production manual

7.8.3 KALRO Chicken Manual 2nd Edition

MODULE 8

BREEDING AND SELECTION OF INDIGENOUS CHICKEN

8.1 Introduction to the Module

Many farmers embark on indigenous chicken farming with a few birds. For the growth of the enterprise, it is important to plan on ways to increase the flock size and more so in a commercial production system. Knowledge of different breeds of poultry, their merits, demerits and their use in cross breeding is also required. It is essential that farmers be equipped with knowledge and skills on breeding and selection, and the best approach to use. Breeding and selection is also crucial for the purpose of maintaining a vibrant, high performance flock that also provides a good pool of birds to select from while avoiding inbreeding.

Selection involves separating the well performing growers and productive hens, and the well sized, active cocks, from the flock. A set criteria illustrating the features to assess is used to distinguish the best performers from the rest of the birds for the hens, cocks, and growers. Selection is further facilitated by the presence of performance records kept on the farm. This module demonstrates the process and approach in breeding and selection of indigenous chicken

8.1 Learning Outcomes

By the end of the module participants the following should be achieved:

- a) Importance of breeding and selection in IC farming explained
- b) Monitoring of poultry performance to aid in distinguishing best performers and avoid inbreeding explained.
- c) Productivity of IC different production systems Recounted
- d) Traits to be improved for enhanced IC productivity identified
- e) Features to use in selection of cocks, growers and hens identified
- f) Selection methods for use in IC breeding described
- g) Cock to hen ratio and fertility of eggs related

8.2 Target Group and Categories

This module targets agricultural extension, extension service providers based at the county level and lead farmers.

8.3 Module Users

This module is intended for use by trainer of trainers (TOT) in poultry production value chain master trainers who are members of the Core Team of Trainers (CTT). This module outlines the learning outcomes, the category of trainees targeted, module summary, and participants' handouts. The facilitator using this module should thoroughly familiarize themselves with the participant's handouts.

8.4 Module Duration

The Module is estimated to take a minimum of 4 hours 30 minutes.

8.5 Module Summary

Indigenous Chicken Breeding And Selection			
Sessions	Training Methods	Training Materials	Time
1.0 Introduction, module outcomes and expectations	• Power-point presentation • Discussion	• Flip charts, felt pens • LCD projector	20 minutes
2.0 Importance of breeding and selection in IC farming	• Discussion • Power-point presentation • Direct instruction	• LCD projector • Flip charts, felt pens	45minutes
3.0 Monitoring of poultry performance and keeping of records to aid in distinguishing best performers and avoid inbreeding	• Power-point presentation • Discussion • Demonstrations • Practice by the trainee	• LCD projector • Flip charts, felt pens • Participants handouts	45minutes
4.0 Breeds and categories of birds to select from	• Power-point presentation • Discussions • Demonstration • Practice by the trainee	• LCD projector • Flip chart, participants handouts, visuals, • Practical notes	45 minutes

5.0 Features to use in selection of cocks, growers and hens	Power-point presentation • Discussions • Demonstration • Practice by the trainee	LCD projector Flip chart, participants handouts, photographs	45 minutes
6.0 IC production systems	Power-point presentation • Discussions • Demonstration • Practice by the trainee	• LCD projector t • Flip chart, participants handouts, photographs	20 minutes
7.0 Traits to be improved for enhanced IC productivity	Power-point presentation • Discussions • Demonstration • Practice by the trainee	• LCD projector • Flip chart, participants handouts, photographs, practical notes	45 minutes
8.0 Selection methods for use in IC breeding	Power-point presentation • Group discussions • Demonstration • Practice by the trainee	• LCD projector • Flip chart, participants handouts	30 minutes
9.0 Cock to hen ratio and fertility of eggs	Power-point presentation • Group discussions, • Demonstration • Practice by the trainee	LCD projector Flip chart, participants handouts, photographs	20 minutes
Total			4 hours 45 minutes

8.6 Facilitators' Guidelines

Breeding and Selection		
8.6.1 Introduction, outcomes and expectations	Session Guide	Time
<i>The facilitator welcomes participants to the module indigenous chicken breeding and selection, introduces the module and invites participants to give their expectations. The facilitator then outlines the module learning outcomes.</i> By the end of the module the participants should be able to: • Explain the importance of breeding and selection in IC farming understood • Explain monitoring of poultry performance to aid in distinguishing best performers and avoid inbreeding explained. • Recount Productivity of IC different production systems • Identify traits to be improved for enhanced IC productivity • Identify the features to use in selection of cocks, growers and hens • Described the selection methods for use in IC breeding • Relate Cock to hen ratio and fertility of eggs	Summarize participants “expectations” by listing them on a flip chart PowerPoint presentation Share training materials at the end of the module	20 Minutes
8.6.2 Importance of breeding and selection in IC farming	Session guide	
Plenary discussion The participants discuss the importance of breeding and selection. <i>The facilitator gives a power point presentation on Importance of breeding and selection</i> Any issue or questions arising is answered during this session.	• Powerpoint presentation • Plenary discussion	30 minutes

8.6.3 Traits to be improved for enhanced IC productivity	Session guide	
<i>The facilitator makes a power point presentation on traits considered for improvement in IC and reasons for improvement (15 minutes)</i> Group discussion (20 Minutes) Participants are divided into groups in and tasked to list various traits of economic importance that farmers in their respective jurisdictions prioritize The groups present their work and any issue or questions arising is answered during this session Plenary discussion (10 minutes) Any issue or questions arising is answered during this session.	• Powerpoint presentation • Plenary discussion • Group Discussions	45 minutes
8.6.4 Differentiate productivity of IC different production systems	Session guide	
<i>The facilitator makes a presentation on genetic productivity of IC under different production systems (20 minutes)</i> Plenary discussion (10 minutes) The participants recall what they learnt and discuss any issues that may arise. Any questions are also answered during this session.	• PowerPoint presentation • Plenary discussion	30 minutes
8.6.5 Demonstrate the features to use in selection of cocks, growers and hens	Session guide	

Various methods of selecting specific classes of IC (40 minutes) <i>The facilitator gives a PowerPoint presentation highlighting the following;</i> • Different classes of IC (Chick, Growers, Hen and Cocks) • Key features and characteristics that are considered for different classes when doing selection • Applicability of different selection methods for classes of IC Practical Session/ Group work (30 minutes) • Selection of chicks, cocks, growers and hens Plenary discussion (10 minutes) Any issue or questions arising is answered during this session.	• PowerPoint presentation • Flip charts • Group work • Plenary discussions • Photographs	1 hour 20 minutes
8.6.6 Selection methods for use in IC breeding (30 minutes)		
<i>The facilitator makes a presentation on different methods of IC (20 minutes)</i> Plenary discussion (10 minutes) The participants discuss any issues that may arise. Any questions are also answered during this session.	• PowerPoint presentation • Plenary discussions • Flip charts	30 minutes
8.6.7 Cock to hen ratio and fertility of eggs		
<i>The facilitator makes a presentation on cock to hen ratio (15 minutes)</i> Plenary discussion (15 minutes) Participants discuss various factors that affect fertility of eggs and their remedies. The groups present their work and any issue or questions arising is answered during this session	• PowerPoint presentation • Flip charts • Plenary discussions	30 minutes

Module review (20 minutes)	Session guide	
<i>The facilitator leads the participants in reviewing the module</i> Summarize and review the main points of the training on breeding and selection • What new things participants learn from this module? • What is the main take-home message?	• Q & A session • Discussions • Questionnaires	20 minutes

8.7 Participants' handouts

1. KALRO IC Breed brochure
2. KALRO Chicken Manual 2nd Edition

MODULE 9

INDIGENOUS CHICKEN BREEDER FLOCK

MANAGEMENT

9.1 Introduction to the Module

BBreeding and multiplication of improved indigenous chicken is crucial in the development of the sub-sector. Good production practices including disease control ensures that farmers only receive the correct breed and that good quality (strong, healthy) chicks or breeding birds are produced and supplied to the grower farms.

This module specifies the competencies required to manage IC breeder flock. It involves feeding laying birds, cleaning of feeding and watering equipment, maintaining suitable litter conditions, managing poultry house micro climate, managing breeder flock health, monitoring poultry performance, handling poultry eggs and maintaining poultry records.

9.2 Learning Outcomes

By the end of the module the following should achieved:

- The feeding of breeder flock birds explain
- How to clean feeding and watering equipment demonstrated
- Maintenance of suitable litter condition recounted
- Managing poultry house micro climate explained
- Management of breeder flock health described
- Monitoring of poultry performance explained
- Handling and grade of breeder flock eggs explained
- Maintain poultry records

9.3 Target Group and Categories

This module targets agricultural extension, extension service providers based at the county level and lead farmers.

9.4 Module Users

This module is intended for use by trainer of trainers (TOT) in poultry production value chain master trainers who are members of the Core Team of Trainers (CTT).

This module outlines the learning outcomes, the category of trainees targeted, module summary, and participants' handouts. The facilitator using this module should thoroughly familiarize themselves with the participant's handouts.

9.5 Module Duration

The Module is estimated to take a minimum of 4 hours.

9.6 Module Summary

Indigenous Chicken Breeder Flock Management			
Sessions	Training Methods	Training Materials	Time
1.0 Introduction, module outcomes and expectations	• Power-point presentation • Discussion	• Flip charts, felt pens • LCD projector	20 minutes
2.0 Feeding Breeder flock	• Discussion • PowerPoint Presentation • Practice by the trainee • Direct instruction	• LCD projector • Flip charts, felt pens	60minutes
3.0. Cleaning feeding and watering equipment	• PowerPoint Presentation • Discussion • Demonstrations	• slides • LCD projector • Flip charts, felt pens	30minutes
4.0 . Maintaining suitable litter condition	• PowerPoint Presentation • Discussions	• LCD projector • Flip chart, participants handouts	30 minutes
5.0 . Monitoring breeder flock performance	• PowerPoint Presentation • Discussions	• LCD projector • Flip chart, participants handouts	45 minutes
6.0 . Handling poultry eggs	• PowerPoint Presentation • Discussions • Demonstrations	• LCD projector • Flip chart, participants handouts	60 Minutes
7.0 . Record Maintenance	• PowerPoint Presentation • Discussions	• LCD projector • Flip chart, participants handouts	45 Minutes
TOTAL			4hours and 30 minutes

9.7 Facilitators Guidelines

Facilitator guideline on Breeder Flock Management in Indigenous Chicken

Breeder Flock Management in Indigenous Chicken	
Introduction And Levelling Expectations (15 minutes)	Session Guide
<i>The facilitator welcomes participants and introduces him/herself. Facilitator then introduces the module and invites participants to give their expectations.</i> By the end of the module, the participants should be able to:	• Project/Highlight Participants expectations • Distribute Participant Handouts by the end of the training • Share the module Objectives. • Session Guide
Explain the feeding of breeder flock birds • Demonstrate how to clean feeding and watering equipment • Recount maintenance of suitable litter condition • Explain managing poultry house micro climate • Describe managing breeder flock health • Explain monitoring poultry performance • Explain handling and grade of breeder flock eggs • Maintain poultry records Feeding Breeder flock (30 minutes)	Session guide
<i>The facilitator makes a presentation on feeding breeder flock) (25 minutes);</i> • Feed requirements of layers • Form of diet • Feeding with grit • The importance of calcium in breeder flock diets • Feeding with green feedstuffs • Water requirements of layers • Feeders and waterers Plenary discussion (5 minutes) Facilitator demonstrate and discuss TIMPs on Feeders and waterers The participants recall what they learnt and discuss any issues that may arise. Any questions are also answered during this session.	• Powerpoint presentation • Plenary discussion • Flip charts

Cleaning feeding and watering equipment (30 minutes)	Session guide
<i>The facilitator makes a presentation on cleaning of equipment meant to be used in a chicken house (20 minutes)</i> • Types of detergents and sanitizers used • Methods used for disinfection of equipment • Cleaning procedures for feeders, waterers and poultry house • Sanitizing procedures for feeders and waterers. Plenary discussion (10 minutes) Facilitator demonstrate practical cleaning of equipment. Any questions are also answered during this session.	• Powerpoint presentation • Plenary discussion • Demonstration • Use of flip charts
Maintaining suitable litter condition (40 minutes)	Session guide
<i>The facilitator presents PowerPoint slides highlighting; (30 minutes)</i> • Role of litter in poultry house • Factors determining choice of litter material • Common litter defects Plenary discussion (10 minutes) Participants discuss litter maintenance practices in IC farming in their respective counties. Any questions are also answered during this session.	• Powerpoint presentation • Flip charts • Group work • Plenary discussions
Monitoring breeder flock performance (30 Minutes)	Session guide
Various ways of monitoring breeder flock performance (30 minutes) <i>The facilitator presents PowerPoint slides highlighting the following;</i> • Growth and development pattern • Breeder flock behavior at lay • Layer vices • Factors influencing egg quantity and quality • Evaluation of egg production performance • Broodiness in breeder flock Plenary discussion (10 minutes) Any questions or issue raised answered during this session.	• PowerPoint Presentation • Flip chart • participants handouts • Plenary discussion

Poultry house light management (30 Minutes)	Session guide
<i>The facilitator presents PowerPoint slides highlighting the following (20 Minutes);</i> • Importance and disadvantages of lighting • Lighting programme in relation to age of the flock Plenary discussion (10 minutes) Any question answered during this session.	
Module Recap (15 minutes)	Session guide
<i>The facilitator leads the participants in reviewing the module</i> Summarize and review the main points of the training with the participants about breeder flock management • What opportunities have you identified from the module? • Main take-home message • Any issue that need clarity or emphasis	• Q & A session • Discussions • Questionnaires

9.8 Participants' handouts

1. KALRO IC Breed brochure
2. KALRO Chicken Manual 2nd Edition

MODULE 10

CHICKEN PRODUCT PROCESSING AND VALUE ADDITION

10.1 Introduction to the Module

This module specifies the training competencies required for chicken processing and value addition. Value addition aims at seizing opportunities offered by the market. It involves improving the quality of products, enhancing their value and in return better income is realised. Processing and value addition comprise several processes, including transportation and handling chicken and eggs hygienically; processing chicken using different value addition techniques; preparation of chicken products (eggs & meat) using different recipes; maintenance of good quality chicken products; packaging, branding and certification of chicken products and preparation and storage of products safely for an extended shelf life.

There are two main value addition processes: (i) Value capturing: This includes improvements of current production, processing, trading processes to increase productivity, reduction of wastage and costs, and entering new markets with existing products. (2) Value creation: This is achieved through product innovation (e.g. new product range and new processed products).

10.2 Module Learning Outcomes

By the end of the module the following should be achieved :

- Processing of chicken products outlined
- Personal hygiene in product handling recounted.
- Methods of chicken products value addition demonstrated.
- Best management practices in chicken product preservation and value addition identified.
- Quality and safety of value-added products explained.
- Packaging and branding of chicken products demonstrated

10.3 Module Target Group

This module targets service providers, lead farmers, entrepreneurs in the poultry value chain, public and private extension agents.

10.4 Module Users

This module is intended for use by master trainers who are members of the Core Team of Trainers (CTT). The module user should thoroughly familiarize themselves with the participant's handouts and training reference materials.

10.5 Module Duration

The Module is estimated to take 4 hours 30 minutes.

10.7 Module Summary

Sessions	Training methods	Training materials	Time
1 Module learning outcomes and expectations	• Personal introductions • Power-point presentation	• Flip charts • Felt pens • LCD Projector	15 minutes
2. Chicken product (eggs and meat) handling and hygiene requirements	• Brainstorming • Plenary discussions	• Flip charts • Felt pens • Handouts	30 minutes
3. Types of chicken product preservation methods	• Audio visuals • Demonstrations/ Practicals • Group discussions	• Flip charts • Felt pens • LCD Projector • Handouts	30 minutes
4. Benefits and factors to consider in chicken product value addition	• Plenary discussions	• Flip charts • Felt pens • Handouts	30 minutes
5. Value-added production methods and recipes	• Practical demonstrations • Group formation	• Flip charts • Felt pens • Handouts	2 hours 30 minutes
6. Module review	• Plenary discussions • Powerpoint presentations	• Flip charts • LCD Projector • Handouts	15 minutes
TOTAL			4 hours 30minutes

10.8 Facilitator's Guidelines

Chicken Product Processing and Value addition	
10.7.1 Introduction, objectives and expectations (15 minutes)	Session Guide
<i>(The facilitator introduces the module and invites participants to introduce themselves and state their expectations. The facilitator presents learning outcomes and expectations (15 minutes)</i> By the end of this module participants should be able to: • Outline processing of chicken products • Recount Personal hygiene in product handling. • Demonstrate methods of chicken products value addition d. • Identify best management practices in chicken product preservation and value addition • Explained. quality and safety of value-added products • Outline packaging and branding of chicken products	• Summarize participants “expectations” using cards or any appropriate method • Powerpoint presentation • Distribute handouts to participants at the end of the module
10.7.2 Chicken product handling and hygiene requirements (30 minutes))	Session guide
10.7.2.1 <i>(The facilitator explains how to prevent chicken meat and egg contamination for food safety and guides the participants in discussion of the same. Facilitator plays video clips on hygiene requirements for chicken products handlers).</i> Importance of Good chicken product Handling Practices and Hygiene requirements for chicken product handlers 10.7.2.2 Product quality aspects • What chicken meat and egg quality is and its importance • Factors affecting quality at the farm • Application of good product handling practices on- farms to reduce product contamination 10.7.2.3 How to prevent product contamination • Temperature control • Display units 10.7.2.4 Sources of food borne diseases • Person • Food/Product • Environment	• Q&A sessions • Handouts • Good manufacturing practices (GMP) manual • Play video related to food hygiene requirements

10.7.3 Basic principles of chicken production processing and preservation 30 minutes)	Session guide
10.7.3.1 <i>The facilitator present the following on powerpoint and flip charts:</i> How to assess chicken meat and egg freshness Factors contributing to spoilage Stages of spoilage How to slow down spoilage Types of Chicken preservation • Smoking - Traditional - Modern • Evisceration • Chilling and freezing - principles for good icing practice • Salting • Types of salting • Canning • Fermentation	• Powerpoint presentation • Demonstration/Practicals • Recipe Book and Brochures • Visual Videos on ?FTT Technology • Distribute handouts to participants
10.7.4 Benefits and Factors to consider in chicken product value addition (30 minutes)	Session guide
10.7.4.1 <i>(The facilitator guides participants on factors to consider in chicken value addition and make a PowerPoint presentation on;)</i> • Quality standards • Cost-benefit analysis • Increased product shelf life • Better product prices • The increased product mix in the market • Product quality assurance • Product traceability • Easy and safe commodity handling	• PowerPoint presentation • Distribute participants handouts • Q& A session
10.7.5 Chicken and egg value-added production methods and recipes (2 hours 30 minutes)	Session guide

10.7.5.1 <i>The facilitator takes the participants through discussions on product development practicals and other value addition technologies</i> 10.7.5.1 .1 Why is it good to consume chicken meat and egg products? • Biological value; • Healthy and nutritious • Low in fat • White meat or Organic or free range • Convenient packaging, easy to cook.	• Distribute handouts to participants • Q&A Session • Demonstrations and Practical
10.7.6 Module review (15 minutes)	1 Session guide
10.7.6.1 <i>(The facilitator lead the participants in reviewing the module)</i> 10.7.6.1.1 Summarize and review the main points of the training with the participants about Post harvest and value addition • What new things did you learn from this module? • What are some of the problems and issues that you have become more aware of in the module? • What is your main take home message?	• Recap of the key take home points using any of the following participatory methods; 2 Discussions • Q& A session • Questionnaires • Any other

10.8 Facilitator's Handouts Training and Reference Materials:

1 KALRO Chicken Manual 2nd Edition

MODULE 11

WASTE MANAGEMENT IN INDIGENOUS CHICKEN PRODUCTION

11.1 Introduction to the module

Poultry manure management is important for a number of reasons and the most important ones are:

- (i) Reduce disease risk on the farm –good poultry management and biosecurity practices reduces the risk of pest and disease introduction and multiplication on the farm. Avoid wet bedding and manage your manure well
- (ii) Reduce the risk of pollution and loss of nutrients.

This module is designed to expose facilitators to the management of the indigenous chicken manure for dairy cattle feeding and as a soil amendment.

11.2 Learning Outcomes

By the end of the module the following should be achieved:

- 1. The importance of regular removal of manure from chicken houses in earthen floor explained
- 2. Management of poultry manure to produce feed for dairy cattle demonstrated
- 3. Management and application of poultry manure on crops demonstrated

11.3 Module Target Group and Categories

This module targets agricultural extension service providers based at the county level.

11.4 Module Duration

The Module is estimated to take 4 hours 45 minutes.

11.5 Module Users

This module is intended for use by master trainers who are members of the Core Team of Trainers (CTT). The module user should thoroughly familiarize themselves with the participant's handouts and training reference materials.

11.6 Module Summary

Integrated Poultry Manure Management			
Sessions	Training Methods	Training Materials	Time
1.0 Introduction, module outcomes and expectations	• Power-point presentation • Discussion	• Flip charts, felt pens • LCD projector	20 minutes
2.0 Identification of indigenous poultry production systems and the management system to enable collection and use of the manure	• Discussion • Power point Presentation • Visit to a poultry house to identify potential of using the manure for dairy feeding • Direct instruction	• LCD projector	1 hour
3.0 Identification of management changes required to enable farmers use poultry manure for feeding dairy cattle	• Presentation • Discussion • Group exercise	• PowerPoint Slides, • Flip charts, felt pens • Samples of well processed poultry manure • Poultry House	2.30 Hour
4.0 Manure management for crop production	• Presentation	• PowerPoint • Flip chart, participants handouts • Exercise guide	1.15 Hours
TOTAL			4 hours 45 Minutes

11.7 Facilitators Guidelines

Waste Management in Poultry Production Systems	
11.7.7.1 Introduction, outcomes and expectations (15minutes)	Session Guide
<i>The facilitator introduces the module and invites participants to introduce themselves and state their expectations. The facilitator presents modules learning outcomes and expectations</i> By the end of the module participants should be able to: 1. Explain the Importance of regular removal of manure from chicken houses in earthen floor 2. Demonstrate the management of poultry manure to produce feed for dairy cattle. 3. Demonstrate management and application of poultry manure on crops.	• Summarize participants “expectations” using cards or any appropriate method. • PowerPoint presentation • Distribute training notes and handouts at the end of the module
11.7.7.2 Importance of Poultry waste management (45 minutes)	Session guide
<i>The facilitator makes a presentation on waste generation in poultry production systems (15 minutes).</i> Then the participants break into groups and discuss the importance/benefits of management of the generated waste (15 minutes). Plenary discussion (15 minutes) The participants discuss the various points raised and any issues that may arise. Any questions are also answered during this session.	• Powerpoint presentation • Group work • Plenary discussion
11.7.7.3 Poultry waste management strategies (75 minutes)	Session guide
<i>The facilitator leads a brainstorming session on the various strategies of managing poultry waste. This is aimed at gauging the participants level of knowledge in waste management and helps the facilitator during his/her PowerPoint presentation (60 minutes)</i> 1. Brainstorming on waste management strategies (15 minutes) 2. Powerpoint presentations (45 minutes) a) Specific waste management strategies b) Advantages and disadvantages of each waste management strategy Plenary discussion (15 minutes) The participants ask questions on the presentation, which are answered by the facilitator.	• Brainstorming sessions and discussion • PowerPoint presentation • Plenary discussion

11.7.7.4 Potential uses of poultry waste (60 minutes)	Session guide
<i>The facilitator leads the participants in forming groups to discuss the potential uses of poultry waste. This will later be discussed in plenary with all the groups participating. If the group work is not conclusive, the facilitator can make PowerPoint presentations on the sub-module. If the discussions are conclusive then the facilitator can make a summary of the sub-module and allow any clarifications from the participants.</i> Potential uses of poultry waste 1. Feathers 2. Manure a. Animal feed b. Fertilizer 3. Biogas Group work (15 minutes) Plenary discussion (30 minutes) Summary (15 minutes)	• Group work • PowerPoint presentation • Plenary discussion
11.7.7.5 Important policies with a bearing on waste management (30 minutes)	Session guide
<i>The facilitator makes a presentation on some of the policies that have a bearing on waste management and later have a plenary discussion to see if the same have been cascaded at the County level. The plenary will also discuss some of the opportunities or challenges in implementing this policy</i>	• PowerPoint presentation • Plenary discussion
11.7.7.6 Module review (15 minutes)	Session guide
<i>The facilitator leads the participants in reviewing the module in plenary.</i> Summarize and review the main points of the training with the participants about waste management in poultry production systems • What new things did you learn from this module? • What are some of the problems and issues that you have become more aware of in the module? • What is your main take-home message?	Recap of the key take-home points using any of the following participatory methods: • Q & A session • Discussions • Questionnaires • Any other

11.8 Participants' handouts

1. Poultry waste for dairy cattle feed
2. Dairy cattle feed formulation
3. KALRO Chicken Manual 2nd Edition

MODULE 12

INCUBATION AND HATCHERY MANAGEMENT

12.1 Introduction to the Module

Incubation is the process of embryonic development of a fertile egg into a chick; that takes 21 days in chicken. The process can be achieved through a natural method where a broody hen is given between 10-15 eggs depending on its size and mothering ability. The hen provides all the required conditions for hatching such as; humidity, warmth and periodic egg turning. Overall, the hatchability is higher than artificial incubation and can be up to 100% provided all the necessary conditions are adhered to. Artificial incubation is achieved through incubators in large hatcheries under highly specialized personnel with the aim of achieving maximum hatch of viable chicks from the eggs set. Hatchability percentage should be 80% and above in a well-functioning machine under good management practices. Many farmers have invested in hatching technologies but lack knowledge on how to optimize use of incubators.

Hatchery management entails aspects that address genetic progress, uniformity and post hatch performance of chicks. The high chick uniformity and disease free condition is a precursor to outstanding post hatch performance. All processes in the hatchery must contribute towards achievement of production and distribution of vital chicks that are free of pathogens for enhanced superior quality and clientele satisfaction. This is achieved through a set of management practices that include strict bio-security processes and adherence to recommendations by the Directorate of Veterinary Services (DVS) in the hatchery inspection protocol. It is important for farmers interested in commercial incubation to obtain requisite licenses from the DVS.

12.2 Learning Outcomes

By the end of the module the following should be achieved:

- Proper design, siting, size and recommended biosecurity requirements of a hatchery understood.
- Laying nests, grading, handling, storage conditions and setting eggs in an incubator recounted
- Candling process during egg incubation explained.
- Incubator operation for enhanced hatchability demonstrated
- Various wastes from the hatchery and their disposal methods identified.
- grading, handling and storage of day old chicks, explained

12.3 Target Group and Categories

This module targets public agricultural extension, private extension service providers based at the county level and lead farmers.

12.4 Module Users

This module is intended for use by trainer of trainers (TOT) in poultry production value chain master trainers who are members of the Core Team of Trainers (CTT). This module outlines the learning outcomes, the category of trainees targeted, module summary, and participants' handouts. The facilitator using this module should thoroughly familiarize themselves with the participant's handouts.

12.5 Module Duration

The Module is estimated to take 3 hours and 10 minutes.

12.6 Module Summary

Incubation and Hatchery Management			
Sessions	Training Methods	Training Materials	Time
1.0 Introduction, module outcomes and expectations	• Power-point presentation • Discussion	• Flip charts, felt pens • LCD projector	20 minutes
2.0 The importance design, siting, size and biosecurity requirements of a hatchery	• Discussion • PowerPoint Presentation • Direct instruction	• LCD projector • Flip charts, felt pens	20minutes
3.0 Nests, grading, handling, storage conditions and setting eggs in an incubator	• Power point Presentation • Discussion • Demonstrations • Practical by the trainee	• LCD projector • Flip charts, felt pens	60 minutes
4.0 Understanding candling during egg incubation	• PowerPoint Presentation • Discussions • Demonstration	• LCD projector • Flip charts, felt pens	20 minutes
5.0 Incubator operation for enhanced hatchability	• PowerPoint Presentation • Discussions • Demonstration	• LCD projector • Flip chart, participants handouts	45 minutes

6.0 The importance of grading, handling and storage of day old chicks	• PowerPoint Presentation • Discussions • Demonstration • Practice by the trainee	• LCD projector • Flip chart, participants handouts	45 minutes
TOTAL			3 hours 10 minutes

12.7 Facilitators Guidelines

12.7.7.1 Introduction, outcomes and expectations (20 minutes)	Session Guide
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The facilitator introduces the module and invites participants to introduce themselves and state their expectations. The facilitator presents modules learning outcomes and expectations

By the end of the module participants should be able to:

- Properly design, site, size and recommend biosecurity requirements of a hatchery
- Advise on laying nests, grading, handling, storage conditions and setting eggs in an incubator
- Explain candling process during egg incubation
- Demonstrate incubator operation for enhanced hatchability
- Identify the various wastes from the hatchery and their disposal methods
- Explain grading, handling and storage of day old chicks

- Summarize participants “expectations” using cards or any appropriate method.
- PowerPoint presentation
- Distribute training notes and handouts at the end of the module

12.7.7.2 Introduction to Hatchery Management (30 minutes)	Session guide
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The facilitator makes a presentation on Hatchery operations and management (15 minutes)

- Powerpoint presentation
- Plenary discussion

Plenary discussion (15 minutes)

The participants ask questions and contribute by comments; while the facilitator leads in responding and coordinating the session.

12.7.7.3 Hatchery standards (1 hour)	Session guide
<i>The facilitator leads on discussion on the biosecurity measures.</i> These include; • Hatchery location • Size of hatchery • Hatchery design • Biosecurity of poultry hatchery facility • Cleaning procedures • Licensing of hatcheries • Sampling for farm hygiene • Pullorum testing • Sampling/swabbing of dirty and clean areas • Laboratory result presentation Presentation (45 minutes) Plenary discussion (15 minutes) The participants ask questions along the discussions and from the presentation, which are answered by the facilitator..	• Powerpoint presentation • Plenary discussion
12.7.7.4 Egg Grading and handling (1 hour)	Session guide
<i>The facilitator presents PowerPoint slides that practically demonstrates egg grading for incubation.</i> Plenary discussion (30 minutes) Group Work (30 minutes) Participants grade eggs for incubation; categorizing them as either accepted or rejected.	• Powerpoint presentation • Group work • Plenary discussions
12.7.7.5 Principles of Incubation (1 hour)	Session guide
<i>The facilitator presents PowerPoint slides on key principles of incubation. These include; Poultry hatchery operations /practices</i> • Temperature • Humidity • Ventilation • Position of eggs • Turning of eggs • Egg candling • Diagnosis and troubleshooting in incubator operations Presentation (45 minutes) Group work (15 minutes)	• Powerpoint presentation • Plenary discussions

12.7.7.6 Chick Harvesting and distribution (1 hour)	Session guide
<i>The facilitator presents PowerPoint slides on harvesting of day old chicks and factors that would lead to poor hatchability. Descriptions are made on chick handling, classification as normal or abnormal, vaccination and final distribution.</i> • Chick harvesting • Chick grading • Chick vaccination • Chick packaging and dispatch • Day old chicks distribution points management • Role of county veterinary services and inspectors • Role of nominated veterinarian • Ports of entry documentations • Frequency of inspection/licensing of hatcheries/day old chicks distribution points Presentation (45 minutes) Plenary discussion (15 minutes) Participants to discuss various kinds of deformities in chicks and their causes, operation roles and responsibilities.	• Powerpoint presentation • Plenary discussions
12.7.7.7 Sanitation and disease control (1 hour)	Session guide
<i>The facilitator presents PowerPoint slides on hatchery sanitary procedures. Waste disposal should cover the following;</i> • Infertile eggs • Non-hatched eggs • Dead • Weak chicks • Unsalable chicks • Egg shells and membranes Presentation (45 minutes) Plenary discussion (15 minutes)	• Powerpoint presentation • Plenary discussions

12.7.7.8 Module Review (30 minutes)	Session guide
<i>The facilitator leads the participants in reviewing the module</i> Summarize and review the main points of the training with the participants about hatchery management ● What new things did you learn from this module? ● What opportunities have you identified from the module? ● What is your main take-home message?	Recap of the key take-home points using any of the following participatory methods: ● Q & A session ● Discussions ● Questionnaires ● Any other

12.8 Participants' handouts

1. KALRO Chicken Manual 2nd Edition

MODULE 13

VICES IN CHICKEN PRODUCTION

13.1 Introduction to the Module

This module specifies knowledge and skills required to identify and manage stress in chicken production. Stress during production leads to vices such as cannibalism, egg eating and feather pecking among others. Vices are difficult to eliminate once entrenched in a flock. It is important to detect and manage vices as soon as they start to avoid their negative effects on production and carcass quality.

The main causes of vices in production include; inadequate chicken space, excessive lighting and heating; inadequate feeding and drinking space; unbalanced diets; mixing of different ages, colour and breed of chicken and prolapse.

13.2 Module Learning Outcomes

By the end of the module the following should be achieved:

- Chicken vices described.
- Identification and monitoring of good and bad behavior in chicken recounted.
- Good management practices in production explained
- Management of stress/vices in chicken demonstrated

13.3 Module Target Group

This module targets service providers, public and private extension agents and lead farmers.

13.4 Module Users

This module is intended for use by master trainers who are members of the Core Team of Trainers (CTT). The module user should thoroughly familiarize themselves with the participant's handouts and training reference materials.

13.5 Module Duration

The Module is estimated to take 3 hours.

13.6 Module Summary

Vices in Chicken production			
Sessions	Training methods	Materials	Time
1. Module learning outcomes and expectations	• Personal introductions and expectations	• Flip-Chart • Marker pens	15 minutes
2. Define chicken vices and their causes in chicken production	• Visual aids • Discussions	• Projector • Flip-Chart • Marker pens	30 minutes
3. Identifying and managing important chicken vices	• Presentation • Discussions	• Projector • Flip-Chart • Handouts	30 minutes
4. Monitoring good and bad behavior in Chicken	• Presentation • Discussions	• Handouts	30 minutes
5. Good management practices in indigenous chicken production	• Presentation • Discussions	• Handouts	30 minutes
6. Managing stress/vices in chicken	• Practical session • Discussions	• Handouts	45 minutes
TOTAL			3 hours

13.7 Facilitator's Guidelines

Vices in Chicken production	
13.7.7.1. Introduction, objectives and expectations (15 minutes)	Session Guide
Introduction (15 minutes) <i>(The facilitator introduces the module and invites participants to introduce themselves and state their expectations. The facilitator presents learning outcomes and expectations)</i> By the end of the module participants should be able to: • Describe chicken vices. • Identify and monitor good and bad behavior in chicken. • Explain good management practices in production • Demonstrate managing of stress/vices in chicken	• Summarize participants “expectations” using cards • Powerpoint presentation • Distribute handouts to participants at the end of the module
13.7.7.2. Define chicken vices and their causes in chicken production (30 minutes)	
The facilitator defines chicken vices and their effects on production and productivity of indigenous chicken	• Visuals defining and describing various vices in chicken production • Discussions • Q&A sessions
13.7.7.3. Knowledge and skills in identifying and managing important chicken vices	
The facilitator creates awareness, knowledge and skills on how to look out for bad vices in a flock	• Visuals describing knowledge and skills in managing vices • Discussions • Q&A sessions

13.7.7.4. Monitoring good and bad behavior in Chicken	
The facilitator imparts skills on when to look out for good and bad vices during the production cycle	• Visuals with productions cycle and when to expect bad vices • Discussions • Q&A sessions
7.5. Best management practices indigenous chicken production	
The facilitator leads participants in discussing management practices that reduce bad vices in a flock.	• Visuals with management practices that reduce vices • Discussions • Q&A sessions
7.6. Practical skills for managing stress/vices in chicken (45 minutes)	
Practical demonstration of managing bad vices in chicken e.g. Debeaking chicken Issues of animal welfare related to managing vices	Practical group demonstration Discussion.

13.8 Facilitator's Handouts Training and Reference Materials:

1. KALRO Chicken Manual 2nd Edition

MODULE 14

RECORD KEEPING IN A POULTRY ENTERPRISE

14.1 Introduction to the Module

Records are an integral part of any business enterprise. Records enable the monitoring of progress of an enterprise, thus facilitating any required interventions to make the enterprise better or more profitable.

Despite the importance of farm records to the growth of a farm business, farmers often consider it as a difficult task and therefore the decisions they make are guided by vague estimates and guesses based on their past experience of farming. It is imperative for extension officers to convey information to farmers by demonstration, technical assistance, and education programmes.

There are various types of farm records which are classified under four basic types. These are the resource inventories, production records, financial records and supplementary records. Resource inventories include assets and liabilities of the farm while production records include mortality, breeding, bird performance, feed information, laying and labour. Financial records include income from sale of eggs and birds and expenditure from feed, vaccines, labour and maintenance of farm equipment. Supplementary records include survey maps, the farm layout (map) and the legal documents of the farm.

It is therefore essential that farmers keep good records as they are essential tools for management and maintenance of successful flocks. Record keeping involves keeping, filing, maintaining, and categorizing inventory, financial and production information for your flock. This can be accomplished by hand recording or by using computer software.

14.2 Learning Outcomes

By the end of the module the following should be achieved:

- a) Importance of record keeping in IC farming explained
- b) The various types of records, their uses and characteristics described.
- c) Various methods of keeping records and associated advantages and disadvantages Identified
- d) Various types of records understood and demonstrated

14.3 Target Group and Categories

This module targets agricultural extension and extension service providers based at the county level.

14.4 Module Users

This module is intended for use by trainer of trainers (TOT) in poultry production value chain master trainers who are members of the Core Team of Trainers (CTT).

This module outlines the learning outcomes, the category of trainees targeted, module summary, and participants' handouts. The facilitator using this module should thoroughly familiarize themselves with the participant's handouts.

14.5 Module Duration

The Module is estimated to take of 2 hours

14.5 Module Summary

Record Keeping			
Sessions	Training Methods	Training Materials	Time
1.0 Introduction, outcomes and expectations	Power-point presentation Discussion	• LDC Projector • Flip charts, felt pens	
2.0 Importance of record keeping in IC farming	• Discussion • Power point Presentation • Direct instruction	• LCD projector • Flip charts, felt pens	15minutes
3.0 Types of records, their uses and characteristics	• PowerPoint Presentation • Discussions • Demonstration • Practice by the trainee	• LCD projector • Flip chart, participants handouts, visuals, • Practical notes	30 minutes
4.0 Methods of keeping records and associated advantages and disadvantages	• PowerPoint Presentation • Discussions • Demonstration • Practice by the trainee	• LCD projector • Flip chart • Participants handouts • Photographs	30 minutes

5.0 Types of records	• PowerPoint Presentation • Discussions	• LCD projector • Flip chart • Participants • Handouts • Photographs	45 minutes
TOTAL			2 Hours

14.6 Facilitators Guidelines Record Keeping

Record Keeping	
14.7.7.1 Introduction, outcomes and expectations (10 minutes)	Session Guide
<i>The facilitator introduces the module and invites participants to give their expectations. The module learning outcomes and expectations are also given by the facilitator</i> By the end of the module participants should be able to: - Explain the importance of record keeping in IC farming - Describe the various types of records, their uses and characteristics - Differentiate various methods of keeping records and associated advantages and disadvantages - Design various types of records	• Summarize participants “expectations” by listing them on a flip chart • PowerPoint presentation • Share training materials at the end of the module
14.7.7.2 Importance of record keeping in IC farming (20 minutes)	Session guide
Plenary discussion (10 minutes) The participants discuss the importance of records. <i>The facilitator makes a presentation on Importance of records (10 minutes)</i> Any issue or questions arising is answered during this session.	• Powerpoint presentation • Plenary discussion
14.7.7.3 Various types of records, their uses and characteristics (20 minutes)	Session guide

<i>The facilitator makes a presentation different types or records and their characteristics (10 minutes)</i> Plenary discussion (10 minutes) The participants ask questions on the presentation, which are answered by the facilitator. They also discuss various records farmers keep and constraints of record keeping in their respective regions	• Powerpoint presentation • Plenary discussion
14.7.7.4 Methods of keeping records (30 minutes)	Session guide
Various methods of keeping records and context specific practices (20 minutes) <i>The facilitator presents PowerPoint slides highlighting the following;</i> • Examples of different methods of keeping record. • Advantages of different methods of keeping records • Applicability of various record keeping methods in poultry production Plenary discussion (10 minutes) Any issue or questions arising is answered during this session.	• Powerpoint presentation • Flip charts • Group work • Plenary discussions
14.7.7.5 Design various types of records (30 minutes)	Session guide
Group discussion Participants are divided into several groups and tasked to design various records that can be used by farmers in their respective counties The groups present their work and any issue or questions arising is answered during this session	• PowerPoint presentation • Flip charts • Group work • Plenary discussions
Module review (10 minutes)	Session guide
<i>The facilitator leads the participants in reviewing the module</i> Summarize and review the main points of the training on record keeping • What new things did you learn from this module? • What is your main take-home message?	• Q & A session • Discussions • Questionnaires

14.7 Participants' handouts

1. KALRO IC Breed brochure
2. KALRO Chicken Manual 2nd Edition

MODULE 15

INDIGENOUS CHICKEN AGRI-BUSINESS

15.1 Introduction to the module

The cost benefit analysis is important for efficient production and management of birds. It is used to enable the trainers to have an idea on how to assist the farmers determine whether an indigenous chicken production enterprise being is carrying out is making profits or losses. The cost benefit analysis therefore enables the trainers to estimate the types of costs that go into an indigenous chicken enterprise and the benefits that can be derived from it. It should be based on costs of materials and products, the production system and the scale of production.

This module is designed to expose facilitators on how to carry out a cost benefit analysis for the indigenous chicken enterprise produced under different production systems and at varying scales.

15.2 Learning Outcomes

By the end of the module participants should be able to:

1. Cost benefit analysis for indigenous chicken production under different production systems understood and demonstrated
2. Advice on how to determine whether the enterprise is making profits or losses and how it can increase profits or minimize losses understood.

15.3 Module Target Group and Categories

This module targets Private and public agricultural extension service providers based at the county level and lead farmers.

15.4 Module Duration

The Module is estimated to take 4 hours 45 minutes.

15.5 Module Users

This module is intended for use by trainer of trainers (TOT) in poultry production value chain master trainers who are members of the Core Team of Trainers (CTT).

This module outlines the learning outcomes, the category of trainees targeted, module summary, and participants' handouts. The facilitator using this module should thoroughly familiarize themselves with the participant's handouts.

15.6 Module Summary

Cost Benefit Analysis			
Sessions	Training Methods	Training Materials	Time
1. Introduction and leveling expectations	• Buzz • Presentation	• Participants' Handouts • Felt pens, masking tapes and sticker glue	20 Minutes
2.0. Identification of cost components in an indigenous chicken enterprise(Cash outflows)	• Discussion • Powerpoint Presentation • Practice by the trainee • Direct instruction	• LCD projector • Flip charts, felt pens	1 hour
3.0 Identification of products produced at the farm	• PowerPoint Discussion	• LCD projector • Flip charts, felt pens	1 Hour
4.0 Identification of sources of income in the enterprise	• Presentation • Group exercise	• PowerPoint • Flip chart, participants handouts • Exercise guide	1 Hours
5.0 Work out the cost benefit Analysis (Net cash flow)	• Presentation • Group exercise	• PowerPoint • Exercise guide	1 hour
6.0 Financial Records	• Discussion	• Flip chart, participant's handouts	45 Minutes
TOTAL			
			4 hours 45 Minutes

15.7 Facilitators' Guidelines

Cost Benefit Analysis	
1. Introduction to the Module and levelling the expectations (20 minutes)	Session Guide
• Welcome participants to the module • Participants to brainstorm on expectations • Present the module objectives By the end of the module participants should be able to: 1. Conduct a cost benefit analysis for indigenous chicken production under different production systems 2. Advice on how to determine whether the enterprise is making profits or losses and it can how to increase profits or minimize losses.	Powerpoint presentation Handouts on: on Modules objectives
2. Introduction to indigenous chicken Business Management (60 minutes)	Session Guide
2.1. Present the definition • What is a business? • What business are we familiar with? • What is agri-business? 2.2. Group Exercise <i>Compare a common retail enterprise (shop) with an agri-business on aspect of inputs, operations, financing marketing cost and record keeping”</i> 2.3. Present the common terms used in business 2.4. Explain the characteristics of a good IC business venture	Summarize Participants’ responses on a flip chart and display on the wall/board. Handouts on Definition and comparisons between farming and retail shop (business) Handouts on Common terms and characteristics of a good business
3. Concept of Commercial Farming (30 minutes)	Session Guide
3.1 Group Exercise (<i>comparison between commercial and subsistence farming undertakings</i>) • What are the inputs involved in either of the systems? • What are the operational activities involved in each of the two? • What are the marketing activities in each of the two? 3.2 Explain the principles of Business Management	Handout on Comparing commercial farming to traditional subsistence farming Handouts

4. Key requirements for IC business Enterprise (50 minutes)	Session Guide
4.1. Key requirements in IC enterprise • Discussion key requirements for production and marketing • Discuss on what are the inputs, operation and marketing requirements for production • Discuss the cost associated with the IC production and marketing 4.2 Some strategies of enhancing returns from the IC farming Ask participants to mention cost saving and income enhancing strategy for a farm. Then present in plenary • Cost saving strategies. • Income enhancement strategies	Each group brainstorms each question. Handouts Participants' Handouts on Costs of production and marketing Power point presentation Participants' Handouts on Strategies to enhance returns from farming
5.0 Financial analysis of indigenous chicken enterprise (60 minutes)	Session Guide
1.1. Definition and importance of economic analysis 1.2. Present different economic performance indicators (the Gross Margin Analysis, break even, cost benefit, Rate of investment, Internal rate of return) 1.3. What are the benefits of economic analysis? 1.4. Group exercise –carry out gross margin analysis for IC value chains by filling in the chart provided after group exercise one. Group presents and other comments on it.	List answers on flip chart. Distribute Participants' Handouts on farming gross margin analysis Distribute handout Group exercise Session guide
6. 0 Enterprise Business Planning (30 minutes)	Session Guide
1.1. Business Plan Definition 1.2. The Benefits of a Business Plan? 1.3. Parts of A Business Plan	Distribute the Participants' Handouts :

7. 0 Enterprise Business Financing (20 minutes)	Session Guide
7.1. What Is Business Financing? 7.2. Types of Finances Available 7.3. Sources of Finances For Farming 7.4. Group Exercise nn Business Planning	Participants' Handouts on Sources of business finances. Cost and advantages Handouts on Steps in business planning Session guide
8. Module Review (30 minutes)	Session Guide
Let's review together the main points about farming as a business. • What new things did you learn from this Module? • What are some of the problems and issues that you have become more aware of in the farming as a business module? • What questions do you still have about seed selection and handling?	Distribute Participants' Handouts on Message from farming as a business module Distribute evaluation forms to participants, have them filled and returned for analysis

15.8 Participants' handouts

- 1.1.1 A sample of already worked out cost benefit analysis for a small scale indigenous chicken enterprise under free range production system
- 1.1.2 A sample of already worked out cost benefit analysis for a medium scale indigenous chicken enterprise under intensive production system
- 1.1.3 KALRO Chicken Manual 2nd Edition

MODULE 16

INDIGENOUS CHICKEN MARKET ASSESSMENT

16.1 Introduction to the module

This module is designed for use in training trainers/facilitators on market assessment for indigenous chicken. This is necessary in order to provide knowledge and skills necessary for market assessment and developing market plans. Consequently, this will enable the facilitator to guide farmers to raise chicken for an identified target market. Farmers rarely understand how the market operates and thus produce with uncertainty. There is a disconnect between production and marketing where most farmers believe their role ends when the produce matures. Selling of farm produce is done at the farm gate. In most cases, farmers engage middlemen to link them to the produce market. These middlemen facilitate through engaging in upstream value chains activities like sorting, grading, packaging, storage and bulking that should otherwise have been undertaken by the farmer or farmer groups. In the process, the middlemen may earn more than the farmers.

16.2 Module learning outcomes

This module aims at training the trainers/facilitators to empower farmers to increase productivity and improve marketing for enhanced incomes. This will be done through market assessments that will enable the farmers to engage in sustainable indigenous chicken farming. By the end of the training, the facilitators should be able to help the participants to undertake market assessment and arrangement plans through:

- Identifying the market assessment methods and tools
- Conducting a market assessment
- Facilitating farmers or their groups in developing a marketing plan.

16.3 Module Target Groups

This module targets Private service providers, Public County Extension staff and lead farmers.

16.4 Module Users

This module is intended for use by trainer of trainers (TOT) in poultry production value chain master trainers who are members of the Core Team of Trainers (CTT).

This module outlines the learning outcomes, the category of trainees targeted, module summary, and participants' handouts. The facilitator using this module should thoroughly

familiarize themselves with the participant's handouts.

16.5 Module Duration

The module is estimated to take 7 hours 30 minutes

16.6 Module Summary

Indigenous Chicken Market Assessment			
Sessions	Training Methods	Training Materials	Time
1. Introduction and leveling expectations	• Buzz • Presentation	• Participants' Handouts • Felt pens, masking tapes and sticker glue	20 Minutes
2. Introduction to market assessment for IC products	• Plenary presentation and discussions • Powerpoint presentation	• Flip charts felt pens • Projector	30 minute
3. IC Market assessment plan	• Buzz activity • Presentation discussion	• Flip charts • Handouts	40 minutes
4. Market assessment tools and procedures	• Powerpoint Presentation • Plenary discussion • Group exercise • Plenary presentation	• Projector/Flip charts • Handouts • Note books	60 minutes
5. Practical market assessment (<i>where necessary</i>)	• Market walk	• Samples for assessment • Handout – Checklist/ tools • Flip charts	120 minutes
6. Analysis of market data	• Plenary discussion • Plenary presentation	• Flip charts • Analysis template • Participants' handouts	60 minutes

7. Developing a marketing plan	• Plenary discussion • Group exercise • Discussions • Powerpoint	• Participants' handouts • Projector • Flip charts, felt pens	30 minutes
8. Collective marketing	• Plenary discussion • Group exercise • Discussions • Powerpoint	• Participants' handouts • Projector • Flip charts, felt pens	30 minutes
9. Module review	• Participants' Facilitator's summary	• Participants' Handouts module review	10 minutes
Total			7 hours 30 minutes

16.7 Facilitators' Guidelines

Introduction and levelling expectations (20 minutes)	Session Guide
<i>The facilitator introduces the module and invites participants to give their expectations. The module learning outcomes and expectations are also given by the facilitator</i> By the end of the module participants should be able to: 1. Identify the market assessment methods and tools 2. Conduct a market assessment 3. Facilitate farmers or their groups in developing a marketing plan.	Summarize Participants' "Expectations" on a flipchart and make displays. Distribute Participants' Handouts on Module Objectives.
Introduction to IC market assessment (30 minutes)	Session Guide
2.1 Present definition of market and market assessment 2.2. Give dimensions of a Market Assessment 2.3. Give the benefits of a Market Assessment	Let the participants brainstorm and define Market assessment Discuss with the participants their perception of market assessment. Summarize discussion in flip chats Participants' Handouts on Definition, dimension and benefits

IC Market Assessment Plan (40 minutes)	Session Guide
1.1. Explain the steps to follow when doing market assessment 1.2. Buzz exercise “<i>What should the market assessment report tell a reader?</i>” Discuss in pairs for 5 minutes and present to plenary in another 10 minutes	List the need for market assessment on flip chart as they are mentioned Distribute Participants’ Handouts on Information required from a market assessment exercise.
Market Assessment Tools And Procedures (60 minutes)	Session Guide
The facilitator makes a PowerPoint presentation on: 4.1. Tool used • Observation • Surveys • Focus Groups and Product Testing Procedure for Market Assessment • Preparation • Field Data Collection • Analysis, Conclusions, Recommendations and Action Planning	Power point Distribute Participants’ Handouts on Tools used in market assessment. Distribute Participants’ Handouts on generic questions for a checklist or questionnaire Power point Distribute Participants’ Handouts on Procedures for market assessment and decision making
Practical Market Assessment (120 minutes)	Session Guide
1.3. Preparation for a Market Assessment Tools Group exercise: Let each group develop a maximum of five simple questions for traders 1.4. Market Visit	Handouts on : preparation for a market assessment visits Presentation by groups
Analysis of Market data (60 minutes)	
6.1. Describe data analysis needs 6.2 Analysis results, conclusions and recommendations	Handouts on Group exercise Session Guide Plenary discussion Distribute Participants’ Handouts on Data analysis, conclusions and recommendations

Developing A Marketing Plan (30 minutes)	Session Guide
1.5. Brainstorm and come up with: 1.6. Description of the target market for the produce 1.7. Customer profile 1.8. Competitor profile. Who are the other competitors to be aware of?	Distribute Participants' Handouts on: The Marketing guide Distribute Participants' Handouts on Marketing plan template. If time allows they can complete the business plan report
Collective marketing (30 minutes)	
1.9. Definition 1.10. Advantages of collective marketing 1.11. Collective marketing models	Powerpoint presentation Hand out
Module Review (10 minutes)	Session Guide
9.1 Let's review together the main points about market assessment and arrangements. 9.2 What new things did you learn from this Module? 9.3 What are some of the problems and issues that you have become more aware of market assessment and arrangements? 9.4 What questions do you still have about market assessments and arrangements? 9.5 Who can explain the first point - the message and its application? The second message? The third message?	Handouts

16.7 Participants handouts

ANNEX 1:

TRAINING PROGRAM

The training program presented here assumes that the trainees report on Sunday evening as the first day and leave 12 days later on Wednesday morning.

KENYA CLIMATE SMART AGRICULTURE PROJECT KCSAP INDIGENOUS CHICKEN VALUE CHAIN TOT TRAINING

PROGRAMME

Time	Activity	Responsible
Day 1 Sunday - Travel to Venue		
Day 2	Monday	
08:00-08:30	Arrival and Registration	Secretariat
08:30-08:40	Welcome address	Dr. Miano Mwangi
08:40-09:00	Workshop objectives and Expectations	Dr. Miano Mwangi
09:00-09:30	Overview of KCSAP	Dr. Miano Mwangi
09:30-10:30	Poultry Industry in Kenya and its role in GDP	Dr. Ann Wachira
Health Break		
11:00-13:00	Climate smart Agriculture and Poultry Production	Dr. Michael Okoti
Lunch Break		
14:00-17:00	Indigenous chicken Agribusiness	Dr. Alice Murage
Coffee/tea		
End of day 2		
Day 3	Tuesday	
08:00: 08:30	Review of Day 2	Dr. Miano Mwangi
08:30: 10:30	Indigenous chicken Agribusiness	Dr. Alice Murage
Health Break		
11:00-13:00	Indigenous Chicken Health Management Part 1	Dr. Erick O. Mungube
Lunch Break		
14:00-17:00	Indigenous Chicken Health Management Part 2-Practical	Dr. Erick O. Mungube
Coffee/tea		
End of day 3		

Day 4	Wednesday	
08:00: 08:30	Review of Day 3	Dr. Ann Wachira
08:30: 10:30	Indigenous Chicken Production Systems	Dr. Ann Wachira
10:30- 11.00	Health Break	
11:00-12:00	Indigenous Chicken Production Systems	Dr. Ann Wachira
12:00-13:00	Indigenous Chicken Feeding guidelines	Ouko Ochieng
Lunch Break		
14:00-15:00	Classification of indigenous chicken feed ingredients	Ouko Ochieng
15:00-16:00	Production of insects protein for indigenous chicken	Dr. Miano Mwangi
16:00-17:30	Feed formulation	Ouko Ochieng
Coffee/tea		
End of day 4		
Day 5	Thursday	
08:00: 08:30	Review of Day 4	Dr. Miano Mwangi
08:30-10:30	Breeding and selection of Indigenous chicken	Samson Mwangi
Health Break		
11:00-13:00	Breeding and selection of Indigenous chicken	Samson Mwangi
Lunch Break		
14:00-15:00	Brooding management of Indigenous chicken	Martin Macharia
15:00-17:00	Brooder construction practical	Martin Macharia
Coffee/tea		
End of day 5		
Day 6	Friday	
08:00: 08:30	Review of Day 5	Dr. Miano Mwangi
08:30-10:30	Processing and value addition of chicken products	Dr. Ann Wachira
Health Break		
11:00-12:00	Processing and value addition of chicken products	Dr. Ann Wachira
12:00-13:00	Vices in indigenous chicken management	Martin Macharia

Lunch Break		
14:00-17:00	Hatching and Incubation	Peter Alaru
Coffee/tea		
End of day 6		
Day 7	<i>Saturday: Tour of poultry farms</i>	
Day 8	Sunday	
Health Break		
11:00-13:00	Review of Day 6 and 7	Dr. Ann Wachira
Lunch Break		
14:00-17:00	Record keeping	Samson Mwangi
Coffee/tea		
End of day 8		
Day 9	Monday	
08:00: 08:30	Review of Day 8	Dr. Erick Mungube
08:30-10:30	Waste management in indigenous chicken management	Dr. Michael Okoti
Health Break		
11:00-13:00	Housing and equipment for Indigenous Chicken	Dr. Ann Wachira
Lunch Break		
14:00-17:00	Housing and equipment Practical	Martin Macharia
Coffee/tea		
End of day 9		
Day 10	Tuesday	
08:00: 08:30	Review of Day 9	Dr. Erick Mungube
08:30-10:30	Indigenous Chicken Market assessment	Dr. Alice Murage
Health Break		
11:00-13:00	Indigenous Chicken Market assessment	Dr. Alice Murage
Lunch Break		
14:00-17:00	Group work discussions on Lessons learnt and way forward for each County	Dr. Erick Mungube
Coffee/tea		
End of day 10		
Day 11	Wednesday	
08:00: 09:00	Review of Day 10	Dr. Peter Alaru

9:00-11:00	Plenary discussions on Lessons learnt and way forward for Kisumu County	Dr. Miano Mwangi
Health break		
11:30-13:30	Plenary discussions on Lessons learnt and way forward for Kakamega County	Dr. Miano Mwangi
Lunch Break		
	Training Evaluation and Closing	Dr. Miano Mwangi
Coffee/tea		
Participants departure End of day 11		
Day 12	Thursday	
09:00-16:30	Report writing and review of training materials	<i>Core Team of Trainers</i>
Day 13	Friday	
09:00-16:30	Report compilation and training materials	<i>Core Team of Trainers</i>
Day 14	Saturday Departure from training venue	<i>Core Team of Trainers</i>





Kenya Climate Smart
Agriculture Project

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