

The Smallholder Indigenous Chicken Improvement Programme (InCIP) aims at contributing to poverty alleviation, income and food security of smallholders and disadvantaged actors in the indigenous chicken (IC) sub-sector in Africa. This is achieved through harnessing of inter-regional scientific research collaboration and cooperation to increase productivity, promote, utilize and conserve IC in the face of climate change.

The programme addresses four main areas of development:

- 1. Empowering people:** Institutional capacity building and organization of actors in the IC value chain.
- 2. Environmental protection:** Facilitate transmission of appropriate production practices through exchange and cooperation between partner universities and IC farmers.
- 3. Policy support:** Active support of policy makers to develop and uphold policy recommendations, provide advice on development of institutions and motivation of various actors towards improvement of IC and integration of smallholder farmers.
- 4. Economic empowerment:** Development of sustainable partnerships and networks for service delivery and agribusiness.

The implementation tools include:

- Product value chain approach
- Integrative approach: Human resource and institutional development
- Public-private Partnership approach (PPP)
- Even distribution of responsibilities
- Close cooperation of partners

...working to improve livelihoods and food security among the resource poor households in Sub-Saharan Africa

InCIP is a collaborative programme between Egerton University- Kenya, University of Malawi-Malawi and Wageningen University-The Netherlands. It is funded by the European Union through the African Union.



Programme Activities Development of IC technologies

High producing ecotypes and composites identified, empirical data on effects of climate change on IC production systems collected and analysed. Meat composition and quality analysed post-harvest value addition and preservation technologies, ecotypes resistant to priority diseases identified and nutritional requirements of ecotypes and optimal feeding strategies quantified. Breeding strategies focussing on maintaining resistance to priority diseases developed, quality control and assurance practices established, alternative marketing systems identified, marketing/producer groups formed. Renewable energy (biogas) using incubator designed and tested and electronic SMS based marketing and information system established.

Promotion of partnerships and enterprise development

Strong and sustainable linkages with stakeholders developed to provide information of the performance of the developed IC breed, and business incubation centres established to enhance services delivery, credit access and a revolving fund in close collaboration with financial institutions in Kenya and Malawi.

Validation of IC technologies

Target beneficiaries of the new technologies identified through Participatory Rural Appraisals (PRA), promising technologies packaged, packaged technologies delivered and their adoption monitored and evaluated. Training modules covering all aspects of IC ranging from production to processing developed.

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Introduction



Prof. A. K. Kahi

Prof. A. K. Kahi is the InCIP Principal Investigator (PI) and Dean Faculty of Agriculture. He is an Associate Professor of Animal Breeding and Genetics at Egerton University's Department of Animal Sciences. He

has a wide experience in livestock production systems and their economics specifically definition of breeding objectives for different production systems, genetic improvement, computer simulations, experimental and observational quantitative genetics and genetics of indigenous animal resources. Prof. Kahi has played a key role in the development of indigenous chicken (IC) in Kenya and under his guidance Egerton University has seen the birth of InCIP.



Prof. J. A. M. van Arendonk

Prof. J. A. M. van Arendonk is a Professor in Animal Breeding and Genetics, Coordinator of European Masters in Animal Breeding and Genetics (EMABG), Dean of Sciences of Wageningen University and Chair, Animal Breeding and Genetics Group. He is involved in InCIP programme, supervision of

PhD students registered in The Netherlands (Wageningen University) and Kenya (Egerton University)".

Prof. T. N. P. Gondwe is an Associate Professor and the Associate Dean, Faculty of Agriculture at Bunda College of Agriculture (now Lilongwe University of Agriculture and Natural Resources (LUANAR). He has worked and published widely in the area of animal



Prof. T. N. P. Gondwe

sciences. Prof. Gondwe has interests in using indigenous livestock in the improvement of the livelihood of the local population in Malawi. He is also keen in the conservation of animal genetic resources for the purposes of insuring food security and alleviation of poverty. In InCIP Prof. Gondwe leads the programme activities in Malawi.

Management Staff

Mr. Wilson Munene Karimi - Programme Administrator

Mr. Richard Otwori - System Administrator

Other Staff at Egerton University

Dr. Chrilukovian Wasike - Liaison Officer

Mr. Kiplangat Ngeno - Research Officer

Ms. Sophie Miyumo - Student Tutor

Mr. Edmond Majoni - Student Tutor

Mr. Johnson Diyo- Livestock Assistant

Mr. Joseph Gachoki - Livestock Assistant

Mr. Churchill Arogo - Livestock Assistant

Mr. Josephat Mungai - Livestock Assistant

Other Staff in University of Malawi

Mr. Daniel Chiumia - Liaison Officer

Ms. Melina Chapotera - Office Administrator

Ms. Mtisunge Chanunda - Technical Officer

Target Groups

Entrepreneurs

The entrepreneurs such as smallholder farmers will profit from the strong and sustainable linkages between stakeholders in the IC value chain and new technologies generated for management of the improved IC ecotypes. Processors, traders and cooperatives would also benefit from the incubation centres established for information and credit facilities.

Policy makers

The information generated within the IC value chain will provide policy makers with factual information which they can use to develop policies to govern the entire IC value chain.

Consumers

They will benefit from ease of access to good-quality IC products

University staff participating in the programme

Information generated from the programme will enhance

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*Improving Indigenous Chicken
Productivity for Enhanced
Livelihood and Food Security in
Sub-Saharan Africa*

lecturers' knowledge in IC production, processing and marketing thus provide them with a comprehensive IC knowledge base to convey to students. The participating university staff will also gain skills on how product value chain approach can be used in solving problems.

Undergraduate and graduate students from the partner universities

Information generated will be of use to undergraduate and graduate students of animal breeding, animal nutrition, food science and technology, agricultural economics and marketing and socio-economics.



Egg preparation for setting in the incubator

InCIP's answer to food insecurity and poverty

The UNDP in its 2012 Human Development Report for Africa explores why eradicating hunger remains pervasive in the region, despite abundant agricultural resources, a favorable growing climate, and rapid economic growth rates. To boost food security the report advocates for action in 4 interrelated areas of agricultural productivity,



One day old chicks in the brooder

nutrition, access to food and empowerment of the rural poor. The report is bold in its assertion that increasing agricultural productivity in sustainable ways can bolster food production and economic opportunities. To promote equitable allocation of food and resources within families and across communities the report advocates for empowerment

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Visibility and multiplication

The web site (www.incip.org) supports internal and external programme communication and interactions. The publications including conferences and refereed journal papers, posters, brochures and newsletters posted on the website. Symposia are organised to discuss outputs and modules developed to train other stakeholders on the new technologies.

InCIP Poultry Breeding and Research Unit (IPRU)

Completion and operation of the InCIP Poultry Research Unit (IPRU) is a great milestone in poultry research in Kenya and the region. The Unit will be housing a state of the art setters and hatcher together with pens for breeding. For a while the potential of the IC as an important ingredient to economic growth hasn't been fully exploited. Factors compromising IC growth in Sub-Saharan Africa (SSA) include production losses, impaired health, infestation and predation. IC researchers agree that the IC value chain needs to be understood for the purpose of improving the sub-sector. Animal production experts from the SSA Research and Academic institutions like Egerton University attest to the fact that though the IC have



A section of InCIP Poultry Breeding and Research Unit

been kept for many generations in Africa their production is still at subsistence level and management interventions are still limited or non-existent. Establishment of the IPRU at Egerton University comes at the opportune time to counter the challenges in IC production. It also develops opportunity packages for the growth of the IC sub-sector in the region. Currently the IPRU hosts a Wageningen/Egerton University PhD Sandwich Fellowship student to develop capacity towards improving the IC sub-sector. The research tackles the potential and challenges of IC keeping by looking at the challenges and opportunities through targeting different ecotypes. IPRU continues to receive an upgrade including addition of facilities like offices, internet, an incubator, a feed processing machinery and a generator.

Traditional knowledge in controlling chick mortality and Newcastle disease in IC in Malawi

Malawi InCIP team conducted focus group discussions in all the three districts of Karonga, Mzimba and Lilongwe from 3rd - 12th September 2012. The aim of this trip was to collect empirical data on the effect of climate change of IC production systems and identify high producing IC ecotypes and composites. It was reported that mortality of chickens affects the sustainability and productivity of the indigenous chicken in the area, especially chicks. The losses were mainly due to Newcastle disease (NCD) according to the farmers' knowledge and predation by wild animals. The wild animals that decimate the chickens include foxes, wild cats, eagles and kites. It was easy to control the chickens at night from these wild animals since most of the chickens are housed in human dwelling places, but very difficult during the day.

Traditional methods of controlling mortality through predation

It was revealed that some farmers put some maize bran (*madeya*) under the maize granary or any raised structure so that the hen and the chicks stay most of the time at that place especially during the first 5 weeks. The mother will be busy feeding on the concentrate and the chicks will not go away from the mother.

Some farmers indicated that they do put the hen and the chicks in a bamboo woven basket with supplementation for the first few days after hatching. Others paint the chicks with oil paint. This is especially to prevent the chicks from eagles and kites. The theory behind this, is that flying predator will not recognise the chicks because of the paint. Finally on prevention of predation, there is a belief that soon after hatching, they put all the chicks in the winnower (*lichero*) and do what women do when they are winnowing maize. The chicks should be jumping on their own from the winnower to the ground, in so doing they believe that those chickens will not be predated.

Traditional method of Newcastle disease control

Newcastle disease is the major disease affecting rural chickens in Malawi. The extremely high mortality discourages farmers from investing time or money in their flocks. Though there are conventional vaccines available for the disease, some farmers are still using indigenous knowledge and beliefs to control and treat the disease. One isolated example was the use of water which is thrown away after soaking maize, (*chiithuwi*). They immerse the whole chicken in that water and let them go. Doing this, they believe to protect the chickens from NCD.

of the rural poor especially women whilst harnessing the power of information, innovation and markets. In this report the human population in SSA which stood at 856 million in 2010 is projected to exceed 2 billion shortly after 2050. The report paints a grim picture on the food situation in Africa by stating that more than 1 in 4 Africans which is close to 218 million people is undernourished. In a bid to explain the food insecurity in the continent there has been a bias to dwell on towns rather than rural areas and on men rather than women. On the other hand African governments spend between 5-10% of their budgets on agriculture compared to 20% average by Asian governments during the green revolution. The report highlights the significant role of women as food producers despite the fact that their control of land in SSA is less than in any other region. InCIP therefore raises to the occasion to answer questions and provide interventions to equitable allocation of food resources across gender and location.

InCIP presents a platform for a great revolution in the indigenous livestock production systems. For a while, the value of local livestock breeds has been sidelined in preference to consumption of products from exotic breeds. However, the local livestock play a critical role in the livelihoods of the smallholder farmers, widows and orphans in SSA. Though little attention is paid to this livestock, their economic and social value cannot go unnoticed. The IC has established itself as an important resource in the small scale production where it is highly valued for flesh and eggs in SSA. However, success in IC production is compromised by limited management practices and investment. An understanding of IC value is key to successful development of IC sub-sector. Collaborative intervention by Egerton University, University of Malawi and Wageningen University provides unique solutions to challenges compromising growth of the IC sub-sector.

InCIP liaison officers trained

The training of liaison officers for the InCIP programme took place at Egerton University on 12th - 13th July 2012. They were drawn both from Egerton University and University of Malawi. The liaison officers were equipped with skills to link the programme to the industry and to create networks with key players and stakeholders in the IC value chain. They were trained on different networking models, facilitator dependent and independent networking models, target groups identification criteria and tools necessary for initiating and running an efficient and sustainable network. The liaison officers were also trained on the financial accounting procedures and financial and technical reporting as per the regulations of the European Union. These techniques equipped the liaison officers with the necessary skills and expertise on how to link the InCIP with all stakeholders within the IC sub-sector for the purpose of marketing the programme activities and subsequent up-scaling of the findings.

Koepon meeting

A crucial partnership has been struck with Koepon Foundation. The partnership opens way for funding of two PhD students from Department of Animal Science (ANSCS) at Egerton University pursuing animal breeding and genomics



Mr. Pon (center) together with some of the postgraduate students supported by Koepon Foundation

and their projects one of whom is in the InCIP. In a move to strengthen this partnership, representatives from Koepon Foundation will visit Egerton University Kenya. The Koepon Foundation has been on the fore front in supporting graduate students to accomplish their studies by financing their research projects.

Paper presentation at the Tropentag

Dissemination is important in any research activity. Peers and other consumers of research outputs rely on the nouvelle ideas resulting from the research. InCIP therefore sponsored Mr. T. O. Okeno to present the findings of a research targeting genetic improvement of IC at this year's Tropentag in Göttingen,



Mr. T. O. Okeno during Tropentag presentation

Germany (19th - 21st Sept 2012). The conference theme was "Resilience of Agricultural systems against crises". The conference was also attended by Prof. A. K. Kahi and Mr. Wilson Karimi. Mr. T. O. Okeno presented a paper on genetic and economic evaluation of alternative breeding objectives for adoption in InCIP

Birth of InCIP-Hendrix Genetics partnership

InCIP has brokered a partnership with Hendrix Genetics a leading multispecies breeding company in the Netherlands. Hendrix Genetics comes on board to partner in research that is already on going and they will provide expertise gathered over years in poultry and aquaculture breeding. Hendrix Genetics has linked InCIP to



Brokering the deal with Hendrix Genetics representatives

a company that sells incubators. InCIP therefore bought an incubator which has a substantial capacity to incubate over 60,000 eggs. This incubator will serve an important function in the growth of the IC in the country and replaces a small capacity incubator previously used at the IPRU. Hendrix Genetics will also supply InCIP with male grandparents stock of Rhode Island Red (RIR) from the Institute Selection Animale B.V. Villa „de Kover Spoorstraat for experimental crossbreeding with IC. InCIP welcomes Hendrix Genetics on board.

The paper aimed at identifying the optimal within IC selection schemes based on their genetic and economic merits by evaluating farmers' and alternative breeding objectives for adoption in the IC breeding programme.

The presentations generated a lot of interest among the participants who appreciated the need to support within-IC selection not only as a tool for improved livelihoods of the resource limited households in developing countries, but also as a strategy for conservation of IC genetic resources which is threatened by unplanned crossbreeding with commercial exotic chickens. The presentation resulted to networking and a linkage with other researchers i.e., in Tanzania and interested organizations such as Veterinaires Sans Frontieres Germany (www.vsfg.org) or Tierärzte ohne Grenzen e.V (www.togev.de). The paper concluded that there is feasibility for within-IC ecotypes selection either for dual-purpose, egg or meat production. Selecting IC for meat production was both genetically and economically superior to dual-purpose and egg production. Full details of the paper can be found at Tropentag 2012 website.

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Visit by Prof. J. A. M. van Arendonk

Prof. Johan van Arendonk, a member of InCIP partnership from Wageningen University visited Egerton University recently. During his visit he toured the InCIP Poultry Breeding and Research Unit (IPRU) where a student he is supervising within InCIP is hosted. The Wageningen University Professor also had



Prof. van Arendonk plants a tree during his visit

a chance to tour the Aquaculture Centre that is still under development and will soon host a variety of research activities. The Aquaculture Centre upon completion

will be linked to the IPRU through the utilization of by-products from the IC. During his visit Prof. van Arendonk who is also the head of the Animal Breeding Group at Wageningen University planted a commemoration tree at the Faculty of Agriculture Fountain Gardens.

Simple IC husbandry techniques in Kenya

Despite low levels of expertise and use of management practices in IC production there exists simple yet effective IC management strategies. They include those used to control inbreeding, parasite control etc. The techniques have been used since time immemorial among different communities. IC are given concoctions of herbs such as pepper and aloe spp. extracts for parasite control. Recycled engine oil or kerosene is used to expel external parasites and pests like mites. Dusting the IC with ash is widely used to expel external parasites and pests. IC are left to look for food in a free range practice and in the evening share residence with the farmers either housed in the kitchen or in livestock shades. Inbreeding is controlled by buying from the market or exchanging with neighbors. Hens brood on average 12 eggs. In case the hens are not required to brood eggs, a process of dipping it in cold water successively for 3 days is carried out to reduce broodiness. These methods are practiced across different communities and though rudimentary are regarded useful in overall management of the IC.

InCIP inception workshop

InCIP Inception workshop was held at Egerton University on 8th to 15th July 2012. The workshop was a platform to table existing challenges, possible opportunities and mitigating strategies. The forum highlighted the importance of the IC in uplifting the livelihoods of the target groups

that includes small scale farmers, orphans and widows of the SSA. The collaborative programme



Participants during InCIP inception workshop

brings together partners from Egerton University-Kenya, University of Malawi-Malawi and Wageningen University-Netherlands. In the workshop the partners anticipated that the partnering institutions will be directly involved in the programme. The partners also expressed the need to maintain focus on conservation so as to avoid impediments as those experienced in previous attempts to improve IC and in the Dairy Sector. On this note, the partners emphasized the importance of having back-up mechanisms in the IC for purposes of future references and research. The idea of developing a hybrid within the IC conditions was floated. The partners also agreed to consider the consumer preferences given that the demand for IC is growing. In addition to this, InCIP will investigate the market characteristics of the IC.

Importance of IC in the Kenyan society

In comparison to the commercial layers, broilers and other livestock, the IC receives minimal attention when speaking of income generation. However, the importance of the IC in the African traditional society cannot go unnoticed. The importance of the IC is common place in the African folklore, art, traditional healing practices, cuisine and social practices. In Kenya for instance the IC is a treasured delicacy during the end year festivities like Christmas and New Year and other holidays. During these events the price of IC sky-rockets and vendors flock Kenyan cities and market places to make a kill during these holidays. Some entrepreneurs' set-up temporal markets to sell IC that have been reared for the better part of the year.

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Tropentag paper

Genetic and Economic Evaluation of Alternative Breeding Objectives for Adoption in the Smallholder Indigenous Chicken Improvement Program

Tobias O. Okeno, Alexander K. Kahi and Kurt J. Peters

Abstract

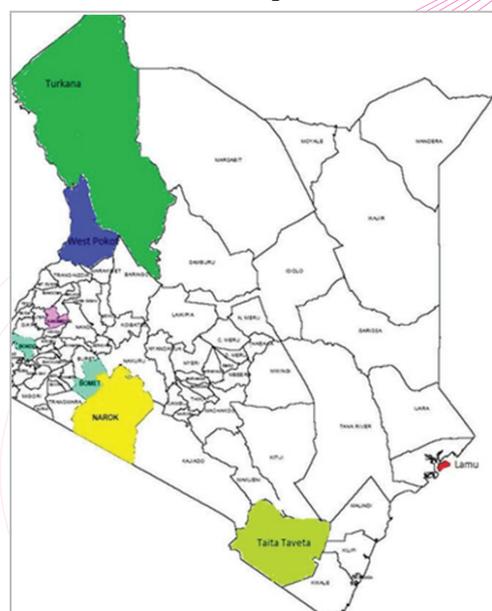
The aim of this study was to genetically and economically evaluate the breeding objectives for adoption in the smallholder indigenous chicken (IC) breeding program in Kenya. A closed three-tier nucleus breeding program with three breeding objectives targeting within breed selection was simulated. The breeding objectives differed based on the end marketable products. They included IC dual-purpose (ICD) representing the smallholder IC producers' breeding goal for both eggs and meat production and IC layer (ICL) and broiler (ICB) simulating alternative breeding objectives for IC egg and meat pure lines, respectively. A flock size of 48,000 breeding hens with 1, 29 and 70% in nucleus, multiplier and commercial flock, respectively, was modeled using deterministic approach to assess the genetic and economic merit of each breeding objective. The results indicate that cocks were the main contributors of genetic gains than hens reflecting their ability to transmit superior genes faster within the population than hens. The genetic response after one round of selection for individual traits differed between the breeding objectives. The highest genetic gains for egg number (2.71 eggs) and growth traits (average daily gain, 1.74g and live weight at 16 weeks, 58.0g) were realized in ICL and ICB, respectively. The genetic responses for age at first egg were desirable in all the breeding objectives while that for fertility and hatchability were only favorable in ICD and ICL. Faecal egg count had low but desirable response to selection compared to antibody response, which had negative genetic gains. The ICD reported the highest increase in feed intake (0.19g d⁻¹) while ICL had the least (0.12g d⁻¹). The ICB was the most profitable breeding objective while ICL was the least. The alternative breeding objectives ICL and ICB were found to be superior in genetic improvement for egg production and growth traits, respectively, compared to smallholder farmers breeding objective (ICD). Adoption of breeding objective targeting improvement of IC for meat production was recommended. However, this must be accompanied by improved production environment for high profitability.

Conclusions

The current study has demonstrated that there is possibility of improving IC either for dual-purpose or specialised lines for eggs and meat production. Selecting IC for meat production was the most profitable breeding objectives under optimal management regimes. However, to develop a dual-purpose breed that can fit within the smallholder farms, which have sub-optimal production systems, there would be a need to develop different pure lines and then cross them to exploit heterosis on both productive, reproductive and adaptability traits as demonstrated in ICB in under CBS. On the other hand breeding programs targeting commercialization of IC should initially adopt ICL and ICB under PLS and once the desired gains have been achieved then crossbreeding strategies can be adopted for hybrids production purposes.

IC blood sample collection

As part of its research objective InCIP has embarked on a blood sample collection from different ecotypes in Kenya. Currently blood has been collected from 8 ecotypes namely Turkana, Lamu, West Pokot, Kakamega, Bondo, Narok, Bomet and Taita Taveta of Kenya, making a total of 800 samples. The exercise of blood sample collection targets to



Map of Kenya showing the source IC ecotypes

carry out DNA analysis as well as analysis of origin and diversity using single-nucleotide polymorphism (SNP). In addition to this, the research on microsatellite is ongoing. The information collected provides an important insight into the IC ecotypes and will help in understanding many aspects of performance among the IC in Kenya.

Challenges and solution in implementing IC research in the tropics: The case of Kenya

A scenario painted by research gives an implication of what is experienced by small scale farmers. Diseases and predation are some of the challenges that have impacted the growth of IC in the SSA. For instance research on IC at Egerton University has had to contend stray cats which at one point decimated 100 chicks from the IPRU brooder. Birds also succumbed to



Invasion by wild cats and other predators

Newcastle disease from birds collected from the field.

The symptoms of Newcastle managed to conceal themselves until few days after the birds had been introduced into



Blood sampling at IPRU

the IPRU. Fortunately the problem was arrested through vaccination with Newcastle Disease vaccine.

The problem of tag shortage was countered by inventing tags. However, InCIP acquired 6000 tags. Transportation in remote or and marginal InCIP eco-regions is a great challenge. For instance transport to islands and marginal areas in Kenya proved a major challenge during the data collection. Faza Island in Lamu has only one vehicle and the data collection could only be achieved by boarding the top of the vehicle. Poor state of roads and long distances took toll on researchers especially in sections of Turkana and Pokot. These areas have serious security problems from cattle rustlers, Al-Shabab and other bandits. Police had to be hired for escort.

The IC is also used in traditional healing practices and has formed part of traditional folklore. For instance purely white or black IC is constantly mentioned in the folklore as hugely important among the traditional healers and witchdoctors. Some practices among some communities include throwing a live chicken into a forest after a burial to get rid of evil spirits. In some communities children visiting relatives are given IC as gifts to take back home. Among certain communities different age groups are forbidden from eating certain parts of the IC, while in some communities certain parts of the chicken are reserved for certain members of the family. For example the men served chicken breast, while the chicken legs are reserved for children. The IC also forms important images on logos for different organizations and political parties as well as postal stamps.

InCIP activities in Malawi

Since the inception workshop at Egerton University, InCIP-Malawi has embarked on several crucial activities. For instance there has been identification of solutions to IC challenges e.g. sourcing and distributing Black Australorp, a dual purpose exotic chicken into village chicken without any documented protocol to guide farmers. To ensure mutual benefit between the participating stakeholders as well as encourage team work, a first stakeholder meeting was held on 14th September, 2012 at Bunda College. Stakeholders in the



A well designed tradition IC house identified in Lilongwe

above meeting included Heifer Project International (promote IC in Mchinji District), Malawi Industrial Research and Technology Development (manufacture local chicken egg incubators), Inter-Aide and Small Scale Livestock Livelihood Programme (promotion of village poultry vaccination programmes) and Save the Children (have a chicken improvement component of children nutrition project in Chiradzulu district, Southern region). Stakeholders elected the Programme Advisory Committee (PAC) and Programme Implementation Committee (PIC). Both committees comprise of different stakeholders. The

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PAC guides the InCIP research agenda and PIC monitors InCIP implementation. In addition InCIP-Malawi has embraced the Public-Private-Partnership approach to contribute to sustainability of quality production of IC.

Furthermore to ensure that most stakeholders are well informed of the InCIP activities, a presentation was made in Salima on 21st September 2012. This is an annual forum organized by the Department of Agriculture Research Services, where all livestock projects are presented together with progress reports. In a strategy aimed at capacity building at the Bunda College of Agriculture, students have been integrated into InCIP by involving them in activities where, two undergraduate students have been recruited; on the other hand, village chicken structures are under construction as well as the rehabilitation at Bunda College. Similar to what InCIP-Egerton has done, InCIP-Malawi has also sourced for an egg incubator from a stakeholder. This is a 500 egg capacity incubator. Finally there has been extensive networking among players in IC sub-sector initiated through focus group discussions and during the stakeholder briefing meeting.

Feed formulation at InCIP Egerton University

Supply of abundant and quality feed is key in animal production. Due to the high number of individuals carrying out poultry production in Kenya, there has been a high demand for poultry feed. This has led to low availability of the feeds as well as poor quality of the produced feeds. To tackle the problem of feed scarcity and poor quality of the same, InCIP has initiated a feed processing and production facility so as to produce feed at Egerton University.



Feed mill

The feed production facility is capable of producing feeds for chicks, growers and layers.

The move will ensure consistent availability of high quality feeds for the IC. The move targets intervention into poor quality feeds available in the market and scarcity due to seasonality in availability of ingredients. The Aquaculture centre will also benefit from the feed processing since aquaculture feeds will also be formulated, processed and produced. This is also a great opportunity for potential undergraduate and postgraduate students to carry out short- and long-term nutrition studies both for IC and Aquaculture when InCIP is integrated into aquaculture.

InCIP office desks now operational

InCIP now has office desks at its partnering institutions. The offices are responsible for coordinating the programme activities, establishing the programme networks and linking the programme with all stakeholders within the IC value chains in Kenya and Malawi. At the desk at Egerton University, there is a programme



InCIP office desk at Egerton University

administrator who is the link between the two institutions. Through the InCIP office desks the programme brochures and website have been developed and maintained. Both local and international communications pertaining InCIP are also being coordinated through these desks.

InCIP supports undergraduate students at Bunda College of Agriculture

One of the pillars of InCIP is capacity building in IC improvement, so the programme integrated and supported two undergraduate students' research projects. One is on "Evaluation of growth and survival of IC breeds released at different ages under scavenging conditions". Three breeds will be studied; indigenous, layers and broilers. The research will be carried out in villages around Chitedze and on station at Chitedze research station in Lilongwe. Another research project is looking at the "Effect of parity on egg size, hatchability and hatching weight IC in Malawian". This research project would like to assess whether there are any effects on size and number of eggs as well as hatchability and size of the chicks which could be as a result of the number of clutches (parity) the hen has produced so far.

Apart from the two research projects, the programme has also taken on board a group of 25 Animal Science students for an outreach programme. The students will visit an identified village around Bunda College, collect empirical data, carry out analysis and upscale the findings to IC famers.

InCIP perspective from Malawi (by Daniel Chiumia)

InCIP activities in Malawi started in August, 2012 and are expected to contribute towards the development of IC technologies applicable both in Malawi and Kenya through joint coordination, implementation and evaluation of IC sub-sector. This is in addition to substantial indigenous knowledge used by farmers; e.g. painting a chicken to prevent predation. Within the 3 year period, InCIP partners believe that the programme will have improved the livelihood of households in terms of nutrition and cash income.

According to Mr. Daniel Chiumia of the Department of Animal Science, Bunda College-LUANAR, InCIP-Malawi will cover, Karonga, Mzimba, Mchinji & Lilongwe Districts where there already exists IC programmes. There is extreme enthusiasm among farmers to promote IC as was observed during September, 2012 vaccination campaign in all sites where different ecological types of IC will be sourced.



Women with IC at selling point in Mzimba

InCIP supplies 84 vials of I-2 vaccine to partners for IC vaccination

After the focus group discussions, it was noted that the local partners and NGOs in the targeted sites of Karonga, Mzimba and Lilongwe were doing good especially in mobilizing farmers to carry out vaccination on a communal level. However, there were still some flaws in the systems. The partners who are working in these areas are; Small Stock Livestock and Livelihood Promotion (SSLLP) in Karonga, Inter AIDE in Lilongwe and Farmers Union



IC focus group discussion session in Lilongwe

through Coalition of Farmers Association in Mzimba.

SSLLP has a component on IC improvement through NCD vaccination in Karonga and some parts of Lilongwe. This aims at assisting rural communities and support government extension staff through the establishment of a sustainable mechanism for control of NCD using a locally produced vaccine known as I-2. The campaign is achieved by training and equipping community based vaccinators who will promote NCD vaccination within their villages on a regular sustainable basis. Inter-ADE also promotes community vaccination of IC against NCD using community vaccinators.

In Mzimba, farmers organized themselves under the umbrella body known as Coalition of Women Farmers Association (COWFA) which is mainly targeting female headed households. These groups carry out agricultural activities as a group. Farmers Union of Malawi (FUM) which is mother body for all farmers in Malawi also worked with them in chicken improvement project. InCIP found these groups as fertile entry points for IC improvement activities, since they are already organized. Volunteers and Government Assistant Veterinary Office were used to vaccinate IC with support from the programme.

The programme is funded by the European Union through the African Union

InCIP

Smallholder Indigenous Chicken Improvement Programme

...working to improve livelihoods and food security among the resource poor households in Sub-Saharan Africa



WAGENINGEN UR
For quality of life

