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Strategic interventions for Family Poultry
What can be achieved through Research & Development activities

E-conference of the International Network for Family Poultry Development in collaboration with FAO and supported by the International Fund for Agricultural Development (IFAD)
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E-conference Moderators

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PART I

Themes and Leading questions

The contribution of research to the development of family poultry production systems.

- Different research methods (field studies, surveys, case studies, experiments, etc.) have been employed to develop family poultry in the last three to four decades. How did the results of these methods contribute to the development of the family poultry subsector in developing countries? Which of these methods has given the most significant results?
- Are the methodologies and publications of family poultry research of sufficiently high quality?
- Genetic resources, feed, animal health and economics - To which of these fields did research make the greatest contribution?
- Should research for family poultry be conducted at a global, national or regional level?
- Are findings from family poultry research well documented and easily available?
- Do the family poultry producers of specific regions of the developing world benefit from research more than others?
- How can technology be applied in family poultry production?
- Can the technology and expertise developed in the commercial poultry industry be useful for the development of family poultry production?
- Is private research contributing to family poultry development?
- Are family poultry producers keen on applying new research findings?
- How can farmers' innovations help family poultry management?
- What simple technologies which are readily available could yield improvements in family poultry production?
- What are the most effective ways of transferring research findings to family poultry producers?

The cost and opportunities of family poultry development for livelihoods.

- What is the socio-economic importance of family poultry production?
- Food security and conservation of poultry genetic resources: the main roles of smallholder family poultry production systems?
- Does family poultry represent a sustainable source of income?
- Does family poultry alone have the capacity of improving the livelihoods of poor households?
- Does family poultry enable the poorest households to take the first step towards breaking out of poverty?
- Why should development organizations invest in family poultry rather than in other livestock activities?
- Genetic resources, feed, and animal health - which of these areas allows the highest degree of improvement, at a lower cost?

- Is family poultry development easier to achieve than that of the other livestock species reared by smallholders?
- Will the global shift towards intensive livestock production systems reduce the resources allocated to family poultry development?
- Meat and eggs- what is their respective importance to livelihoods?
- What is the willingness of family poultry producers to take risk in innovations?
- What are the risks of innovation? Does the importance of family poultry change in rural and urban households?
- Are investments in family poultry profitable?

Is Family Poultry competing with or complementing commercial poultry systems?

- Household consumption vs. commercialization of family poultry - which is best?
- Can family poultry play an important role to meet the protein needs of the growing human population?
- What are the strengths and weaknesses of family poultry compared to commercial poultry production?
- Can family poultry keepers be competitive on the market?
- Are higher food-safety standards achievable in family poultry production systems?
- Is family poultry consumption decreasing with rising per capita incomes, urbanization and Westernization of diets?
- Which of the following options is more promising in a developing country context: Low input / low output system (family poultry) or high input / high output (large commercials)?

Single versus multiple (integrated) interventions for sustainable development of family poultry.

- Are interventions in family poultry production systems required or are they so well adapted sustainable systems that they should continue as they are?
- Do holistic interventions (integrating health-genetic improvement-feeding-marketing) obtain better results in family poultry development than single interventions in one field?
- Single *vs.* multiple interventions - What are the costs and benefits?
- How should interventions for family poultry deal with the need for supplies and access to the market?
- Do all interventions require investment in skill building for family poultry producers?

Good organizational models for sustainable family poultry development.

- How would we define sustainable development of FP?
- Family poultry is often part of integrated farming systems. Should development activities focus on improving family poultry alone or on the system as a whole?
- Which factors should be taken into account when designing good organizational models for sustainable family poultry development?
  - What are the experiences from successful projects? How can their interventions be replicated or become sustainable and what are the challenges of replication in other areas?
  - Does working for specific target groups (e.g. women) improve the chances of success in working for FP?
  - Ways of disseminating lessons learned (successes, but also failures) from family poultry development projects.
  - Which resources need to be mobilized to make projects sustainable?
  - Which are the institutions that provide the best conditions for promoting a sustainable development and should be responsible for it?
  - How important are markets and the economies of scale for the success of interventions?
  - What level of public funding is required to support and promote FP and for what type of interventions?
  - What are promising new technologies to improve FP?

Women empowerment through sustainable family poultry development.

- Can development of family poultry make an important contribution to women's empowerment?
- What are the requirements and constraints for contribution of family poultry to women empowerment?
- Can family poultry development have negative impacts for women, for example by increasing their workload?
- Have past projects proved a positive impact of family poultry development on women's empowerment?
- While promoting family poultry what should be done to avoid discrimination based on gender, caste, and class?

Influencing policy for family poultry.

- What should be the purpose of family poultry policies?
- Is policy changing a prerequisite to steer family poultry development towards meeting the needs of the poor?
- What can policies do to support family poultry?
- How much importance has been given to family poultry in the current poultry development policies and what needs to be done to influence that?

- Have family poultry development projects influenced policy, if so, why and how?
- Have needs and priorities of the commercial poultry industry negative impacts on the policies for family poultry?
- What arguments and facts are required to achieve pro family poultry policies?
- Who are the stakeholders that should work for smallholder friendly poultry policies?
- What can international organizations and institutions do to achieve FP friendly policies?
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The future contribution of INFPD and other networks to family poultry development.

- What has been achieved by INFPD? What has worked and what not?
- What should be the future priorities of INFPD?
- What actions could INFPD take to further contribute to policy change?
- What actions could INFPD take to further contribute to improving technical knowledge?
- Should INFPD collaborate more actively with other institutions or networks?

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PART II

List of messages

Message No 1

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In reply to the above mentioned topic here are what I feel:

1. **The contribution of research to the development of family poultry production systems.**

Research, on the development of family poultry production system is not really lacking but baring few countries like Bangladesh and Sub-Saharan nations, it is not in practice in many other places where family poultry production is vitally important. I am not aware if we have the database for the species of poultry that are raised by different communities in the Earth, it may run into few hundreds and the status of these breeds of choice holds crucial information. Modern day family poultry production system if asked to be explained by a recent graduate will mention the farming that a single family do, I must tell you that poultry farming by a single family in commercial terms stands to huge numbers like over 40K in South Korea, 6-10K in Sub-continent to be a profitable household business. Hence, family poultry production system in context here is evolving in its understanding and imagining a real support by providing a rooster to a family is an activity of bygone era. A family needs to be trained in commercialization and if capacity is the problem go for niche product preparation.

I believe that not much research focus is aimed at family poultry production, this science will gain momentum only at the second half of this century when the population of the planet stabilizes and local food becomes important.

2. **The development for livelihoods through family poultry - cost and opportunities.**

Lifestyles today are at the two poles, where subsistence and sustenance at one and plenty at the other end is evident. The commercialization drive, more is better attitude is still rife and shifting from developed societies to the developing ones. On one hand are societies that lost a lot before it reaches their plate and on the other hand there are societies that waste a lot after it reaches the plate. The global food security demands intervention at both ends. Livelihood, as challenged by many things including climate change and paradigm shift in human behavior have tended to migrate, rural to urban-developing to developed parts of the planet, which must be managed. I honestly have little faith in the development of livelihood through poultry-given the emergence of diseases, cost of feed materials, reluctant of younger generations to continue with farming or for the matter being a rural resident. Co-operative activity and micro-financing should be promoted added to the diversification of allied business for better profits.

3. **Competing or complementing commercial poultry production systems?**

Let us realize that majority consumers want a cheap buy for daily use, occasional celebration with value added items may be in the card but given the price difference common buyers will still go for commercial factory farming products. It is true that farmers market, ethics and organic products demand is increasing in richer societies but that is too small and given the global economic turmoil, bound to be stagnant in future. Added to the problem is the fact that the demand for organic items is coming from the Greying population with money to spend but sadly they are turning Green,

meaning they are attracted by vegetarian diets. I see the competition of commercial poultry production systems affecting when the special family raised (local) product gets sabotaged by the seller diminishing consumers' confidence. Let me cite and example "The hill station of Daunne, Nawalparasi (Mahendra Highway) of Nepal is very famous for its local chickens, but now customers are shying away from that station as commercial and namesake chickens are sold in name of local". Same way, ethics of business, trust, value addition and diversification will enhance the commodity market; let us bring the theme of sustainability in practice by promoting local foods, as the need to maintain the ecological footprint at lower side and for those on higher side to reduce it significantly gets global campaign.

Message No 2

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Dear Moderators: Below are my contributions to the on-going e-conference:

Genetic resources, feed, animal health and economics - To which of these fields could research give the greatest contribution?

In Tanzania, more researches that are conducted on family poultry are mainly focused on locally available feed resources, animal health and production as well as on their socio-economic contribution at household levels. There are varied ecotypes of poultry that are widely distributed in my country. However, their characteristics are yet delineated. Therefore, their comprehensive information are needed, such as description of phenotypic characteristics, production environment to which they are adapted, origin and development of the ecotypes, special attributes (unique features), relevant indigenous knowledge, ongoing management (utilization and conservation) actions, genetic diversity and genetic relationships between ecotypes within and outside the country.

Globally, efforts have been undertaken to characterize and understand the potential of indigenous ecotypes using several recommended strategies and approaches by FAO. These strategies aim for effective management of FAnGR diversity, which includes identifying and listing all ecotypes, describing their characteristics and documenting their unique qualities, developing improvement strategies and monitoring the population statistics for each population.

Message No 3

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Chers modérateur et tous les autres intervenants, j'aimerai apporter ma contribution sur le thème suivant:

3. Le système de production familiale face au système de production

commerciale: compétition ou complémentarité?

Pour ma part, je suis d'abord confronté à un problème, celui du terme aviculture familiale qui prête à confusion:

1. Si on définit l'aviculture familiale comme cette aviculture pratiquée à petite échelle, avec des races exotiques, pour subvenir aux besoins alimentaires des familles et aux mieux répondre à certains besoins financiers, on pourrais parler de compétition de l'aviculture commerciale avec cette forme d'aviculture.

   Pourquoi compétition? L'aviculture familiale, ainsi définit, est pratiquée de façon la plus rudimentaire, ce qui implique un coût de production et de commercialisation beaucoup plus élevé que le système commercial. Aussi, beaucoup de producteurs de la forme commerciale sont souvent passés par cette forme familiale. Cette forme familiale apparait donc, le plus souvent, comme la porte d'entrée dans la production commerciale. On peut donc, dans ce cas parler d'une compétition de l'aviculture familiale par la forme commerciale.

2. Si par contre on définit l'aviculture familiale comme une aviculture traditionnelle avec des souches indigènes, améliorée "coq raceurs" ou non, alors on pourrais parler plutôt de complémentarité de l'aviculture commerciale avec cette forme d'aviculture.

   Pourquoi complémentarité? L'aviculture familiale, ainsi définit, joue un rôle autre qui est beaucoup plus important que la dimension alimentaire et économique: C'est le rôle social qui laisse comprendre que cette forme d'aviculture ne saurait être substituée par la forme commerciale malgré sa faible productivité et ses contraintes génétiques, sanitaires et économiques. Les produits de cette forme d'aviculture familiale sont utilisés pour des fins symboliques, socio-culturelles et mystico-sociales que la forme commerciale serait incapable de satisfaire. Il s'agit donc de deux formes d'aviculture qui se complètent. La forme commerciale permet de répondre aux besoins économiques et de sécurité alimentaire, tandis que la forme familiale, même si elle va jouer aussi un rôle capitale dans la sécurité alimentaire et de sorte de carte de crédit, elle va surtout compléter la dimension socio-culturelle et mystico-sociale, capitale pour la plupart des populations du monde rural.

Enfin, comme proposition:

- Je souhaiterais que le terme aviculture familiale sur revu et bien éclaircit.

- Je souhaiterai aussi qu'un travail sous forme de recherche puisse porter sur la typologie dynamique de l'aviculture traditionnelle (ou familiale?) en rapport avec les évolutions de la forme commerciale et des importations, s'il y a lieu, afin de voir les influences de ces deux dernières sur l'évolution et le développement de l'aviculture traditionnelle (ou familiale?).

Message No 4

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(the following message was not distributed during the e-conference due to technical problems)

Dear all,

As I am writing from Tanzania (East Africa) the following are my opinion:

1. The contribution of research to the development of family poultry production systems.

The contribution of research to the family poultry production systems is useful and of utmost importance to Tanzanians and globally. I can see subsistence farmers have no technical support in terms of knowhow on species of local chicken and the related diseases. They are somehow totally ignorance on their own field. In this sense family poultry production becomes a nightmare! Therefore, research is mostly needed and not only to be done by knowledgeable researchers but the results need to be shares by family poultry producers. This will bring about positive attitude and culture in family poultry production.

2. The development for livelihoods through family poultry - cost and opportunities.

The development of this industry in Tanzania is almost stunted. Individuals are struggling on their own. The support from the government or any organization is insignificant. The costs of production which mostly comprise of electricity, feeds and medications are very very high for an ordinary person to afford. However, the opportunities for making family poultry production a livelihood is very great here in Tanzania. The market for chicken and eggs is so huge. The big supply of chicken meet and eggs is from South Africa and other countries.

3. Competing or complementing commercial poultry production systems?

To me and to our context in Tanzania, complementing commercial poultry production is required. There is no need of competing systems while the market is so huge. We need to complement each other to serve for the market.

Message No 5

Datta Rangnekar
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Dear participants,

This is Datta Rangnekar from Ahmadabad, India.

My compliments to the organizers of this E-conf. as it gives me a good opportunity to express my views based on 'perceptions developed through interactions, observations and learning' while working/ interacting with underprivileged and not so underprivileged families in different parts of India (may be relevant to South Asia to

some extent).

I would like to express observations first on point **2 *'the development for livelihoods through family poultry — cost and opportunities'*** since I feel it provides desired backdrop for discussions on other aspects of the E-Conf.

- 'Socio-economic importance of family poultry' needs no emphasis since the 'traditional backyard family poultry' (the predecessor of the modern family poultry) is an integral part of livelihood systems of many a social groups of underprivileged families. I realized the strong linkage and importance observing how quickly the families re-stock the birds after these get wiped out due to calamities like floods, earthquake or disease epidemic (I always wished I could study the process for better understanding). Social factors have a strong bearing on choice of sub-systems and hence family poultry production is more common in rural areas of India with certain social and religious groups.

The current approach to development of family poultry does contribute in a small way to 'Nutritional Security' (I prefer to use that term rather than food security). The contribution is small since the 'push is for sale of produce' in the development schemes. In states where large commercial poultry farms have not come up the contribution of traditional and modern family poultry to poultry production is around 50%.

- However, the current approach to development of family poultry is 'killing poultry genetic resources' rather than conserving. The 'development schemes for family poultry' provide substantial assistance in form of supply of chicks of new varieties (synthetics or hybrids) developed by Govt. of private units at heavily subsidized rate but there is no support for developing traditional family poultry based on indigenous birds – except for one or two well recognized breeds like Kadaknath from central India.

- The traditional family poultry is one of the most sustainable production systems with hardly any dependence on external sources (including chicks). One of the salient features of the system is that it is one of the few that is **'producer centered'** in the sense that the *'producer does not have to approach retailer or consumer for sale but they approach the producer'.* While the producer may get lower price for the products but consider saving in drudgery / hassle/ time/energy spent on selling the product and that is used for other livelihood activities (that is how the rural families allocate the limited resource of time and energy).

- A look at the prevailing rural livelihood systems would clearly reveal that these are made up of a combination of a number of sub-systems and hence we should not even think of 'Poultry alone having the capacity of improving livelihoods' drop this kind of 'reductionist approach'. The underprivileged / resource poor rural families never depend on one sub-system – it is one of the 'risk aversion mechanisms'.
- Organizations involved in rural livelihood development and which have understood the systems, would and should not plan for developing only one sub-system but take a 'holistic approach'. However, some subsystems may be given higher priority compared to others depending on the situation and social factors (there is variation between and within a region).
- Regarding the choice between genetic resources, feed, and animal health for highest degree of improvement, at a lower cost – the answer is on the same lines as above – 'it is not possible to achieve high degree of improvement with a single intervention. I cannot refrain from mentioning that this kind of

'reductionist approach' is commonly seen in most of the Govt. development programmes and the results were not encouraging – breeding intervention somehow was the most common/popular choice and 'breeding became synonymous with development and it is high time we depart from this approach/thinking.

- Family poultry development cannot be identified as easier than development of other livestock species.
- Family poultry production is 'low external input system' and hence less likely to be effected by crunch on resources.
- Meat and eggs – both have equal importance for livelihood.
- It is the 'rapport and credibility of the development organizations' that would determine degree of risks that producers will take knowingly.

Message No 6

Dr El Hadji TRAORE, DVM, Dr *es* Sc.
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La contribution de la recherche au développement des systèmes d'aviculture familiale au Sénégal.

Au Sénégal, dès 1962, le Centre National de Mbao (CNA / Mbao) est crée pour prendre en charge le développement de l'aviculture sur l'ensemble du territoire. Mais, très vite le CNA va presque exclusivement s'intéresser à l'aviculture périurbaine plus ou moins moderne, qui exploite des souches exotiques, importées essentiellement d'Europe ; délaissant pratiquement l'activité avicole menée en milieu rural. La recherche a également fait de même, en travaillant sur les formules alimentaires, l'habitat, la prophylaxie sanitaire et médicale etc. pour l'aviculture commerciale dite moderne. C'est beaucoup plus tard que des chercheurs ont commencé surtout avec l'aide d'organisme comme la FAO à s'intéresser au développement de l'aviculture familiale ou rurale.

D'abord, un diagnostic du système d'élevage avicole familial ou rural a été fait. Ce qui a permis de nous rendre compte que la santé notamment la maladie de Newcastle (MN) était la première contrainte, suivie du manque de suivi (pas de système d'alimentation, habitat absent ou inadapté, manque d'organisation des acteurs de la filière etc.).

Naturellement, la recherche s'est beaucoup penchée sur l'aspect sanitaire pour proposer des calendriers de prophylaxie basés essentiellement sur la MN, selon les régions. Aussi, le vaccin thermostable I-2 a été introduit et fabriqué sur place sous sa forme lyophilisée. Pour permettre une utilisation plus facile dudit vaccin par les ruraux, nous travaillons actuellement sur la forme liquide qui est directement administrée sans reconstitution.

Cependant, la MN n'est pas la seule cause de morbidité et de mortalité des volailles en milieu rural. Dans les zones vaccinées, la variole aviaire s'est révélée, de même que les parasitoses internes et externes. C'est donc un programme intégré de prophylaxie médico-sanitaire qui est actuellement l'objet d'étude, en fonction des zones agroécologiques.

Parallèlement aux activités de recherche sur les aspects sanitaires, un excellant travail de recherche sur l'importance socioéconomique de l'aviculture familiale est

menée, ce qui a fini de convaincre les autorités et les bailleurs sur la nécessité de soutenir cette activité qui permet de réduire la pauvreté en milieu rural mais aussi d'assurer un apport en protéine d'origine animal surtout aux villageois.

Le travail doit continuer pour améliorer la race, proposer un itinéraire de conduite (alimentation, habitat, commercialisation) adapté. La plupart des travaux de recherche sur l'aviculture familiale se font directement chez les éleveurs, dont la coopération n'est pas toujours acquise. Par manque de moyens adéquats pour ces travaux, il est difficile de mener des essais en station dont les résultats sont cependant plus appréciables.

Message No 7

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I would prefer that we do not use this 3rd conference arguing the same old questions of what breed, genetic conservation etc.

Family poultry production is an activity with potential to improve economic and health wellbeing of those engaging in it.

It seems to me that the real question, if we skip the rhetoric and window dressing, is;

What do we need to do to raise the profile of family poultry production to achieve the following?

a) Increase family income

b) Encourage regular consumption as a source of protein for the family

In my mind, to achieve these, each family producer must be able to increase their output. I choose the word 'output' rather than 'productivity' not to confuse with necessarily higher performance. You can simply increase output by increasing the number birds you have (with current level of performance) or increase performance with current numbers.

Either way,

i. The family producer needs to increase output in line with possible level of investment to be profitable.

ii. Each producer needs to be able to distinguish between breeder birds (and their replacements) and finisher birds for consumption or market. This will also allow them have a regular (depending on turnover rate) stock for the market and hence a regular source of income.

Please note that the above has nothing to do with the breed or chicks so using the indigenous breeds as they are will be perfectly okay. Also nothing is stopping those who want to invest more from using commercially available hybrids. Experience has told us that nothing anyone does short of engaging in massive culling of the indigenous breeds will make them go away. If you run the commercial hybrids along with the local, they will either survive and help increase the variation in the base genetic resource or will be culled by nature. We can have a strong academic argument about this if you like.

So under this context, what do we need to do to increase the output or productivity of the family poultry producer? What research and development action do we need?

I dare say there has been sufficient research conducted to show how much improvement can be achieved if the birds are;

i. Better housed (prevention of accidents and predation especially of chicks)
ii. Better fed (supplemental feeding)
iii. Medically cared for (vaccinations etc.)

If not then these are research topics. This need to be address at individual country /community level as I doubt if the production parameters are constant across all countries where family production take place. I am also sure that the handbook on family poultry production compiled by Sonaiya *et al* has addressed some of these questions.

So what is missing in my mind is ACTION or a DEVELOPMENT PLAN that can be implemented to raise the productivity of family production at community level.

What agencies/institutions do we need to support and advise family poultry producers at the local level?

Who will help set up and finance them?
What will be the mandate of such resource centres?
What calibre of personnel is required to achieve this mandate?
If we do not have such personnel, how can we go about training them?

My two penny worth comment

Message No 8

Datta Rangnekar, Ahmadabad, India. dattarangnekar@gmail.com

Dear colleagues this is Datta Rangnerkar from India again mailing views and comments on topics 1 and 3.

1. **The contribution of research to the development of family poultry production systems.**
   - There is very little research, in India, on family poultry production systems, economics and such related aspects and if there is some the results are not easily available (not well publicized)**.** Having said that I must also mention that the major contribution of research has been to develop 'low input varieties of birds (synthetics/hybrids)' that look like indigenous bird and need low inputs. These varieties are developed by breeding farms / research institutes/centers of the Indian Council of Agri. Research (ICAR) as well as private hatcheries and recommended for distribution under Government schemes for development of family poultry. While there are claims that these new birds the real picture will emerge after the Govt. grants and subsidies are withdrawn.
   - Studies on role of family poultry from the perspective of livelihood systems perspective are lacking. With due apologies let me state that the 'usual reductionist approach adopted in research' does not suit studies on family poultry and there is need for paradigm change and adoption of 'systems and participatory approach'. Results of studies with such an approach would help in making development of family poultry more effective.

- While genetic characterization of indigenous fowl is lacking there is need to take up research related to health aspects on priority.
- As always, the families living in relatively better developed areas get benefits of research.
- There is need for shift from the conventional 'Transfer of Technology' approach and attempts should be made to assess and prioritize needs of family poultry and select appropriate technologies. However, the fact remains that family poultry does not attract much attention (for funding) in view of low commercial value. A good example is non-availability of 'heat resistant or tolerant vaccine' in India although in many parts of the country maintaining cold chain is not possible and hence poor coverage through vaccination of birds maintained by families in interior rural areas resulting in heavy losses.
- The expertise developed in commercial poultry industry is not of much use for family poultry. However, commercial hatcheries have made good contribution by developing a dual type/low input bird.
- Any product of research (recommendations or technology) which is not only technically sound, economically beneficial but also socially adoptable and not risky would be welcome by family poultry producers. Help in developing low cost housing based on local material was most welcome by family producers.

3. Competing or complementing commercial poultry production systems?

- Household consumption vs. commercialization of family poultry - which is best? There is basic flaw in this concept since family poultry has multiple functions e.g. contribution to family income, nutrition and risk coverage (an addition is empowerment of women since it is usually managed by women).
- Family poultry contributes substantially towards protein needs and in some states of India as much as 50% of poultry production is from family poultry. However, much of the contribution as protein source is hidden and not accounted for through conventional surveys carried out since the families do not keep records of home consumption or for social events.
- As mentioned earlier family poultry does not have problem of selling the produce – consumers and retailers come to them in most cases. Families keeping small number of birds – indigenous fowl – under free-ranging low external input system have a niche market and get higher price for their produce. In general the family units are most likely to be competitive in view of low establishment cost and overheads.
- Traditional family poultry units do not compete for food/feed and are likely to meet food safety and even welfare standards as compared to commercial intensive system based farms (do not use growth promoters).
- Rising per-capita income is increasing demand for products from traditional family poultry since people from peri-urban and urban areas are willing to pay higher price for products having more appealing taste and flavor.
- It is not proper to compare low external input family poultry and high external input commercial farms in an ad-hoc manner since each has place and situations in different regions of a developing country differ. For example in India there are several pockets where establishing large commercial farms is not feasible due to some constraints and family poultry can make substantial contribution to poultry products.

Message No 9

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Dear All,

I am Oluwatosin Kennedy Oko from Department of Animal Science, University of Calabar, Nigeria.

I want to express my gratitude to the organizers of the E-conference. This is a good forum to share experiences, challenges and opportunities encountered in different regions regarding family poultry production.

I would like to agree with Dr. Victor Olori that emphasis should be placed on how research and development activities could improve family income and encourage sustainable production and consumption by the rural families.

On point 2 (***the development for livelihoods through family poultry — cost and opportunities***), I strongly believe that poultry diversification into the production of microlivestock such as quails and rabbit could improve the livelihood of the populace. Micro livestock production greatly complements conventional poultry production as they are less capital and labor intensive with high nutritional and medicinal benefits.

Message No 10

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Dear e-Conference participants,

I would like to fully support everything that Dr. Victor Olori said. As my contribution I have attached two parts of an article that appeared recently in the South African Farmer's Weekly about some pilot work I have started in trying to improve the productivity of village/traditional/indigenous chickens (I think the article is also available on their website).

(http://www.farmersweekly.co.za/article.aspx?id=16282&h=Improving-the-%E2%80%98Zulu-chicken%E2%80%99)

Message No 11

Aimable UWIZEYE, DVM
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Thank you again for this opportunity to discuss about family poultry production systems and their role in community livelihoods.

1. The contribution of research to the development of family poultry

production systems

During the last conference on family poultry, we shared a lot our experiences and findings from different research and I am sure that all sectors have been covered (genetic, breeding, housing, nutrition, marketing, diseases control…). Today, researches should be focused to the productivity and marketing of poultry products. Several developing countries don't dispose the extension unit to transfer findings to farmers that creates a gap between all different actors. Farmers should be involved directly in research projects. In different countries, local chickens are considered as high value products, for the quality of their meat and eggs. In Rwanda for example, recent study carried out in Northern Province, showed that the price of a local coq (2kg live) is 2 to 3 times the price of commercial broiler (weight equivalent). As a very low input production system, family poultry should contribute highly to the poverty reduction, if research and development are focused on marketing flows, the fixation of price, permanent availability of poultry products on market, reduction of intermediaries in value-chain.

2. The development for livelihoods through family poultry — cost and opportunities

Yes, family poultry production could contribute to the food security, not directly by auto-consumption (for animal origin proteins) as some participants have highlighted. By selling local live-birds and eggs, families could get considerable incomes which should help for their everyday needs. In some countries, family poultry should be valuable with a quality label, which can contribute to increasing their price. A strict control to avoid speculation and fraud should be insured to protect this activity. In France, the labeling system has increased considerably the value of local products.

Family poultry production is a sustainable source of income. However, it is subjected to good management of breeding, because many farmers can't offer their products regularly on market. High numbers of live-birds are found on markets during crop season to avoid them scavenging in crop fields, they are sold at low price, what is not profitable for families.

3. Competing or complementing commercial poultry production systems?

Competition with commercial poultry production systems is not fair and not arranging for family producers. Different strategies have been studied to enhance the quality and characteristics of commercial poultry at the same level or more than family poultry. The commercial poultry are very cheap and available the whole year. There are also many companies which support commercial producers in input and technology. As I said before, the best way is to create local poultry label with specific quality characteristics, which can help local community to sell a value-added products. Those products should be sold to the consumers of main cities who know or have nostalgia's of countryside products.

Message No 12

Rajali Yahya DVM, MBA UN - FAO ECTAD, Indonesia. rajalivet09@gmail.com

Yes..I agree with Dr Victor.

Family farming problem is the income problem.

In Indonesia many family farmers and small farmers going bankrupt and collapsed because of prices at the harvest time being low, sharp fluctuated and uncontrollable

and the price is set up by the poultry integrator. Can the family farmer fight the DOC price, feed price, medicine price, and maintaining the price at harvest time?

I think the family farmers should be united to perform cooperative business which has its own small scale breeding farm, has a small hatchery unit, has small feed mill, has small scale poultry slaughterhouses and small capacity of cold storage. It does not matter whether they take care of kampong chickens, broiler chickens, layer chickens or ducks. The united cooperation should be able marketing their final products directly to the consumer in the common city; they should be able to cut a long market chain into a short market chain. They should have their own freezer truck to send their carcasses to super market in the city.

The family farmers united should get continuous training how to blend and formulate the feed, how to use cheap local feed material for their poultry, how to take care of parent stock in small scale, how to apply hygiene slaughter SOP, how to store and deliver carcasses in cold chain technique.

So the small farmers or family farmers will be able to survive run their family farms with normal and measurable profit.

They (family farmers) can start from the district where the people have experience in poultry farming but already collapse because of set up price by poultry integrator company.

Message No 13

Paul Gilchrist
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Dear Colleagues,

I am delighted to have an opportunity to crystallize some ideas about family poultry production on the topic of:

"Strategic interventions for Family Poultry - What can be achieved through Research & Development activities".

The moderators have given three sub-headings:

1. **The contribution of research to the development of family poultry production systems.** In my view research needs to be refocused from specialized areas such as breeds, feed ingredients and special vaccines to project planning on a risk assessment basis (more below).
2. **The development for livelihoods through family poultry - cost and opportunities.** The suitability of family poultry development to improve family nutrition and income seems self-evident but a one-size-fits-all approach is inappropriate. We need a planning approach that recognizes the constraints of each situation and seeks to apply known technology in appropriate ways to the situation.
3. **Competing or complementing commercial poultry production systems.** We should recognize that the potential market is the ultimate limiting factor in any family poultry development project plan. Competing directly with low cost commercial production is fatal. A niche market has to be found.

We all come to the discussion with personal experience that may be biased. I declare my bias and I recognize that it may influence my views. My bias may result from my

experience as a poultry veterinarian (giving me a focus on disease as a major constraint) with some exposure to only a limited number of family poultry development projects in Fiji, Solomon Islands, China, Indonesia, Tanzania and Kenya plus a personal attempt to run guinea-fowl on a scavenging basis in rural Australia. I have also had some experience in risk assessment, activity budgeting and in project modeling. These are all tools that have a place in proposing future family poultry projects.

These projects compete with other development assistance projects for funds so should be undertaken using all the relevant planning tools. Any decision about funding such projects involves judgments on multi-disciplinary matters including technical issues as well as socio-economic matters. Efforts should be made to find good evidence on which to base decisions but it has to be accepted that a level of consensus is usually the best that can be achieved.

I have seen sustainable subsistence poultry activities and have seen some well intentioned interventions in such situations fail for various reasons. I still remain optimistic about possible benefits from interventions intended to benefit poor rural and peri-urban families by assisting them to use the poultry resource to improve family nutrition and income.

I am dismayed at resources still being used to research indigenous breeds (not the responsibility of development aid funds), local feed ingredients (whose composition is known and thus their nutritional value can be assessed) and specialized vaccines (when effective commercial vaccines are available).

I propose an approach that recognizes the biological constraint factors, or hazards, whose control has led to the success of the commercial poultry industry. We must seek ways to apply these control techniques to the extremely varied family poultry situations throughout the developing world.

The hazards overcome by the commercial industry include poor genetic capability, malnutrition, disease, inadequate shelter, shortage of credit and seasonality of production.

If these constrains are not identified, assessed and managed appropriately it can be assumed that they may operate to the detriment of the project and result in the inevitable failure of yet another poultry project.

The belief that the limited scavenging resource, with its inevitable low bird-survival rate, can be improved without a cost to the family-based producer applying an appropriate level of poultry technology is probably a well-intentioned fantasy.

A risk management approach leads us to assess the likelihood of these elements being a factor in any proposed family poultry development project and to consider appropriate technology to combat them.

I have found many family poultry development project planners reluctant to apply even a simple budgeting process to their task, so for me to hope for a risk assessment approach to project planning may also be over-optimistic. The alternative seems to me to continue to see poultry projects fail.

Message No 14

Devesh Thakur, India.drdth4@gmail.com

Respected Researchers,

Currently I am working on a World bank funded ICAR NAIP project on Biodiversity conservation and sustainable livelihoods through agro-livestock interventions in which we have learnt certain important lessons which I would like to share:

1. We have used the local poultry germplasm, selective breeding, improved with indigenous birds and reintroduced back to farm families.
2. The beneficiaries who had previous experience of family poultry have reported improved productivity parameters in their birds with superior performance.
3. The female farmers have been the real beneficiaries as they had more knowledge and inclination to take up this activity.
4. We have tried to ensure natural incubation (hen based egg hatching) which means farmers are not dependent on external hatcheries for chicks.
5. Predator attacks, family labor availability was a major factor for households to take decision to take up family poultry rearing.

Message No 15

Sofjan Iskandar, Indonesia. sofjaniskandar@yahoo.com

Dear colleagues,

I am Sofjan Iskandar from Indonesia would like to contribute some information on the development of native chicken and family poultry system.

About 5-10 years ago, native chicken in Indonesia has been popular among chicken meat consumers, particularly small and medium restaurants with serving special dishes of KAMPUNG chicken. Keeping native chicken is moving towards intensive system as the small farmers would like to produce more number of 70 - 90 days of age kampung chicken for meat consumption. Market weight of the bird is around 700 gram to 1.3 kg per chicken.

Most of the small farmers are gathering in a farmers group or some who are having enough capital go for kampung chicken "fattening". Then there are problems of getting day old chick final stock due to lack of kampung chicken breeding farm. It may be only the most 4 private breeder companies are trying to increase their chicken population to meet the demand.

Small breeding farms are also increasing to produce some kind of final stock hybrid by crossing male native with modern improved brown hens. It seems to work in providing day old chicks, but in some cases like in west and central Jawa, consumers pay less compared to pure kampung chicken. IRIAP has developed improved laying type kampung chicken, which produced 50 % HDEggP and it has been taken up by one of big private breeding farm.

About 64 % of national meat production was actually fulfilled by modern improved broiler chicken breeds, but the parent and grandparent are imported. Native chicken was about 10-16% supplying meat to the nation. Most of native chicken was captured from family poultry traditionally system with low productive performance but of course low input. The idea of developing breeds that can stand under

traditional keeping is against the law after the AI outbreak several years ago, especially in the populated area.

However, the role of native poultry for household consumption and family saving is still important and developing national chicken industry has still to address.

Hope it would be useful.

Message No 16

Sujit Nayak
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Dear Coordinators and friends,

I am Sujit Nayak, a veterinarian with veterinary immunology as my specialization (P.G.) working in the Department of Animal Husbandry, Dairying & Fisheries, Government of India as Assistant Commissioner. I am associated with the national Rural / family poultry development program implemented by the Central Government across the country for BPL (below Poverty Line) beneficiaries. Government of India (GoI), at the apex level, is mainly concerned with policy, planning and program formulation / implementation. However, this family poultry development program is among the few directly beneficiary-oriented programs being implemented by GoI. The scheme component aims at supporting BPL beneficiary families with tapering assistance, wherein 4-week old chicks, suitable for rearing in the backyard, reared at the 'mother units' are further distributed to them in three batches of 20, 15 and 10 birds. Further, to raise the birds in a bio-secure manner, a provision of Rs. 750/- per beneficiary for night-shelter etc. is made in the scheme.

I would like to share some of my experiences and opinions (the views are exclusively mine). I would also like to agree with **Dr. Datta Rangnekar** regarding the lack of field level impacts/ participatory research in the country.

1. **The contribution of research to the development of family poultry production systems.**

I believe research is a sine qua non for the development of family poultry production systems. It may have started initially with the careful study of the environment and requirement of birds under harsh village conditions, their ability to protect themselves from predators, little or no input requirement, and the social aspect of poultry keeping and how it was traded or consumed for benefit (all these have been covered mostly during previous e-conferences).

Therefore the research aspects have not only been confined to development of the suitable bird but their nutrition, participatory research in human-poultry keeping interactions, their methods of disposal (self-consumption, bartering, trading etc.). Though very difficult to quantify and reduction into measurable parameters, scientists across the world have actually found ingenious ways to measure benefits which include buying of better amenities due to supplementary income, growth of children in the house keeping poultry/ piggery (as they presumably received more nutrition etc).

Government of India (GoI) accordingly tied up with the Indian Council of Agricultural Research-ICAR (which is the nodal Research agency) has, over the years developed

and promoted low-input technology birds suitable for survival at farmers' doorstep e.g. CARI (Central Avian Research Institute under ICAR) – Nirbheek (Asil x Naked neck), Shyama, Debendra, UPCARI, HITCARI (Aseel x CARI Red); Project Directorate on Poultry also under ICAR -Vanaraja, Gramapriya etc. Central Poultry Development Organizations under GoI have also developed Kalinga brown, Chhabro, Colored crosses (Kaveri) etc. Besides many veterinary universities have also developed these birds as follows:

a) Sri Venkateswara Veterinary University, Rajendranegar, Hyderabad (Tirupati) which has developed Rajasri
b) Karnataka Veterinary, Animal & Fisheries Sciences University, (KVAFSU) which has developed Swarnadhara, Raja- II, Giriraja, Girirani
c) Kerala Agricultural University, Mannuthy which has developed Gramslakhmi, Gramrshree, Krishipriya
d) Tamil Nadu University of Veterinary and Animal Sciences (TANUVAS) which has developed Nandanam 99

Some private organizations have also seen the business opportunity in this area and have developed and marketed such birds like M/s Kegg farms, New Delhi: **Kuroiler** ; Dr. Yashwant Agritech Pvt. Ltd.; Jalgaon, Maharashtra: **Satpuda Desi** and M/s Indbro Research and Breeding Farm Ltd., Hyderabad: **Rainbow Rooster**

A lot of research and studies have also been made in studying the economics / benefits as stated earlier and the model of night shelter etc.

However, I would like to learn if there are any epidemiological models and simple formats designed for monitoring at a macro level to assess the IMPACT in measurable terms of such programs specially in case of a nation-wide program.

2. The development for livelihoods through family poultry - cost and opportunities.

Again, drawing from the national program, I would like to share that so far in 3 years more than Rs. 67 crore has been released in 21 States covering over 3 lakh BPL families.

Considering at this stage even a one fourth (25%) success rate or say, successful implementation as envisaged – around 75,000 families have benefitted. This comes to the following:

- If Rs. 6000 annual benefit/ beneficiary is considered already **Rs. 45 crore / year** accrued
- Invaluable protein/ nutrition to family
- Subsistence – relief from extreme poverty

However along with the opportunities, comes the threats such as biosecurity risks (the implementing States/ agencies are asked to implement the same away from intensive poultry production areas, night shelter is provided for biosecurity to some extent) and diseases. As the commercial/ industrial sector is also very much developed, the risks for incidences of diseases in the backyard jeopardizing the exports is always looming large. Compartmentalization to some extent is attempted in the commercial sector to sort out the trade implications.

3. Competing or complementing commercial poultry production systems?

Whereas it is evident that family poultry system so far is meant for subsistence and

no surplus production requiring organized marketing is envisaged, there is no question of competition. Slowly however, private industry is evincing interest in this sector and it may not be long before this unorganized sector will also come under the ambit of semi-commercialized system.

As far as complementing is concerned, initially private sector was least interested as there was little commercial interest in remote areas. Therefore, commercial industry had no issues as far as their paths did not cross. Private commercial industry does not at least criticize the Government program on family poultry, but with the food safety concerns, quality assurance norms, stringent export requirements etc., it is imperative that a more ingenious approach to either keep these two subsectors segregated or any other measures to enable them to co-exist has to be thought of.

Message No 17

Dr. Muhammad Sajjad Khan
Professor, Department of Animal Breeding and Genetics, University of Agriculture Faisalabad, Pakistan. drsajjad2@yahoo.com

1. The contribution of research to the development of family poultry production systems.

I tend to agree with most of what has been expressed by my colleagues from India and Indonesia.

The issue of very little research at Universities and research institutes can be generalized for most of the developing countries where indigenous chickens have played (and are playing) a big role in food security. The development of new breeds of chicken was one of the major research areas in the 60's here in Pakistan but efforts gradually dwindled as commercial poultry emerged. Lately, things have become better. I myself am trying to incorporate genes like naked neckness into few strains for backyard poultry and so far so good. But issue is that postgraduates doing research on non-commercial chicken are less favored by the (commercial) poultry related companies, the major employers of such graduates. Doing such research is not a priority area because things are assumed to be available for indigenous chicken (at least) and it is assumed that everything is known as people are keeping them for centuries. Moreover, issue of publishing such research is also there. Lack of collaborative research among poultry science / production / breeding / nutrition / veterinary / economics/ social science etc is also a major bottleneck.

I must point out that some of these issues are being taken care of in a regional project "Development and application of decision support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives" being regionally executed by International Livestock research Institute (ILRI) where apart from Pakistan, Bangladesh, Sri Lanka and Vietnam are involved and genetic characterization of indigenous chicken is an intended outcome. Some of the activities can be seen at the individual project sites [Pakistan: http://www.fangrpk.org/; Bangladesh: http://www.fangrbd.org/; Sri Lanka: http://www.fangrsl.org/; Vietnam: http://www.fangrvn.org/] and the main project site [http://www.fangrasia.org/]

3. Competing or complementing commercial poultry production systems?

Family poultry is not considered friendly by commercial ventures. They are rather blamed for spreading of diseases. Fact is that vaccines (of all sort whether needed or not) are imported by the commercial companies yet the blame is always on

indigenous chicken keepers. And I agree that comparison per say between the contribution of commercial and indigenous poultry is difficult as both have different objectives and their functions are also different.

A less discussed issue of research on indigenous chickens is that indigenous chicken varieties are kept as a sport birds. The cock fighting (major use of some of the indigenous chicken varieties) is considered cruel. But it is more banned because of gambling than probably because of the humane use of cocks. Boxing on the other hand is considered legal and is enjoyed in humans when head is partially protected and hands are protected with gloves. Some other games may also be used as an example. Even bleeding from nose and other parts of face is acceptable. Also, gambling is socially acceptable (at least at law enforcement level) when rich people do gambling on horse racing. Can cock fighting become acceptable in future if we have head gears for cocks?

Message No 18

Paul A. Iji, PhD, GCHE
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(the following message was not distributed during the e-conference due to technical problems)

Hello all,

I am learning quite a lot on operations of family poultry around the world. The closest I have been to research in that area was recently supervising two Masters students from the Solomon Islands and Papua New Guinea. Both looked at the constraints to poultry production in their countries and nutritional limitation was one thing they identified. This limitation is similar to what I have read from Africa and Asia. I do know that other researchers based in Australia have looked at nutritional and other management of poultry in the SI and PNG.

I think it will be important to define the nutritional requirements of local poultry. Such research can only be meaningfully done on-station but may be difficult to apply at the farmer level. It is possible to look at the nutrient intake at the farmer level and also quantify what ingredients are being ingested. Generally, I think there is an agreement that village poultry are not eating enough. Many of the farmers do not provide supplementary feeding. If they do provide supplementary feeding, it may consist of only one ingredient, e.g. grains. We do know that grains alone will not provide enough energy, protein, minerals of vitamins. Depending on the location, the birds will be able to pick up other material that will supply the missing nutrients. However, I think extension officers should teach the farmers to mix ingredients in some simplified way, to arrive at close to nutrient requirements. For example, what if farmers combine maize with peanut at 50:50 or 75:25? This will up the energy and protein levels at the same time. Just adding common salt to the mix will supply sodium and chloride. Limestone is available in many areas although getting it in the right form may be difficult but if sea shells get into the mix, then the requirements for other minerals like Ca and P will be improved. It may be difficult to improve nutrition for birds which are not in lay but for those in lay or brooding, the farmer can provide what I would call a laying or brooding ration, to improve protein and

mineral mobilization, improve laying, egg quality and hatchability.

We would want to follow up on the findings of the two surveys in the SI and PNG but we all know how it is with funding. So, for now, I am back into commercial nutrition research and hoping to open the village chicken research again in future.

Message No 19

Dr DIALLO Amadou Moctar
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L'amélioration des moyens de subsistance à travers l'aviculture familiale

Le Mali, pays sahélien et d'élevage fait partie des pays les plus pauvres du monde où 63,8 % de la population vivent dans la pauvreté et 21 % dans l'extrême pauvreté. Le phénomène de pauvreté est plus accentué en milieu rural et très aiguë chez les femmes. Parmi les activités qui contribuent à l'allègement de la pauvreté des femmes rurales au Mali, l'aviculture occupe une place importante. Cette activité améliore la sécurité alimentaire en générant des protéines aux enfants, contribue au revenu du ménage et réduit leur vulnérabilité.

Cependant, au cours de ces dernières années, le revenu tiré de l'aviculture reste faible et diminue fortement avec comme conséquence un taux élevé de malnutrition, une insécurité alimentaire persistante, les difficultés à assurer les soins de santé et le paiement des frais de scolarité des enfants. Pour renforcer le rôle et la place de l'aviculture dans les moyens de subsistance des femmes, deux ONG partenaires[1] ont mis en œuvre une stratégie dans le Cercle de Kati (Mali) à travers: l'amélioration de la production, le renforcement des capacités organisationnelles, l'appui à l'accès des productrices aux services de la production et au marché.

Les résultats obtenus ont montré que le cheptel aviaire moyen est augmenté de près de 50 % par ménage. La couverture sanitaire a permis de réduire le taux de mortalité autour de 27 %. Le renforcement de capacité des femmes a favorisé l'adoption d'innovations qui ont amélioré les conditions d'élevage (habitats, hygiène) et l'alimentation des volailles. La structuration des femmes et la mise en relation des acteurs de la filière ont facilité l'accès aux services de la production et aux marchés. L'impact de cette expérience a optimisé la contribution de l'aviculture dans le revenu des femmes de 5000 à plus de 35 000 f cfa. Ce revenu (certes modeste) a été utilisé à 16 % pour l'accès aux soins primaires en santé et à la scolarisation des enfants ; à 37 % pour les dépenses familiales (nourritures, habillement, logement), à 38 % pour les activités génératrices de revenu et à 9 % pour l'épargne.

Cette expérience montre que l'aviculture villageoise a amélioré les conditions de vie de ces femmes et mérite d'être poursuivie, intensifiée et étendue éventuellement aux autres espèces à cycle court (lapin, petits ruminants, porcs).

[1] Vétérinaires Sans Frontières Belgique et Initiatives-Conseils-Développement du Mali

Message No 20

Sodjinin K. EKOUE
Ingénieur Agronome Zootechnicien, Doctorant en Production Animale, Chef Programme Elevage à Cycle court/Aquaculture Pêche. Institut Togolais de Recherche Agronomique (ITRA) E-mail: itra@cafe.tg. thomek06@yahoo.fr

Ma contribution à la question de la 1ère semaine

La contribution de la recherche au développement des systèmes d'aviculture familiale.

L'aviculture familiale ou villageoise ou à petite échelle ou traditionnelle comme certains aiment l'appeler est souvent basée sur l'exploitation des populations locales de volailles avec un degré de métissage élevé ou non. Dans les années 90 les institutions comme la FAO en voulant valoriser ces spéculations ont motivé les réseaux de recherche à s'y lancer. Cela a fait du boum dans beaucoup de pays surtout ceux en voie de développement où les populations locales de volailles sont abondantes. Il faut noter qu'au début, il n'existait aucuns paramètres de croissance et de reproduction si ce n'est ceux de l'aviculture commerciale (pondeuses et poulets de chair). Les pays en développement ce sont lancés et peu à peu les résultats de recherche sur la croissance avec des tests sur l'alimentation en intégrant dans les formules les ingrédients qu'utilisent souvent ces agro-éleveurs qui sont les vrais pratiquants de cet élevage, sans oublier les paramètres de reproduction et autres. Est-ce qu'on est en droit de rappeler que cette aviculture au départ n'était que cueillette avec des animaux qui se débrouillent dans la nature sauf quelques grains que les propriétaires leurs jetaient de temps à autre. Les résultats de recherche ont permis de développer des technologies sur la conduite, l'hygiène, les mesures sanitaires, les paramètres de croissance et reproduction, l'alimentation et tout dernièrement les améliorations génétiques. Ces technologies ont permis de former les éleveurs pour mieux tenir leur affaire. Là on peut dire que cela a fait d'impact parce que beaucoup d'éleveurs se sont lancés soit en groupement de production de volailles locales ou non. A partir des formations ces éleveurs ont trouvé qu'ils peuvent gagner de l'argent car ils savent comment les nourrir et les soigner, les mortalités aussi ont considérablement baissé.

C'est vrai que tout n'est pas au point mais un grand pas a été fait surtout avec des projets financés par les fonds extérieurs. Au Togo on a eu le Projet de Développement du Petit Elevage dans la Kara (PRODEBEKA), Projet Sécurité Alimentaire/ Diversification (PSSA/D), Le Projet d'Appui pour l'Elevage Familial (PAEF) piloté par Agronomes et Vétérinaires sans Frontière (AVSF)… Ces recherches ont bien répondu aux normes. Les technologies touchant l'alimentation et la santé ont rendu plus service à l'éleveur et ces connaissances peuvent être partagées sur le plan national et régional pourquoi pas mondial. Ces derniers temps les recherches se focalisent sur la caractérisation des populations de volailles locales. Beaucoup de pays ont commencé par la caractérisation phénotypique mais la variabilité des gènes pose des problèmes quant à la génétique pour les locales vu les opérations coq qu'il y a eu dans le passé et qui compliquent aussi cette caractérisation.

Dans les stratégies pour combler le déficit en produits carnés certains auteurs ont affirmé que c'est avec l'aviculture qu'on peut vite le faire (Winrock international). A la question est-ce que les résultats de recherche sont bien documentés pour servir l'aviculture familiale, je dis oui en prenant à, témoin le réseau RIDAF qui publie beaucoup sur cette aviculture et ces résultats de recherche profitent plus aux aviculteurs des pays en développement. On peut aussi noter que souvent les résultats de recherche en aviculture familiale s'appuient souvent ou viennent en

comparaison aux résultats en aviculture commerciale qui sont en fait des normes standard auxquelles les autres résultats sont comparés. Pour mieux transférer les meilleures technologies au monde rural il faut passer par la formation incluant la démonstration, genre champ école ou élevage école.

L'amélioration des moyens de subsistance à travers l'aviculture familiale - coûts et opportunités.

L'aviculture familiale joue un rôle très important non seulement dans la satisfaction des protéines nobles mais aussi sur le plan socio- culturel (cérémonies rituelles, réception d'un hôte…). Cet élevage est bien intégré aux ménages (presque tous les ménages en disposent) et de plus c'est un élevage à cycle court avec un taux d'exploitation dépassant les 100%. Dans les milieux ruraux où l'éleveur n'as pas besoin d'un grand fonds, il lui suffit de donner à sa femme deux ou trois poulets pour acheter les vivres au marché qui s'anime tous les huit jours et le père du ménage n'a besoin que d'un poulet pour se désaltérer (consommation de boisson locale) le jour de marché. En fait cette spéculation constitue un capital vivant facilement mobilisable à court terme surtout en milieu rural. Celui qui dispose de beaucoup de volailles a beaucoup d'argent. A part les épidémies qui peuvent surgir faute de prophylaxie l'aviculture constitue une source de revenu durable puisque l'investissement n'est pas lourd. D'ailleurs la poule en langue locale au sud du Togo s'appelle « koklo» ce qui veut dire «enlève la pauvreté». Cela laisse entendre que celui qui élève les volailles n'est pas atteint ou surpris par la pauvreté. L'autoconsommation est réelle en aviculture familiale dans la mesure où la plupart des éleveurs ne disposant pas de moyens et donc se servent des produits de leur élevage pour nourrir la famille (la chair et les œufs). Ces œufs sont aussi vendus sur le marché soit pour la consommation soit pour les cérémonies.

Naturellement les volailles n'ont pas de grande gabarie ceci a fait naître les opérations coq qui dans le temps ont amélioré le format mais les spécimens sont exigeants en soins vétérinaires puisque ces coqs « raceurs » ou améliorateurs sont de race exotique moins rustiques. L'aviculture villageoise a un investissement faible et attire beaucoup de paysans que les autres élevages. Elle est existante dans tous les ménages. On ne fait pas de grand investissement en aviculture familiale comme en aviculture commerciale car la première profite de la nature ce qui ne nécessite pas autant d'aliment que la deuxième qui plutôt est très exigeante en soins puisque moins résistante.

Le système de production familiale face au système de production commerciale: Compétition ou complémentarité?

Moi je peux parler plutôt de complémentarité que de compétition dans la mesure où chacune des spéculations a son plan de production c'est-à-dire le mode de production et pas souvent le même marché. Par exemple en Afrique les poulets exotiques ne peuvent pas être utilisés pour les cérémonies par exemple. Jusqu'à ce jour certains ménages en Afrique ne consomment pas jusqu'alors les poulets exotiques parce qu'ils n'ont pas ce goût qu'ils recherchent. Quand on voit aujourd'hui les statistiques dans les pays en développement on a comme l'impression que malgré les contraintes liées à l'aviculture familiale, elle produit plus de viande que l'aviculture commerciale. Au Togo l'aviculture commerciale en matière de viande ne produit que 1% des besoins alors que la familiale va au-delà. D'autre part les femmes en milieu rurale surtout font une cuisson longue adaptée à la viande qu'elles produisent et c'est pourquoi elles n'aiment pas les poulets de chair par exemple. Evidemment une question se pose quant à la démographie galopante et qui demande à accroître vite les productions pour autant de bouches à nourrir. Est-ce qu'il faut

recommencer une autre sélection des poulets ? non, mais l'une n'élimine pas l'autre alors là les deux formes d'aviculture doivent cohabiter.

Message No 21

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Hello

Below is my contribution from Burkina Faso on the topic: "**Contribution of research on the development of family poultry production**":

In Burkina Faso research works in the poultry sector in general and the family poultry sector in particular were mainly based on the nutritional aspects and the goal was to promote poultry production in the rural areas in order to increase household income and also to promote gender issue in the rural areas. Very little attention was given to the other research topics such as genetic selection and health status.

Summary and implication of some results from research works carried on village poultry in Burkina Faso:

Research on the evaluation of performance and economic efficiency showed that exotic layers could be reared advantageously in a semi-scavenging system and in confinement by resource-poor farmers, using locally available feedstuffs such as cottonseed cake and brans as protein ingredients.

Alternative ingredients to imported protein feeds were evaluated and it was found that cottonseed cake could advantageously replace fishmeal in exotic layer diets when combined with wheat and maize bran, as a result of its high crude protein content, and also because the glandless (gossypol-free) variety commonly cultivated in Burkina Faso allows higher levels of inclusion. Another by-product produced at village level, beer residue, was also found to be potentially useful, due to the fairly high protein content and high digestibility values of some essential amino acids.

The scavengeable feed resource base in some regions of Burkina Faso that were studied is poor in quantity and quality, particularly during the dry season, which lasts for almost eight months of the year.

Inputs for poultry in the rural areas are low, mainly because of the high cost of conventional feeds and also due to competition between humans and chickens for potential feed ingredients such as cereals.

Poultry is a class of small livestock that resource-poor people can afford, including neglected groups such as women and the landless, and therefore is one of the most important sustainable sources of income and capital accumulation available to the poor. However, rural poverty persists, due amongst other things to the rapidly increasing human population and natural factors, including diseases such as avian influenza, that negatively influence the expansion of village poultry.

The smallholder poultry sector was blamed for the spread of this disease, and it was suggested that a higher degree of control should be enforced with respect to smallholder producers. For example the authorities required that smallholders prevent their poultry from scavenging and instead, keep them confined in an

enclosure. Taking into consideration smallholders' restricted economic situation, however, and the reality of village conditions, it seemed highly unlikely that this ban was realistically feasible.

However, the results of many research studies in family poultry sector in Burkina Faso show clearly that confinement and supplementation can lead to better performance as well as improved bio-security, and therefore, to promote poultry production in the rural areas, the following recommendations are suggested:

- Measures to improve disease control

- Evaluation and promotion of confinement systems for small-scale producers

- Government policy should take into consideration the possibility of subsidizing agro-industrial by-products for poultry producers in the rural areas.

Future Research

Further research focusing on poultry production systems suitable for resource-poor people in Burkina Faso and could include:

- Development of bioassay techniques to evaluate the nutritive value of by-products produced at village level.

- Techniques for improving the palatability and intake of some by-products by the birds.

- Feeding trials should be carried out at village level, to evaluate the effect of inclusion level of these by-products on growth and egg production performance.

- Studies should also be carried out in Burkina Faso on disease control in scavenging systems; for example to evaluate the effect of supplementation and improving the scavenging feed resource base on the prevalence of parasites and infectious diseases.

Message No 22

Dr Harry Swatson
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1. The contribution of research to the development of family poultry production systems.

Research in family poultry production systems has received a fair deal of criticism both positive and negative. These contributions have enabled the family poultry production systems to gain greater popularity amongst researchers and development practitioners as a tool in poverty reduction and in improving rural and peri-urban livelihoods. Criticisms have arisen from academics, communities, senior government officials, politicians, technical support institutions, journalists and concerned participants in programs implemented by some NGOs and community based. Most of the criticism has come from people who are unsure of what a family poultry production system actually entails or have over-exploited their available knowledge on family poultry production. Uncertainty has been the ideal breeding ground for criticism. Thus a workshop was held to address some of the issues raised by various stakeholders. Indications from the recommendations from the workshop of theme "The potential of free-ranging poultry development in improving the livelihoods and food security of rural livelihoods" are that the following areas of problem led research

should be conducted in a participatory manner, on-farm with the inclusion of beneficiaries. A few of the research questions identified by participants included

(i) Feeds and feeding: the identification, production (where possible), processing, utilization of natural unconventional protein sources by communities engaged in family poultry production.

(ii) Ethnoveterinary practices, ND-vaccine heat tolerance, the interaction between traditional family poultry management, scavenging chickens and diseases.

(iii) The identification and development of niche markets for family poultry products: feathers, meat, eggs/eggshells to meet the religious, socio-cultural and economic requirements of consumers.

Ongoing research in South Africa in particular and other countries have generated millions of ideas, skills and bits of knowledge floating in the minds of different individuals or households. Some preliminary data from non-descript local or indigenous breeds kept under improved rearing conditions gave indications that the application of research and development activities had an impact on family poultry production. We now have lowered impacts of the effects of diseases. This is because of improved poultry husbandry practices, supplementary feeding and adherence to a basic poultry health program. Overall, this has resulted in a 79% increased survivability up to 20 weeks of age, an age at first egg production of 126 days, a total number of 4 to 5 clutches of eggs of about 47g, and an average of 12 to 15 eggs per clutch produced over a 12 month period. Last but not the least a 23% improvement in chicken live weights at 20 weeks of age **amongst targeted** households making use of research recommendations combined with own indigenous knowledge on rearing poultry in the traditional farming system. There is no single individual with all the appropriate knowledge on family poultry production systems that can be applied in every country of the world or every community. It is therefore important for researchers, development workers and households to continue exploring in a participatory manner options for maximizing the use of scare resources within communities or resource limited households to optimize the production of family poultry. Research if appropriately applied is and will definitely continue to contribute to the development of the family poultry production system.

2. The development for livelihoods through family poultry - cost and opportunities.

Family poultry production systems by definition will include the rearing of chickens in urban and peri-urban areas with some amount of inputs being supplied to the chickens with restricted access to scavengeable feed resource base. This aspect of family poultry production does complement the efforts of the large integrated broiler production units. In contrast is the low-input output extensive production system of village poultry making use of indigenous poultry genotypes found in many resource limited rural areas. In the extensive system of village poultry production, there are varied opportunities for households not only to meet their protein food security but also for the cultural, religious and economic requirements by selling or bartering the chickens. Rural households like all entrepreneurs will go into family poultry production because they want to make money or improve upon their cultural or socio-economic livelihoods. As with some commercial poultry production, they do not go into this enterprise to create jobs. Like business people they act in their own self interest. They are not very much aware that the consumers really determine the prices of poultry and poultry products and how much they are really willing to pay for it. In some communities however, they are able to bargain for a fair price. There is a

need to develop family production systems to such an extent that households will see and use it as an opportunity to fill the need in a niche market place. Households must realize that to be an entrepreneur, one must raise the necessary finance, organize the production of the chickens or chicken products (i.e feathers) as a special product that few people have (i.e. sell product in a village restaurant providing local dishes or add value by processing with spices) and take the required risks.

Strategies for family poultry production should be based on an accurate analysis of the market situation or the situation of the farmer as an entrepreneur, a correct assessment of the qualities and resources needed to respond to the situation, and a vision of what the poultry farmer sees as achievable, desirable and realistic. There must be room for making adjustments to meet the demands of the market for family poultry, the ability of families to change or influence the situation by being innovative in for example collecting and hatching eggs, rearing chicks, producing poultry meat and eggs at least cost, and enlisting the assistance or resources of others (i.e. the development workers, extension advisory services) to optimize the use of scarce resources. It **may** also be possible to take advantage of the growing market demands for organically produced chicken meat and eggs. These should be free of undesirable chemical residues from insecticides or antibiotics. Several shops including Woolworth's do promote such products in South Africa but require high quality control standards of production. An opportunity also exists for associations of women from rural households to supply locally grown indigenous chickens to feeding schemes in targeted schools in a pilot project in KwaZulu-Natal. South Africa.

3. Competing or complementing commercial poultry production systems?

Family poultry production does compliment the efforts of commercial production in meeting the growing needs for poultry and poultry products in South Africa. Soon after independence, there has been a growing middle and upper class whose demands for more poultry products have been steadily increasing due to increased incomes. Currently we do import large amounts of poultry products. The rearing of small flocks of chickens in an intensive or semi-intensive system is also getting popular. However due to economies of scale, lack of ready markets and sometimes poor husbandry practices such enterprises have not been very successful in comparison to large integrated operations. For example in the area where I stay there are 27 broiler farms each with a capacity of about 400000 broiler chickens kept in fully environmentally controlled houses every 6 to 7 weeks. However, there is still a growing demand for poultry produced under a variety of family poultry production systems to meat the demand for poultry meat and eggs. With the formation of the Developing Poultry Farmers Organization (DPFO) in 2011 with the support of the South African Poultry Association (SAPA), it is hoped that all farmers regardless of whether they are large commercial poultry farmers or small farmers will receive technical and possibly organizational support. This is in recognition of the fact that family poultry production systems and commercial poultry production do complement each other to meet National Protein Food Security. This is also important in the holistic control of diseases such as Newcastle disease and Avian Influenza. In other situations small-holder poultry growers are contracted to grow for the large integrated operations and occupy an important place in the whole poultry value chain. There is still much difficulty for the small producer.

Message No 23

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Dear Coordinators and participating friends,

I would like to share some views on sustainability of FP system and interventions vis-a-vis the topics outlined as follows:

1. **Single *versus* multiple (integrated) interventions for sustainable development of family poultry.**

   - **Are interventions in family poultry production systems required or are they so well adapted sustainable systems that they should continue as they are?**

   Interventions are needed as and where required to make FP system sustainable. Further it needs to be changed/ upgraded when better interventions are available. We are sometimes constrained to apply a 'one size fits all' program in Government (national level) programs for uniform approach and ease of financial calculations. Then, at a later stage it is difficult to introduce some element we feel that are very important for a particular area. Some of the interventions may be:

   a) Intermediate rearing/ mother units
   b) Supply of chicks
   c) Supplementary feeding
   d) Biosecure / clean shelter
   e) Applying participatory research methodologies to learn more about specific interventions
   f) Participatory epidemiology
   g) Specific vaccination against endemic diseases
   h) Training - especially for first time poultry keepers
   i) Ensure marketing facility in clusters where there is surplus production
   j) Develop a niche market for their produce / branding?

- **Do holistic interventions (integrating health-genetic improvement-feeding-marketing) obtain better results in family poultry development than single interventions in one field?**
- **Single *vs.* multiple interventions - What are the costs and benefits?**

  As stated earlier, interventions should be need-based – may be single or multiple. However, a holistic approach may definitely be better if costs are not a constraint and it is applied at a large scale to attain economies of scale. This will be similar to the stage where industrial poultry system was evolving from backyard stage- the cycle goes on.

- **How should interventions for family poultry deal with the need for supplies and access to the market?**

  The backward and forward linkages are important and often the issue is traversing long distances, or going to remote areas where there is no motor able road. In some places in India, a novel way is introduced where 'Pheriwalas' on bicycles carry the inputs and even in some areas act as link workers / vaccinators who provide the necessary health services. Some private organizations are now slowly adopting the 'contract farming' method

by buying back the produce (especially coloured/ tinted eggs which are much in demand) through the pheriwalas.

(I am attaching a couple of photographs of pheriwlas and their cycles alongwith cages which they use for transporting chicks/ birds and other inputs)

- **Do all interventions require investment in skills building for family poultry producers?**

  I would like to share an anecdote regarding how even basic training is essential from the eyes of a layman:

  A person who wants to take up poultry farming for the first time goes to the local vendor and tells the man, "Give me 100 baby chickens."
  The man complies.
  A week later the man returns and says, "Give me 200 baby chickens."
  The man complies.
  Again, a week later the man returns. This time he says, "Give me 500 baby chickens."
  "Wow!" the man replies. "You must really be doing well!"
  "Naw," said the man with a sigh. "I'm either planting them too deep or too far apart."

  Therefore, leave aside skills, we need to take care of the basic training and with every intervention skill and awareness needs to be upgraded/ updated.

  FP producer have often little awareness about taking care of birds, identify unhealthy birds, reporting of unusual mortalities and often no skill whatsoever in certain areas like, marketing or exchanging birds with neighbours to introduce heterozygosity; white ant feeding and rice-husk egg-hatching (in some areas) etc. Self-Help Groups are now taking up these activities in a collective manner.

Further, an innovation and skill development fund may be set aside for enabling interventions in a de-centralised manner.

Message No 24

Sunil Gamage Sri Lanka. deego@sltnet.lk, sunilgamage2006@gmail.com

Dear Dr Sujit Nayak,

In Sri Lanka the land holdings of recipients are limited. Therefore, I found that by providing such families with a flock of birds with different adult body sizes gave a better production (with scavenging only) than a uniform size flock of birds such as Giriraj and Vanaraj. This is due to the limitation of the feed resource base and the body maintenance requirements. Please refer to Guneratne SP and Roberts paper on feed resource base.

Message No 25

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Dear Dr. Sunil Gamage,

Thank you for the input.

It may also be pertinent to mention that in our FP scheme we are providing 4-week old chicks in tapering manner in 3 stages -20, 15, 10 approx 16 week apart. This however is keeping in view the fact that after 16 weeks the farmer can sell off the males and have another batch from the money which s/he gets- thus by default having around 3 different age groups after 3 batches. But we had not look at it from the feed resource angle.

Thank you for the references.

Message No 26

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Dear Coordinators and participants,

I would like to appreciate some of the interventions mentioned for Burkina Faso- with bio/ quality assays for poultry products which is interesting. I would like also like to share some loud thinking.regarding the following topics:

How would we define sustainable development of FP?

Due to the little inputs and efforts required, poultry keeping has been a very resilient activity. It is noted that in some war-torn places, poultry surfaces first as a supportive activity. However, sustainability of the activity in FP would be very difficult to define as it is dynamic- in the sense that families who have accrued good amount of benefit by keeping poultry would like to graduate over to more profitable

(like broiler farming), albeit risky businesses but then these families have crossed over the extreme poverty stage and can afford major interventions.

When we talk of FP (limiting to subsidiary income generation and family nutrition) then sustainability may mean continuing to keep 5-20 birds at any given time; deriving nutrition for home consumption on a regular basis and occasionally trading-off few birds to meet contingencies??

When we talk of progressive FP with marketing models and too many organized interventions for increasing value of products, sustainability is regarding enriching resource base but then we are going beyond the basic objective of bringing out the poorest-of-the-poor from abject poverty.

Well, as far as the FAO definition stands, FP fits the bill as environmentally sustainable:

"The management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment of continued satisfaction of human needs for present and future generations. Such sustainable development conserves (land), water, plants and (animal) genetic resources, is environmentally non-degrading, technologically appropriate, economically viable and socially acceptable".

Family poultry is often part of integrated farming systems. Should development activities focus on improving family poultry alone or on the system as a whole?

FP is a supplementary activity and sole dependency will require at least small scale farming- requiring more inputs, labour and a strong forward linkage. However, having said that I eat my own words as we have a separate scheme exclusively for FP which, though it does not forbid other farming to be taken up as it is for landless, marginal farmers, it is a separate program nonetheless.

Message No 27

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Week Two Work:

Single *versus* multiple (integrated) interventions for sustainable development of family poultry.

The traditional family poultry production system that has endured for centuries will continue for the next century without any intervention as long as our rural environment and people persist. However output and impact on family income and nutrition will also remain at current level.

If however we need some evolution of family poultry production with the aim of improving family income and nutrition, or we can imagine a future where the rural environment and rural human population dwindle, then interventions are required. In this regards an integrated approach will be essential.

In previous contributions, mention has been made of questions of access to land. Climate change may also constraint the productivity of available land and its ability

to sustain scavenging domesticated birds even though these may be the last to suffer. It is pertinent therefore that we should consider interventions that will ensure the survival of this production system as well as enhance its profile so as to actively encourage new entrants to take it up as a means of improving their livelihood.

I would like to suggest two bold interventions or organisational models that will have universal appeal and application. This is based on my earlier suggestion that what we need at this stage are efforts or studies on identifying and setting up infrastructure and institutions to support small scale low input family poultry production in parallel with large scale commercial poultry production.

Organisational models for improvement of Family poultry production

1. Family Poultry resource centre(s)

A resource centre to facilitate daily collection of eggs from each village in a region to be hatched centrally and brooded centrally. What I envisage is a centre with personnel who will be able to go out every day to producers in their region, to collect eggs and bring these back to the station/centre. The centre should be equipped with an incubator of sufficient capacity to allow weekly setting of eggs for hatching. This will solve the problem of source of day old chicks for anyone looking to start up. The centre should also have a shed for rearing of day old chicks until at least 6-8 weeks which would reduce chick loss due to predation and accidents due to exposure of young chicks to the elements. It should be open to allow the purchase of any quantity of chicks at any age by individual producers at replacements or for finishing for the market. Anything not purchased can be reared as usual with FP and taken to the market to be sold whole or processed and sold as meat on site so that it also serves as a regular source of processed poultry meat for people living around there. Meat can thus be sold on as required basis once the price per KG is fixed.

The resource centre/institution can also be a centre of knowledge and excellence on poultry production and family poultry production in particular. They can then offer advice as well as maintain a sales outlet 'within site or down town' for the sale of inputs such as supplemental feed and drugs as well as the processed meat.

The personnel involved in collection of eggs may also be equipped with knowledge to serve as advisers facilitated to take products from the centre's sale outlet to the producers. This will depend on their mode of transport and will vary from place to place (i.e. van, motor bike, or bicycles). The key being that everything should be sold in quantities that will allow each producer to buy only as much as they need or can afford on the day.

These same rural poultry workers (a concept that is already being considered in Nigeria for example –Sonaiya personal communication) could be trained to vaccinate or provide required medical interventions when requested or on routine. This idea can be expanded and modified to make feasible according to prevailing local conditions

2. Family poultry product marketing board

An organised marketing structure will be a panacea for the uptake and commercialisation of family poultry production. Often times, it has been suggested that one of the reason why people keep chickens is as a store of wealth to be cashed on a 'rainy' day. I dare say that cash is now widely used and easily stored these days and every rural dweller would rather have cash saved than living birds that can succumb to disease and die. To this end, I believe that producers would be glad to mains a reasonable population of breeding hens and produce chicks or eggs that

they can sell to the resource centre above or rear chicks to market weight for sale on a regular basis to be able to earn some income.

What I therefore propose is a centralised marketing structure or institution that will facilitate a ready market for poultry birds or poultry products from family producers. A kind of Family Poultry Marketing Board. Their main role will be the commercialisation of family production by

1. Providing a ready market at standardised price for the products
2. Helping to create and develop niche markets for family poultry products
3. Help in processing, product developments and marketing
4. Actively promote family poultry products to local and international markets.

Such an organisation will have the muscle and capacity to regulate and ensure quality control of family poultry meat such that they can then be promoted at local and international markets as wholesome specialised meat products. As daunting as this may seem, I would crave your indulgence to find out about PDOs (protected designation of origin), PGI (protected geographical indication) and TSG (traditional speciality guaranteed) schemes from the European Union from this link

http://ec.europa.eu/agriculture/quality/schemes/index_en.htm

These EU schemes encourage diverse agricultural production and help protect niche products developed in local regions. Quality regulation and product promotion allow these niche products produced only in specific localities to be marketed worldwide. I believe poultry meat products from family production system based on specific indigenous breeds can be developed to fit a similar niche market. It will however require an organised marketing or commercialisation structure or institution to achieve both the development and promotion of such a product.

I am convinced that these two organisational structures can enhance the profile of sustainable family poultry production which maintains diversity in the indigenous poultry populations while enhancing the income and nutrition of resource poor family producers. This is my personal opinion.

Message No 28

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1. The contribution of research to the development of family poultry production systems

There is no denying the fact that research with family poultry, although scanty, is contributing to the development of family poultry production systems. But before undertaking research activities, we the researchers must make sure what is meant by family poultry? Is it the local bird only or commercial strain or both? I think both, but in small number to ensure nutrition, self employment and income generation. If this is so, all research efforts should take account of it. Eventually, the contribution of research to the development of family poultry will be large. Since local birds or indigenous stock constitutes the major parts of family poultry in many developing countries, improvement of their production system by means of research is

necessary for productivity enhancement and mortality reduction. This does not mean that we will alter their genetics leading to extinction. Research with indigenous duck resources in coastal areas of Bangladesh showed that supplementation of home-made balanced feed @ 50% of the total requirements of laying ducks improved egg production significantly as compared to those reared solely on SFRB. In this study, the nutritional requirements were also investigated. A separate trial on supplementation level during scarcity of SFRB is in progress. Similarly, the nutritional requirements of common indigenous chicken up to a target weight of 850g at 12 weeks in confinement were determined. This will be tested under scavenging condition shortly. Hopefully, generation of adequate data will aid in the development of family poultry in Bangladesh under varied systems of rearing.

2. **The development for livelihoods through family poultry - cost and opportunities.**

The contribution of research should pave way towards livelihood improvement. So, the production needs to be cost effective and should help in livelihood improvement.

Any intervention to augment production even under existing husbandry practices will involve cost. The costs per kg meat or egg yield and sale price are important. Income generation is the key to livelihood development. Income generation is possible through improvement of production systems which will aid in livelihood development.

Message No 29

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Dear Coordinators and participants,

I would like to share a few more ideas and experiences on the following topics:

Which factors should be taken into account when designing good organizational models for sustainable family poultry development?

- **What are the experiences from successful projects? How can their interventions be replicated or become sustainable and what are the challenges of replication in other areas?**

  Following are some of the interesting models I have come across which actually focus on a specific segment (given in the parentheses) as per the regional requirements:

  - Bangladesh(BRAC) /Asian model- (extended to Nepal, Philippines, Fiji- Self-Help Groups, Micro-financing)
  - African/ Mozambique model (extended to Kenya, Morocco, Benin, Burkina Faso- New Castle Disease vaccine)
  - Latin American / Cuban model (extended to Nicaragua, Haiti - epizootiological monitoring and surveillance program)
  - DANIDA-Danish Development Agency-Integrated Livestock Programs (extension/ training/ farmers field school)
  - Kegg Farms – a private company (supply chain)

- PRADAN(Kesla)s- a social non-govt. organization model (market access facilitation)
- ICAR model– Indian Council of Agricultural Research(Germplasm flow)
- NABARD (techno-economic considerations and credit flow)

Ideally organizational models should be an amalgamation of various factors derived from the above experiences. The model may incorporate:

a) Research model on improving birds suitable for FP, feed resource base etc.
b) Inputs supply model and service delivery models including health services
c) Training, skill upgradation, extension model
d) Marketing model(where needed) with credit flow and financing

I am sure we can extrapolate and replicate these mutatis mutandis.

- **Does working for specific target groups (e.g. women) improve the chances of success in working for FP?**

  Though it is a well-known fact that besides income generation, FP provides nutrition supplementation in form of valuable animal protein and empowers women as generally the backyard activities are handled by the women in rural areas.

  However, it is, at this stage felt that it is better to stick to the objective of alleviating the extreme poverty condition using FP as a tool for the landless and marginal farmers which of course include women (landless farmers constitute 32 % of the rural poor in India; but distribution of poultry is only to the extent of 6.5 %).

  The success should be reflected in reduction of extreme poverty – so maybe the target group should be the most vulnerable group of society – as not the spread and production of poultry, but empowered resource-poor humans should define the success.

- **Ways of disseminating lessons learned (successes, but also failures) from family poultry development projects.**

  This is really interesting and important. A demo along with success stories may be shown as a film in clusters where FP programs are implemented. Better even, if pictorial flyers/ posters can be distributed. The highlighting of 'failures' or 'What NOT to do' is all the more important.

  I often share a picture I had taken of a covered earthen grain storing vessels (called mokli in local language- I have attached a picture) which was used by some people to keep the birds resulting in mortality- this strikes the others who see it immediately that the birds do need ventilation in the shelter to breath. It may strike as common sense to us but is crucial for the farmer.

- **Which resources need to be mobilized to make projects sustainable?**

  As a top down approach, the administrators in the Government must realize the factors for sustainability of the FP programs and they must be convinced- as they often look towards commercial/industrial poultry to be the major pillar of development.

  Resources need to be mobilized for research

a) at input level for development of suitable germplasm

b) at field level, participatory research for feedback from Family Poultry keepers

The statistics of target group and FP- especially the production from FP, is another important aspect which is required to be recorded properly as all financial calculations to mobilize resources will depend on that.

At the bottoms up approach, NGOs and other Organizations should mobilize the delivery, marketing and supply chain to enable decentralized management.

- **Which are the institutions that provide the best conditions for promoting a sustainable development and should be responsible for it?**

  I believe that the Government and the NGOs will play an equally important role in policy planning and implementation at ground level.

- **How important are Markets and the economies of scale for the success of interventions?**

  In a cluster approach having surplus production, development of niche market is crucial and with substantial production the costs of logistics, cost of inputs and service delivery can be taken care of.

  It would be interesting to work out the critical number of families involved and quantum of production to achieve the same.

- **What level of public funding is required to support and promote FP and for what type of interventions?**

  This may vary from place to place but initial efforts to give fillip require that this should be funded 100% by the Government. Possible tailor-made interventions are already mentioned.

- **What are promising new technologies to improve FP?**

  The Information Technology for widespread dissemination of basic information as well as for feedback could be explored alongwith charting of FP areas on a digital map (if not GPS) may help policy makers to focus on the areas of interventions as well as to enable surveillance.

Death of birds due to keeping them during the night in grain stores

Message No 30

Sodjinin K. EKOUE
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Contribution 2ème semaine

Les interventions pour le développement du système de l'aviculture familiale: interventions uniques ou multiples (intégrées)

En fait on n'est pas encore au but du système avicole familial. Par exemple au Togo on a commencé par maintenir en vie les volailles avant d'aller à l'alimentation puis à l'habitat des volailles. Ce n'est qu'après tout cela que la recherche est allée vers la caractérisation phénotypique pour aboutira à la caractérisation génétique avec la biologie moléculaire. Pour les plus importants on a mis en place un modèle de logement (case rectangulaire ou ronde selon la possibilité de l'agro-éleveur) qu'on a appelé le Poulailler Traditionnel Amélioré (PTA) développé dans le cadre du « Projet Appui à l'Elevage Familial (PAEF)» piloté par l'ONG Agronomes et Vétérinaires sans Frontière (AVSF) en collaboration avec les services de recherche et de vulgarisation. Dès qu'on avait commencé par la vaccination, on s'est vite rendu compte que les volailles n'ont pas de toit et cela rendait difficile la vaccination. Ce qu'on peut dire par rapport à cela c'est qu'il faut opter pour une approche intégrée en tenant compte de la spécificité de cet élevage.

Quand on prend la vaccination par exemple une intervention isolée serait plus coûteuse surtout que les effectifs ne sont pas très grands correspondants aux doses existantes. Le vétérinaire est alors obligé de grouper les effectifs pour finir une boîte de vaccin ITA NEW par exemple. Il faut aussi surtout dans les milieux ruraux grouper des interventions pour ne pas trop perdre.

Un côté aussi important pour l'aviculture c'est l'organisation autour de cette spéculation. Les personnes individuelles et surtout les groupements s'y mettent mais parce que mal organisés ils ne profitent pas comme les intermédiaires véreux qui leurs fixent les prix. Ce qui urge aujourd'hui c'est l'approche « chaine des valeurs » qui doit regrouper beaucoup d'acteurs (commerçants, les braseurs de volailles, les vendeurs d'ingrédients, les pharmacies vétérinaires…) pour les laisser se gérer eux-mêmes et faire des plate formes avicoles qui vont durer. Quoi qu'on dise l'accès au marché est aujourd'hui est très important pour que le producteur s'assure de son revenu.

Les modèles organisationnels pour le développement durable de l'aviculture familiale.

Comme je viens de le dire plus haut, il faut voir l'aviculture familiale dans sa globalité pour promouvoir sa durabilité. Le modèle « chaine des valeurs » basé sur la mise en place des plates formes est susceptible d'enclencher sa durabilité. On peut prendre en compte les groupes de même sexe ou hétérogènes mais l'essentiel est qu'on sache pourquoi on mène l'activité. La tendance est que les femmes semblent plus assidues à ces genres d'activités que les hommes. Comme facteurs pour une bonne organisation on peut noter le fait que les groupes cibles doivent aimer l'activité et doit vivre de cela. Les groupes cibles doivent être réceptifs aux innovations et entreprenants par-dessus tout.

J'avais parlé auparavant des projets comme PRODEPEKA (Projet de développement

du petit élevage dans la Kara), le projet PAEF qui développer le modèle d'habitats pour les volailles (PTA). Cela a fait beaucoup d'émules puisque cela a été dupliqué par les éleveurs ayant vu chez leurs collègues.

Message No 31

S m rajiur Rahman
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Dear Coordinators and participants,

I am fully agreed with Mr. Sujit Nayak's views.

I am working more than one decade in the field of small holder livestock and poultry production for sustainable development of poor people. I can share my observation: Poor people start with poultry (one of the important livelihood option) with the assistance of GO/NGOs. They do well and get return/benefit. But different disasters (Flood, Super cyclone, Tidal surge) come and damage their livelihood option (family poultry and farm animal).

Therefore how we make sustainable family poultry program and how we can challenge this issue. We need to involve some important research about

- Impact of climate change on family poultry production
- Coping pattern of disaster management and risk reduction: special emphasis of family poultry production

  Government and Partner Organizations should keep their attention in this issue for sustainable livestock and poultry production. Some activities must be incorporated about disaster management in project design for Government and Partner Organizations.

Message No 32

Henry Lizarraga
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Saludos a todos los participantes:

Quiero colocar algunos aportes acerca del aporte de la investigación en la mejora de la producción avícola de traspatio o familiar.

En nuestro caso, llevamos adelante trabajos de tesis con estudiantes de licenciatura de las carreras de Veterinaria, Sociología, Agronomía y economía para determinar el rol de las aves en la seguridad alimenticia de familias de escasos recursos. Además, de tratar de determinar los parámetros productivos de los sistemas tradicionales, las causas más altas de mortalidad, las estrategias de alimentación utilizadas con la finalidad de identificar los recursos alimenticios usados durante el año e igualmente poder encontrar los parámetros productivos de estas aves: (producción de huevos, % de eclosión, ganancias de peso, etc.)

En base a estos resultados me animo a afirmar que la mayor problemática productiva de las familias en estos sistemas es la disponibilidad de alimentos en las

diferentes épocas del año.

Muchas instituciones y organizaciones (con fines políticos y electorales) al contrario creen que la repoblación de las aves a través de lo que yo considero un repartija de aves hibridas (hy line, Isa Brown), va a solucionar los problemas de los productores, resultando más bien en un problema para las familias campesinas, dado que si ellos ya tienen inconvenientes para mantener las pocas aves que tienen (promedio de 26/familia) el recibir 20 o más aves es una carga que resulta insostenible y que al pasar el tiempo quedan solo en las originales, y muchos sabemos de los problemas que tienen las aves hibridas para reproducirse dando como resultados más bien una disminución de los parámetros productivos de estos sistemas.

Otro de los factores que interviene para que el sistema se mantenga inalterable son el minifundio y la demanda de mano de obra que implica el incorporar aves de razas hibridas que en principio son bien atendidas y manejadas pero al pasar el tiempo la rutina y cultura de producción que se transmite a través de generaciones vuelve a triunfar para dejar que las aves se críen solas o con escasa intervención de la familia. Suena duro decirlo pero desde mi punto de vista esto solo se puede asociar a una falta de disciplina y conformismo sobre lo cual no se puede hacer nada.

El otro aspecto importante, el minifundio, se refiere a tratar de convencer a las familias que destinen áreas para producir granos que sean destinados solo a la alimentación de las aves. Aspecto que resulta complicado por la priorización que ellos le dan a la alimentación de la familia y es más, a la alimentación de otras especies animales (cerdos, cabras, y hasta vacas).

En resumen considero que la investigación cuando se la lleva adelante de manera responsable es una herramienta importante desde el momento de determinar la base de los sistemas de cría y sus problemas y pienso que debe haber una secuencia en la propuesta para mejorar los sistemas productivos, y desde mi punto de vista el orden que pongo en consideración es:

1. Garantizar la disponibilidad de alimento (granos + fuentes proteicas) durante todo el año.
2. Incorporar tecnologías de manejo semi-intensivo sumado a la mejora de infraestructura (gallineros rústicos) con equipos de producción más intensiva (nidales, comederos y bebederos). Para que las aves duerman, reciban una ración base, pongan huevo y después estén libres.
3. Llevar adelante u programa sanitario zonificado de acuerdo a enfermedades prevalentes y en acorde con las granjas de cría intensiva del alrededor.
4. Incorporar criterios de selección de hembras y machos, técnicas de enclueque, manejo de las gallinas de postura, y empolle.
5. Y por último, buscar incorporar razas de gallinas tipo criollo **(NO HIBRIDAS**) de características rústicas y buena productividad.

Respecto a este último punto quisiera saber de razas de este tipo que se estén utilizando con éxito en otras regiones, actualmente nosotros necesitamos gallinas madres para llevar adelante un proceso de producción de pollitos BB. Algunas instituciones están trabajando con razas hibridas (Label Rouge), un error grave al momento de pensar en las consecuencias sin advertir de los trágicos resultados de los cruzamientos con estas razas, tema que considero vital de discutir en este curso.

Message No 33

Robyn Alders
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Thank you Dr Sunil Gamage.

I agree with your comment. Multi-age flocks are a key characteristic of village poultry production and enable the flock to better respond to a number of challenges, including disease outbreaks.

Once flock sizes increase, owners must decide whether they should increase the offtake of birds or provide supplementary feed. It would advisable to research the ecological consequences of providing supplementary feed, especially where the supplementary feed is not readily available in the local area.

Message No 34

Robyn Alders
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Thank you Dr Sujit Nayak for your excellent review.

I would like to make one small comment in relation to the "African/Mozambique" model. While the model focused on ND control (in response to farmer priorities), the model also makes reference to appropriate housing, creep feeding of chicks, marketing and biosecurity.

The ACIAR ND training manual (http://aciar.gov.au/publication/mn086) provides an overview of this model. This manual is to be updated over the coming 6 months and so we would welcome comments on it. If you could send your comments to me at <robyna@kyeemafoundation.org> by the end of August, that would be much appreciated.

Message No 35

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Henry,

Muy interesante sus comentarios. Estamos de acuerdo en la necesidad de conservar los recursos genéticos locales (las gallinas criollas).

Very interesting comments. We are in agreement, we need to conserve local genetic resources ('criollo' strains).

Message No 36

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Chers modérateurs De Besi, je m'adresse à Sujit Nayak. J'ai lu avec grand intérêt la participation de Sujit Nayak de l'Inde et dans son analyse sur la question:

Quelles sont les expériences de projets réussis? Comment peut être reproduite leurs interventions ou devenir durable et quels sont les défis de la réplication dans d'autres domaines?

Il a donné suivant des continents les expériences des projets réussis, mais pour l'Afrique il n'y a que 5 pays:

Afrique / Mozambique modèle (étendu au Kenya, Maroc, Bénin, Burkina Faso-Nouvelle vaccin contre la maladie du château).

Si je comprends bien toutes les expériences qui ont étaient tentées en Afrique n'ont pas abouti. N'existent-elles pas de AF qui peuvent être sélectionnées comme modèles? Un grand continent comme l'Afrique, malgré les avancées technologiques de ces dernières années, elle est à la traîne. C'est révoltant. Il y a lieu de reconnaître quand bien même, que des efforts ont été entrepris dans d'autres pays africains. Par exemple, certains intervenants font allusion à certaines expérimentations encourageantes dans des pays comme au Rwanda, Cameroun, Mali et Sénégal. C'est faible, mais encourangeante.

Message No 37

Bagnol Brigitte
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Cher Arthur Ngalo,

Il existe des expériences positives dans d'autres pays d'Afrique que je connais: Tanzanie, Malawi, Angola où le vaccin contre la maladie de Newcastle (I2) est produit et utilisé dans les villages grâce à la formation de vaccinateur/rices communautaires. Les interventions aussi incluent l'amélioration des pratiques sanitaires, alimentaires et de logement. Le manuel de formation peut être trouvé ici: http://aciar.gov.au/publication/mn086.

En Swaziland le travail est centré sur la commercialisation et l'intensification de la production. Il s'agit donc d'un secteur semi-intensif surtout qui est soutenu par des interventions visant mettre en contact les vendeurs et les acheteurs et par la formation sur le logement, l'alimentation, la reproduction.

Message No 38

Dr. Sulhattin YAŞAR
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Dear all,

I would like to draw your attention to Turkey, where we had an ideal family poultry system developed since 1970's.

I am enclosing a scientific paper wich analysed these family egg-producers. The paper was published in World Poultry Science and I am the author.

I hope this paper will contribute to the outgoing discussion.

Yasar, S., Orhan, H., & Erensayin, C. 2003 Examining the nutritional and production characteristics of egg-farms in Basmakci County in Turkey. *World's Poultry Science Journal*; 59(2): 249-259.

Abstract: The first attempts in producing table-eggs for the Turkish market in commercial egg farms were initiated in Basmakci County in 1974. Since then farmers have started to produce table-eggs through their own efforts, and as a result of rapid development, Basmakci is now the main egg-centre of Turkey. However, there are several factors with negative impacts on egg production in the region. This study involved investigations into the nutritional and husbandry characteristics of egg production. The present work outlines the structure of egg production along with the present problems of management, nutrition and environment. Egg production for Basmakci's producers can be considered as a secondary commercial activity within the farm enterprise. The producers have set up the Association of Basmakci Egg Producers (ABEP) to deal with the problems of supplying the laying stock and marketing the eggs. However, some important problems were encountered in the form of decrease in egg production during the course of the present investigation. The older conventional cage systems (A-type and California type) are still preferred by the farmers. Leading international commercial breeds of laying hens are imported for egg production, but field tests of these breeds are not yet carried out by the commercial breeding companies under local conditions. Neither laying house environmental conditions nor least-cost feed formulation were found to be well controlled in interests of optimum egg production. The producers failed to keep continuous and meaningful production records, and this causes difficulties in implementing different feeding programmes and management solutions. Manure management and other health-related issues are still being ignored. However, in order to improve the production level we suggest that poultry extension works should be established here with the strong collaboration between the universities, Egg Association, breeding companies and the Agricultural Ministry.

Message No 39

Slumber S. Badubi
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Dear All,

I would like to contribute to the current theme (Week 3).

1. To me development of family poultry can make an important contribution to women's empowerment because: the study of Badubi *et al*. (2006) in Botswana showed that most family poultry are reared and cared for by women. So if this resource can be supported positively most women will be assisted and the effects of poverty be reduced especially in women headed families.

- The requirements would include access to markets or pronounced marketing systems to support this resource, feeds which will promote growth rates and should be affordable to the farmer, vaccination programs which will assist in disease control and reduce mortality rates and lastly slaughtering facilities which are up to standard as per the abattoir and slaughter facilities act. As stated the major constraints are lack of feeds, financial base to start up meaningful projects and access to finance.

- I do not think they can have a negative impact since if well planned; cooperatives could be made so that women work in a group rather than individually. However, to make a meaningful project the farmer will have to be prepared to work for the project so that returns could be realized at the end.

- A few projects that I know which were made through BONEPWA+ (Botswana Network of People Leaving with HIV/AIDS) made a big difference where most women have even went ahead and bought goats out of the sales of chickens. And I do belive that if these projects are encouraged we could see a swing in income generation especially at rural level and support to the rural economy.

- It should be understood that there are some men who are also poor and live in rural areas. Family poultry initiatives should cover both and even youths as this is a commodity which is in high demand especially in tourism areas.

2. Policies should aim at:

- increasing productivity of this resource
- Easy access to financing for this resource
- Cheap feeding resources
- Land availability especially for women and youths
- Provision of slaughter facilities
- Conservation of family poultry

- I believe it is a pre-requisite since family poultry production have been marginalized by the promotion of commercial exotic flocks.

- If policies are in place we could see an increase in the availability of products from family poultry in the market place and this would increase job creation at rural level and reduce migration of people from rural areas to urban centers

- There is not much done especially in some countries to promote family poultry, except that through the conservation strategy (FAO) some countries are now valuating the presence of family poultry.

- In some countries like Botswana these have influenced policies because we are now seeing family poultry projects which aim at poverty eradication especially in settlements.

Badubi S S, Rakereng M and Marumo M 2006: Morphological characteristics and feed resources available for indigenous chickens in Botswana. *Livestock Research for Rural Development. Volume 18, Article #3.*

Message No 40

Dr. FOTSA Jean Claude Ph.D
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Chers modérateurs

je vous remercie pour ce sujet intéressant. Il permet de savoir la situation des femmes en rapport avec l'amélioration de leurs revenue à partir de l'Aviculture Familiale.

Can development of family poultry make an important contribution to women's empowerment? Le développement de l'aviculture familiale peut-il apporter une contribution importante à l'affranchissement des femmes?

En effet, l'article en fichier attaché permet de soir l'état de cette aviculture familiale et son système de même que la place que joue la femme. Contribuant à plus de 57% en aviculture familiale, elle devrait être plus émancipée. Mais malheureusement, ce n'est pas le cas. Un appui institutionnel soutenu par une recherche appropriée dans ce secteur avicole est nécessaire pour améliorer les conditions de vie des femmes rurales majoritaires dans l'activité et qui pourra constituer une véritable arme contre la pauvreté. L'élevage familial de poules concerne les femmes dans 56,6% des cas. Cependant, au vue des études faites au Cameroun, il se trouve qu'au sein de la famille, les produits avicoles reviennent majoritairement aux femmes à 69,8% puis aux hommes (24,5%). Selon les régions au Cameroun, les décisions de ventes de ces animaux et leurs produits sont prises par les femmes dans 54,7% de cas contre 42,6% réservés aux hommes et 2,8% aux enfants. Dans d'autres régions, les hommes prennent les décisions de ventes, respectivement dans 62,7%.

Fotsa, J.C., Poné, D.K., Manjeli, & J., Mafeni Mase. 2007. Etude des systèmes d'élevage et description phénotypique des poules locales (Gallus gallus) en milieu rural de la zone forestière du Cameroun. *Cameroon Journal of Agricultural Science*, 3(1): 40-47.

Résumé: Les systèmes d'élevage et la description phénotypique des populations de poules locales sont étudiés en milieu traditionnel camerounais (Lékié et Mfoundi) de la Région du Centre. Le but était d'établir la diversité génétique des poules locales et la diversité managériale pratiquée en milieu rural. Des 45 ménages et 650 poules échantillonnés, il ressort que l'élevage est du type divaguant (81%), caractérisé par une absence de logement spécifique, la non professionnalisation des éleveurs à majorité féminine (68%) et le manque d'un suivi vétérinaire. Bien que la valeur gustative des produits aviaires soit très appréciée et aux prix élevés, l'importante réduction du troupeau est due aux maladies (44,8%), à la prédation (33,9%) et aux accidents divers (21,3%). Phénotypiquement, le plumage est varié avec des couleurs dominantes telles le noir (41,5%), le blanc (21,3%) et le brun/rouge (16,3%). Les tarses sont blancs (54,8%), jaunes (27,3%), noirs (17,9%) ou verts (2,7%). La peau est blanche (76,1%) ou jaune (23,9%). La crête est rouge (96,3%) ou rouge sablé noire (3,75%), de type simple (89,9%), rosacé (9,0%) ou en pois (1,1%). Les phénotypes polydactyles (11,7 %), cous nus (7,0 %), huppés (6,1 %), barbus avec favori (5,6 %) et frisés (1,3 %) sont observés. Les longueurs et diamètres du tarse

sont respectivement de 9,1 ± 0,18 cm et 1,7 ± 0,16 cm chez le coq, de 7,8 ± 0,06 cm et 1,5 ± 0,09 cm chez la poule. Les poids adultes des mâles et femelles sont respectivement de 2306 ±4,49 g et 1704 ± 12,08g. La maturité sexuelle est atteinte à 165 jours. La production annuelle moyenne sur 03 séries est de 47,2 ± 5,52 oeufs de couleur blanc crème (100%), avec un taux d'éclosion de 88,4%. La diversité génétique observée sur le terrain est un atout pour la création des souches adaptées en vue d'accroître la consommation protéique et les revenus des éleveurs en milieu rural.

Abstract: Studies were carried out on the production management and the phenotypic description of local fowl populations reared under the traditional systems of Lekié and Mfoundi divisions in the Centre Region of Cameroon. The aim was to establish the genetic diversity of local chickens and the management diversity practised in the rural area. Out of the 45 households and 650 chickens sampled, the free range system was the most practiced (81%), characterized by the absence of specific housing, untrained owners of whom women constituted the majority (68%), and poor health conditions. Although chicken meat and eggs are tasty and fetch higher market prices, flock size is substantially curtailed by factors such as diseases (44.8%), predation (33.9%) and various accidents (21.3%). Diversity in body feathers shows dominant colours like black (41.5%) or white (21.3%). Shanks are white (54.8%), yellow (27.3%), black (17.9%) or green (2.7%). The skin colour is either white (76.1%) or yellow (23.9%). The comb is either red (96.3%), or red spotted black (3.8%), being either single (89.9%), rose (9.0%) or pea (1.1%). Phenotypes such as polydactyly (11.7%), naked neck (7,0%), crested (6.1%), bearded and muffs (5.6%) and frizzled (1.3 %) are also found. Shank length and diameter show values of 9.1 ± 0.18 cm and 1.7 ± 0.16 cm for cocks and 7.8 ± 0.06 cm and 1.5 ± 0.09 cm for hens, respectively. Adult weights stand at 2306 ± 4.49 g for cocks and 1704 ± 12.08 g for hens. Age at sexual maturity is 165 days. About 47.2 ± 5.52 eggs of creamy colour spread in 3 clutches are laid yearly per hen for a hatchability rate of 88.4%. The observed major genetic diversity could help creating better adapted and more productive strains, likely to improve the dietary protein intake and potential income levels of the rural farmers.

Message No 41

Bagnol Brigitte
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Dear colleagues,

I wonder if there are experiences of confining indigenous chickens (in a chickens house at night and in a fenced area during the day)? This of course implies feeding them mainly with commercial feed. Is it possible to envisage to raise indigenous chicken in an intensive system or should farmers be encouraged to raise exotic breed if they want to go intensive?

This question is related to topic 3 Competing or complementing commercial poultry production systems and to policy issues also.

In Swaziland, the Ministry of Agriculture is pushing the production of indigenous chickens (Swazi breed) by promoting special markets in the capital of the regions, supporting the creation of indigenous poultry groups/associations, training farmers in improved management practices. The MofA is also supporting a multiplication centre for farmers who want to increase their flock or start to raise chickens to be able to buy 4 weeks old chickens.

Message No 42

Sujit Nayak
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Dear Coordinators and friends,
I would like to share some experiences/ views on the topic 'Women empowerment through sustainable family poultry development':

- **Can development of family poultry make an important contribution to women's empowerment?**

  I recently came across two sayings in Telegu (one of the many languages spoken in India) which I would like to share:

  a) What the chicken eats or what a daughter-in-law eats should never be counted because they only multiply wealth in your home, which remains with you.

  b) Only the daughter-in-law knows the amount earned from the poultry in the house

  This itself illustrates that FP in India is so closely associated with women.

- **What are the requirements and constraints for contribution of family poultry to women empowerment?**

  Major requirement would be to allow total physical and financial control of birds with the women. Physical would mean not only taking care themselves but also delegating duties to other members when needed. Financial would require that she keeps account and the decision as to how the birds/ their produce would be used.
  Major constraint is to create an enabling environment where other members of the house support them, and where they can be imparted training close to their home as they have to do multi tasks and cannot afford to stay away for long. A demo with few women would help in the snowballing effect.

- **Can family poultry development have negative impacts for women, for example by increasing their workload?**

  This is a very important issue often not paid due attention. I have not come across any instances where workload increase has been an issue but I have heard of a few cases where the money earned through sell of eggs birds in the haat (local market) - by the men of the house mostly- are not handed over to the women. In some cases if the women earn directly, they are hassled to hand over the earnings. This defeats the empowerment concept.

- **Have past projects proved a positive impact of family poultry**

development on women's empowerment?

A few of the States/ constituencies in the country like West Bengal have very well organized Self-Help-Groups and some North Eastern State are also proposing programs with women only as beneficiaries .
In India, now it is mandatory to go for gender-budgeting of most of the beneficiary-oriented schemes including FP. Even if compulsory budgeting is not done, we are advising implementers to consider at least 30% women in the program.

- **While promoting family poultry what should be done to avoid discrimination based on gender, caste, and class?**

I think FP is setting an example where it is actually helping in removing class differences. In most part of rural India I had heard that the elite classes (Brahmins etc.) would keep cattle and only the supposedly deprived/ socially backward classes would go for pigs, sheep, goat and poultry. So, in a way the 'species kept' created the classes. But slowly there is realization that short cycles of the small animals give faster return and often act as 'cash crops' especially in times of crises which has made them to take up other species also.
However, while implementing the FP program in India we are also earmarking funds to be spent for coverage of some recognized deprived/ socially backward castes/ tribes like Scheduled Castes (SC-16%) and Scheduled Tribes(ST-8%) as is done for Women (30%). Even though it seems discriminating at times but it is actually meant to rationalize the discriminations made earlier to these groups and allow them to come at par with better advantaged groups.

Message No 43

R. K. Sharma
Associate Professor, Department of Livestock Production Management, College of Veterinary & Animal Sciences, Pantnagar-263145, Uttarakhand, India.
rabendra1@rediffmail.com

Dear all,

I would like to draw your attention to India, where dual purpose colored chickens (KUROILERS) developed by the author while working in leading private poultry breeding company had played an enabling role in family poultry system since 1990's. Now the same birds are performing excellently in Africa.
I am attaching an article on KUROILRES written by me for your information pl.
Hope this article will contribute some value to the outgoing discussion.

ROLE OF KUROILERS IN PROVIDING LIVELIHOODS AND NUTRITIONAL SECURITY IN INDIA

SUMMARY: The story of Kuroilers (dual purpose colored chicken) is only about 20 years old when it was felt by R & D team of KeggFarms Pvt. Ltd., New Delhi (India) including the author that availability of suitable germplasm with reasonable productive–adaptability for backyard poultry is the most limiting factor. Kuroilers - dual purpose, multi-colored & hardy birds were capable to produce 200 eggs (4 to 5 times more than non-descript hens) and grows faster: a male Kuroiler reaches 1 kg weight in 6 to 7 weeks compared to 18 to 20 weeks by non-descript hens. Every year KeggFarms distributes about 10 million Kuroiler chicks to 800,000 poor families

across Uttarakhand, Uttar Pradesh, West Bengal, Assam, Orissa, Jharkhand, Chhattisgarh, Bihar and the North-eastern states through 1500 mother units. These mother units buy 400 to 2,000 birds at a time, rear them till 3 to 4 weeks and then supply them to the nearby villages through mobile vendors on cycles. Typically, a mother unit entrepreneur makes a profit of Rs 3 per bird. So do the vendors on cycles. The results of FAO-NDDB survey showed that Kuroilers have made substantial contribution to poor peoples' livelihoods in terms of increased income, women's empowerment and enhanced nutritional status of households. The success story of Kuroilers has also been discussed & documented as case studies by several business schools including Harvard Business School (USA), London School of Economics, New York University- Stern School of Business and HEC School of Management Studies, Paris. Recently, at the initiative of Arizona State University, the Govt. of Uganda had imported Kuroiler hatching eggs and the study demonstrated that Kuroilers outperformed the indigenous birds in growth rate, body weight, eggs production, egg size and hatchability which transforms to a 133 percent increase in meat production, 462 percent increase in egg production and a 341 percent increase in income for rural poultry farmers - an important stepping stone towards nutritional and economic security in this poor region. In 2009, chairman of KeggFarms, was invited to address the briefing of the G77 nations at United Nations Headquarters in New York as a successful example of poverty alleviation through humane animal husbandry and animal welfare practices. Most recently, KeggFarms exported Kuroilers and hatching eggs to Ethiopia on the initiative of Flow Equity, a U.S. based Fund. The introduction of Kuroilers in India has definitely benefited rural poors in a big way in last 2 decades. Indian Kuroiler model can be replicated with or without modifications in other countries to provide livelihoods and supplement nutritional security of rural poor.

Message No 44

Dr. Md. A. Saleque
Adviser, Agriculture & Livestock, BRAC international, and Coordinator IFAD/FAO/INFPD Project.
ma_saleque05@yahoo.com

Dear Colleague,

Thanks to moderator for effective organizing the conference and also especial thanks to all other participants who have made their contributions in different topics. My responses to the theme of week 3 are as follows

1. **Women empowerment through sustainable family poultry development.**
   - **Can development of family poultry make an important contribution to women's empowerment?**

     I agree that family poultry makes an important contribution to woman's empowerment because over 80% of rural households keeps family poultry in most of the developing countries in Africa and Asia. Development of family poultry production will not only enhance the cash income of women but can lead to their greater empowerment when they participate as extension workers and vaccinators or even have a small of chicken. The Women 'poultry vaccinators' have made a significant contribution to raise the stature and capabilities of women, who would otherwise be left out of the working sector. Being a poultry vaccinator not only provides self employment opportunity but

also generates community respect, empowerment, self confidence and dignity among the women involved. Moreover, this practice is worthy of replication because it empowered rural women to actively participating in the rural economy both as buyers and sellers of services. Recent studies conducted by BRAC revealed that both female rearers and vaccinators have greatly benefited in income, family nutrition as well as empowerment through the FP initiative.

- **What are the requirements and constraints for contribution of family poultry to women empowerment?**

The requirements for contribution of family poultry to women empowerment depends on number of factors

- Access to Training, inputs supply and credit delivery in sustainable way: A study conducted by BRAC (the largest NGO in world) in different period in Bangladesh and in some other African countries (Uganda, Tanzania) examines the impact of capacity development training along with other services on the women's income growth, dissemination of technology, access to services etc. Results show that the beneficiaries who received these services earned significantly higher income and were more empowered than those who did not.
- Involve in organization/ group: Involving women in groups will enable them to express, work on their rights, etc. towards developing a joint voice
- Linkage with the Market: link them with markets, so that women can get actively involved in buying and selling of products.

- **Some constraints for contribution of family poultry to women empowerment:**

A careful analysis of the roots of the constraints leads to the following major causes for slow growth and development of the FP and ultimately affects the women empowerment.

- Insufficient organisation and vertical integration in the value chain: while the value chain for exotic breeds is relatively well organized, the chain for indigenous chicken is long and contains a higher number of middlemen. As a consequence, primary producers earn lower margins while the consumer price is considerably higher
- Weak producer organisation and limited economy of scale (core market): Most rural households that keep indigenous chickens do not see them as a commercial venture and consequently invest very little time in the activity. Therefore, the production remains limited to a small number of chickens.
- Lack of a specific development strategy or policy:
- In order to support and strengthen the FP poultry, the government should take an active role in the promotion of both core and services markets as well as continue to improve and create favourable enabling environment.

- **Can family poultry development have negative impacts for women, for example by increasing their workload?**

There is a debate about this issue. From my experience I found that it is true in some cases but most of the cases if the scale of operation increases and generates sufficient income for maintaining the family then other family members

also support the women. However, It depends on number of factors:

- Number of children: many children especially young children in HH, Female headed HH ,disable husband etc
- Perception of HH members: husband and other members of HH don't like to help etc
- Nature of work: Although most of the HH works are done by the women and these are none paid and none rewarded, therefore their work usually not recognized. Increase incomes through family poultry can give give at least some status at the HH level and also in the society.

- **Have past projects proved a positive impact of family poultry development on women's empowerment?**

  A number of projects (SLDP, PLDP, IGVGD, and PFN) have shown positive impact of family poultry development on women's empowerment in Bangladesh. Similarly other projects operated in some other countries have made positive impact on women empowerment in Asia (www.sapplpp.org) and also "Research into use programme" in Tanzania

  http://www.researchintouse.com/programmes/riu-tanzania/riu-tz60learning.html)

- **While promoting family poultry what should be done to avoid discrimination based on gender, caste, and class?**

  We should equally treat all groups of people based on demand and local conditions.

2. Influencing policy for family poultry.

Please visit web site of SAPPLPP (www.sapplpp.org)

Message No 45

Eric Fermet-Quinet efq@laposte.net

Dear All,

Sorry for my very low level of participation in the forum but I'm almost always in mission and out of connection.

There is one single point that I would like to make clear about family poultry vaccination against Newcastle disease (subject mentioned in the Message No 8):
Thermostable vaccines adapted to family poultry are available from many brand names of very well known veterinary pharmaceutical companies.
These vaccines are inactivated and one shot of vaccine is globally enough for the production cycle of family poultry population.
This is known at least since 1978.
Hundred of millions of family poultry have been vaccinated successfully by farmers themselves and with full cost recovery of the vaccines sold by veterinarians.
There is a clear reason for that: everybody is ready to spend 0,1 USD/dose=poultry because 6-8 months later this poultry will be sold 2-3 USD.

The fact that, still, many scientists and development agencies, continue to claim for "thermostable vaccine" is just a pity and a proof of lack of communication.

I'm ready to send again, if necessary the CD Rom that has been made about this matter.

Message No 46

Dr Dibungi Luseba DrMedVet (L'SHI), MSc (Agric), PhD (Pret.)
Dept Animal Sciences, Faculty of Science, Tshwane University of Technology, P.Bag X680, Pretoria 0001, South Africa. LusebaD@tut.ac.za

Dear all,

The message below refers (Message No. 45 by Eric Fermet-Quinet). It has a strong element of lack of information from the sender. A thermostable vaccine is almost a must for the African FP. I have been personally commissioned to conduct a market studies on the thermostable vaccine by Global Alliance for Livestock Veterinary Medicines (GALVMED) last year in the SADC region. Besides South Africa and Zimbabwe where the cold chain can be maintained, this is just not possible for the rest of the region. The veterinary service is lacking and ill-equipped. Where the system has been partially privatised, the vaccinators charge up to the equivalent of one dollar to cover for the wasted vaccine. Remember these vaccines are sold in 100 to 1000 doses, meaning that at any given time, the vaccinator will never get the adequate number to vaccinate.

There is a need for a holistic approach to health issues of the FP. The Mozambican experience is a success story I have seen.

Just my prompt response

Message No 47

Dr. D.P. SINGH
Principal Scientist, Avian Genetics and Breeding Division, Central Avian Research Institute, Izatnagar, Bareilly, U.P., India.
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Dear Moderators

I enjoyed the e-conference but could not participate properly due to my busy schedule for out station work. However, I am sending my small contribution.

1. **The contribution of research to the development of family poultry production systems:**
   Traditional backyard poultry keeping has been in practice since time immemorial. Sizeable amount of researches have been done in the field of backyard poultry production which has contributed significantly to the development of this system due to which three types of poultry rearing viz. (i) Traditional scavenging backyard or village system, (ii) Semi-scavenging system and (iii) Small-scale intensive system were evolved and in single term these three systems are called Family poultry. Since the requirements of each of these systems are different from each other and improvement in the particular system opens the way of new challenges, further continuous research is required for the sustainability of each system.
2. **The development for livelihoods through family poultry – cost and**

opportunities.

Family poultry is playing significant role for livelihoods. There is large number of success stories where the farmer started the poultry keeping as traditional scavenging backyard or village system with 25 birds. Gradually the unit was converted into the semi-scavenging system of 50 birds and ultimately the farm was converted into a small broiler farm having capacity of 250 birds with 8 weeks cycle. Some of the farms have been further upgraded and they earn sufficient money for livelihoods. Certainly the Small-scale intensive system farm will be the minimum requirement for securing the livelihoods.

3. **Competing or complementing commercial poultry production system?**

In India, poultry production has increased rapidly and tremendously in the last three decades, but this expansion, largely due to the commercial poultry sub-sector, does not reach the less-favored rural areas and disadvantaged families, which account for 70% of Indian population. Targeting small-scale, family-based poultry systems as an effective entry point for poverty alleviation programme is gaining widespread acceptance. The large-scale commercial and small-scale rural family poultry sectors need not be mutually exclusive, nor be in direct competition. The challenge to reduce rural poverty and malnutrition cannot be achieved by one single intervention and in isolation, as no single activity will have a major impact. Indeed, the commercial sector with its wealth of human, technical and financial resources might play a major catalytic role in promoting family poultry production as a practical and viable option for poverty alleviation.

4. **Single verses multiple (integrated) interventions for sustainable development of family poultry**

Multiple (integrated) interventions are better than single for sustainable development of family poultry. In recent years, the number of birds reared under traditional scavenging system has reduced drastically due to various reasons among which decrease in availability of natural resources of feed is the most important. In reality, the homestead size is reducing in many countries day by day due to division of homestead land. Natural feed resources are being reduced day by day for scavenging birds due to reduction in kitchen gardens, pucca village allays, multi-cropping in the nearby fields and use of insecticides and pesticides due to which feed supplementation of the birds have become essential . Uses of improved germplasm further need the improvement in feed quality. Urgent need was felt for the alternative source to feeding the scavenging birds without the use of conventional feed ingredients.

An attempt was made to improve the availability of the natural feed resources under the project titled "Holistic Approach for improving Livelihood Security through Livestock based Farming System. The project has different components of livestock and agriculture farming along with traditional backyard poultry production. To reduce the cost of feeding, the small flocks of scavenging chicken reared by the small poultry producers were integrated with the horticulture (fruits and vegetables). Farmers of horticulture crops were motivated for mixed farming including horticulture crops (fruits and vegetables, vermin-composting and small farm chicken production). Earthworm obtained as the by-product of the vermi-compost was also used for feeding the birds. Further, farmers were made acquainted with the importance of Azolla as natural source of poultry feed. They were trained for cultivation of Azolla on small scale on farmer's door and in village ponds on large scale. Both green and dried azolla were used for feeding of the birds in addition to their scavenging and /or conventional feed.

Holistic approach for integrated farming resulted in very economical farming and

helped much in livelihood security. Previously chemical fertilizers were used in the horticulture farming which was replaced with vermin-compost manures which saved lot of money. Use of vermin-compost manures increased the humus of land as a result crop yield increased significantly. Birds were left in the guava, banana and other vegetable crop yards where they found plenty of land for scavenging. Availability of plenty of insects, worms and soft green forages were sufficient for their feed requirement and there was no need of additional feed supplementation. It was amazing to note that the scavenging chickens were found to control the problem of insects and pests up to nearly 60- 80 % especially in guava and banana orchard and also in some vegetable crops. Thus symbiotic relationships were observed for horticulture cropping and scavenging birds. Disease and pest control for horticulture crops saved the money to be spent on medicines and cost of supplementary feeding was also saved. Earthworm converted poultry excreta and other waste materials as good quality manure and extra earthworms were fed to the birds which are source of very good quality protein for poultry feed. Use of Azolla as the supplementary feeding was found to be quite effective in reducing the amount of grains for feeding.

5. **Good organizational models for sustainable family poultry development**
   Various organizational models for sustainable family poultry development have been evolved and tested with grand success in the testing area till the project continued. This is neither an indicator of the success of the model nor the failure. The sustainability of the model depends on various factors among which availability of sufficient permanent infrastructure facilities and technical manpower with zeal to work for poor society is the main requirement. What strategies can be adopted for multiplication and distribution networks has already been discussed during the first e-conference. The model fulfilling the requirements suggested by various participants of the conference will be the best organizational model.

6. **Women empowerment through sustainable family poultry development**
   Women empowerment through sustainable family poultry development is one of the oldest topics of discussion which has been proved to be the established fact and needs no further debate.

7. **Influencing policy for family poultry**

8. **The future contribution of INFPD and other networks to family poultry development**
   Family poultry development is still in primitive stage. Most of the developing countries are lacking the infrastructure facilities for real implementation of the family poultry production programme. There is no doubt that family poultry production has been paid attention by the government since last decade in most of the developing countries after the all possible efforts made by the INFPD and other networks to family poultry development. But development of family poultry scheme has not yet received its appropriate government share. It would the future duty of the INFPD and other networks to boost the further growth of Family poultry research and development by disseminating the updated global technical knowhow.

Message No 48

Eric Fermet-Quinet
efq@laposte.net

To moderator of FAO Family Poultry Forum

I would be pleased if you could confirm that the lack of information is not on my side.

I'm sorry to repeat that all inactivated vaccines produced by reputable international pharmaceutical companies are quite enough thermostable and have been used successfully without any problem by rural family poultry owners where they have been adequately distributed by relevant professional networks even in the poorest and remotest African countries.

It is hard to believe that 35 years of experience and hundred of millions vaccinated rural poultry from millions of rural farmers should still continue to be ignored.

Many articles and conferences have been made on the successful and much cost beneficial usage of commercial inactivated vaccines in rural poultry (without possibility to maintain a cold chain).

We could provide data and documents if needed. I'll transfer this answer to relevant resources persons for their information.

Message No 49

Némaoua BANAON
Consultant, bureau CEFRAP, Ouagadougou, Burkina Faso.
nemaoua.banaon@cefrap.com

Influencer la politique vis à vis de l'aviculture familiale.

- **Que peuvent faire les politiques pour soutenir l'aviculture familiale?**

  Pour soutenir l'aviculture familiale, il faut combiner quatre types de soutien:

  La disponibilité d'un vaccin de qualité, des vaccinateurs villageois bien formés, équipés et bien suivi, la disponibilité d'aliment poussin à base de produits locaux et l'accès au crédit

- **Quelle importance a été accordée à l'aviculture familiale dans les politiques actuelles de développement de l'aviculture et qu'est ce qui doit être fait pour influencer cela?**

  Actuellement, l'Etat Burkinabè prône toujours l'appui à l'aviculture villageoise en maintenant les races locales mais il y a de véritables défis: l'offre ne satisfait pas la demande et" le poulet bicyclette" connais un envolé des prix passant de 1500 F CFA le poulet vivant à plus de 2000 les cinq dernières années.

- **Les projets de développement de l'aviculture familiale ont-ils influencé la politique? Si oui, pourquoi et comment?**

  Au Burkina Faso, depuis 30 ans, on est passé du projet de développement de l'aviculture villageoise au programme national de développement. le défi demeure le même: comment diminuer de manière importante la mortalité des pintadeaux et des poussins afin d'espérer avoir des adultes à l'âge de la vente en

nombre suffisant? Le projet d'acouvoir en gestation devait amener de vraies réponses; il faut aller vers une production industrielle de poussins.

De nos jours le programme d'appui aux filières agro-sylvo-pastorales (PAFASP) financé par la Banque Mondiale appui tous les acteurs de cette filière mais les effets risquent de tarder à venir si une stratégie plus pragmatique n'est pas adoptée.

- **Les gouvernements locaux ont-ils un rôle dans la promotion de l'aviculture familiale?**

  Oui, surtout les communes et les régions, au Burkina Faso, de la seule foire de volaille connue à Poa dans la Province du Boulkiemdé il ya plus de quinze ans, on dénombre maintenant une dizaine de foires communales, provinciales et régionales de foires qui participent à la promotion de l'aviculture familiale; mais beaucoup reste encore à faire au niveau de la production.

Message No 50

Dr DIALLO Amadou Moctar
Chef du projet d'appui aux Organisations féminines par l'élevage d'espèces à cycle court dans le cercle de Kati au Mali, Bamako, Mali.
pafecmali@orangemali.net

Je donne tout à fait raison à EFQ. Les vaccins thermostables ont bien fait leur preuve au Mali et dans la sous-région depuis plus de 30 ans. C'est par excellence le remède miracle des petits aviculteurs à cause de leurs effets démonstratifs et immédiats. Outre cela, ils se caractérisent par

- leur prix abordable;
- leur application simple (une injection de 0,5 ml pour au moins 6 mois);
- leur nature inactivée, donc beaucoup plus thermostable;
- leur conditionnement en 100 doses adapté, qui a l'avantage d'éviter les gaspillages.

Il faudrait juste que les vaccinateurs s'organisent notamment en recensant le cheptel avant de s'approvisionner. Les vaccinateurs dynamiques et compétents peuvent couvrir d'autres villages voisins en plus du leur.

Message No 51

Dr. Muhammad Sajjad Khan
Professor, Department of Animal Breeding and Genetics, University of Agriculture Faisalabad, Pakistan.
drsajjad2@yahoo.com

Dear Eric,

Good to hear that anything like this (thermostable ND vaccine not requiring cold chain) is available. Many of us (as indicated by Dibungi) involved in FP and indigenous chicken production efforts need such information and sources of such vaccines. It will resolve one of the major bottlenecks of chicken raising at village level. And of course getting/spreading new information is one of the objectives of

such forums. I will restrict myself from getting into a debate on the issue because it will distract the debate being carried out at the forum. Pl. share the information.

Message No 52

Sujit Nayak
Department of Animal Husbandry, Dairying & Fisheries, Government of India, India.
sujit.nayak@nic.in

Dear Moderator,

I would like to respond to the views of Dr. Saleque on immensely successful BRAC model for FP. The fact that the value chain is too long in case of indigenous chicken with higher no. of middlemen leading to low remuneration to primary producer and high price for consumers is very worrisome. However with suggestions for the government to take an active role in the promotion of both core and services markets, I wonder what would be the turning point when we decide that FP should be more economically viable/ sustainable in a more commercial way rather than sticking to basic objectives of supplementary income generation and family nutrition?

Message No 53

Dr. Victor E. Olori
Aviagen Limited, Newbridge Midlothian, EH28 8SZ, Scotland, UK.
volori@aviagen.com

Hello Brigitte,

There is lots of experience from the Department of Animal Science, Obafemi Awolowo University, Ile-Ife in Nigeria, in the housing of indigenous chicken in floor pens indoors. For my Masters project, We practically collected various strains of indigenous chickens from several regions of Nigeria as foundation stock from which we derived what we called ecotypes (two distinct ecotypes) based on growth performance. These birds were confined and fed commercial feed through several generations to allow us study the growth characteristics of the chicks produced from the foundation stock as well as the eqg production and quality. Two journal papers, one world congress paper and one MSc Thesis were published on this. See below.

So yes it is feasible and perhaps economical to confine indigenous chickens and feed them commercial feed as supplement especially if one has the labour and land to allow them out into a fenced area at night. This depends of course on a ready market and people willing to pay a good price for the birds at the end. It is also feasible and highly economical for the small scale rearing of fast growing commercial strains also with feed supplementation and access to outdoors and this has been practiced by many people in rural areas especially targeting key festivals in an all in all out system. It is key to stress that where I have seen this done, the people have been careful never to mix the indigenous and the commercial birds in the same pen. Smart I would say.

I quite like this model and it would be interesting to know more about the work going on in Swaziland

1. Olori,V.E. (1994). Quantitative variation in the Nigerian Indigenous Chicken: Juvenile growth characteristics. *Proc. 5th World Congress on Genetics Applied to Livestock Production (WCGALP) Guelph, Canada*. Vol. 20: 417 - 420

2. Olori, V.E. and Sonaiya, E.B., (1992) . Effect of length of lay of Nigerian indigenous chickens on their egg composition and shell quality. Nigerian Journal of Animal Production Vol. 19; 95-100.
3. Olori, V.E. and Sonaiya, E.B., (1992) . Composition and shell quality of white and brown eggs of the Nigerian indigenous chicken**.** Nigerian Journal of Animal Production Vol. 19; 12-14.
4. Olori, V.E. (1992) Evaluation of two ecotypes of the Nigerian indigenous chicken. MSc. Thesis, Obafemi Awolowo University, Ile-Ife, Nigeria.

Message No 54

Sujit Nayak
Department of Animal Husbandry, Dairying & Fisheries, Government of India, India.
sujit.nayak@nic.in

Dear Moderators and fellow Contributors,

I would like to share some views on Influencing policy for family poultry:

- **What should be the purpose of family poultry policies?**

  FP policies should work out the roadmap where the socioeconomically disadvantaged / poorest of the poor could use FP as a potent tool for livelihood and women's empowerment

- **Is policy changing a prerequisite to steer family poultry development towards meeting the needs of the poor?**

  The dynamics of poverty and resource accessibility is ever-changing; we have to possibly re-program various aspects with newer advances in technology & research and also increase participatory approaches. Policy accordingly has to adapt.

- **What can policies do to support family poultry?**

- **How much importance has been given to family poultry in the current poultry development policies and what needs to be done to influence that?**

  Policies can lay the milestones and as reflected by many contributors, create an enabling environment for the FP.

  Government of India has taken into cognizance the immense importance of FP and is implementing a program on FP. This, however, may need many interventions along the way.

- **Have family poultry development projects influenced policy, if so, why and how?**

  FP in Bangladesh, Africa and FAO programs have indeed influenced policy in India who were into the research since long (since 1990s) and were building capacity for production of low-input birds, but could launch a nation-wide program only as late as 2009. Notable is the fact that this was despite the fear of Avian Influenza in the backyard flocks- thus the importance of FP is self-explanatory.

- **Have needs and priorities of the commercial poultry industry negative impacts on the policies for family poultry?.**

Of course, with biosecurity, food safety, international trade, SPS issues, there will always be a negative impact but as some contributors said they may complement each other as well. However, it is to be seen whether the urge to sustain and flourish further with higher yielding poultry would bring some transitory farmers on crossroads with commercial poultry conflicts.

- **What arguments and facts are required to achieve pro family poultry policies?**

  Livelihood, poverty alleviation and women's empowerment should be enough motivators, if properly presented and policy-makers are convinced.

- **Who are the stakeholders that should work for smallholder friendly poultry policies?**

  Central and local Government are the biggest stakeholders with social responsibilities. Self-Help Groups and NGOs (decentralized) play the crucial role in ground implementation. University and Research institutions provide important backward and forward linkages. However, some of the private low-input bird suppliers in India are playing a vested role like vertical integrators where they ensure supply of birds to the farmers' doorstep and also the healthcare. If niche market develops they even (and in case of eggs already doing)may buy back the produce.

- **What can international organizations and institutions do to achieve FP friendly policies?**

  Networking and knowledge sharing facilitated by International Agencies across different countries and continents are proving a great boom for extrapolating and replicating the experiences.

- **Is there a role of local Governments in promoting family poultry?**

  Family poultry without help of Local Government would not sustain as all aspects from IEC to training will have to be supported by them.

Message No 55

Dr. S. D. Chowdhury
Professor, Department of Poultry Science, Bangladesh Agricultural University, Mymesingh 2202, Bangladesh.
drsdchow@gmail.com

In response to a message received from Dr. Bagnol Brigitte (Message No 40), I would like to express my view in relation to the topic 3 Competing or complementing commercial poultry production systems and to policy issues.

Confining indigenous chickens in a house at night and in a fenced area during the day is possible. The indigenous chickens can also be raised in total confinement (intensive system). It is true that feeding them with a balanced diet either home-made or industrial feed will be needed in such a situation if we want to maximize production either meat or egg. I am currently involved in a research project entitled "Development of indigenous (*desi*) chicken as a meat type bird through improved nutrition and management" funded by the Ministry of Education, Bangladesh. We have already completed the first phase of our work by raising chicken in intensive system by providing diets of different nutrient densities. Since demand for indigenous chicks for meat purpose is between 750 to 950g and they usually priced

higher (slightly higher than double the broiler), we had our target weight of 750g and 850g in two separate trials. While all birds were on similar plane of nutrition for the first 3 weeks, they were fed different treatment diets (diets of different nutrient densities) up to target weights. We have been able to achieve 740g against 750g target at 11 weeks with a FCR of 3.46 calculated on weight gain during 4 to 11 weeks by feeding 2800 kcal ME/kg and 23% CP. In a different flock, we achieved 849.8g, our expected target in 12 weeks with a FCR of 4.26 calculated on weight gain basis during 4 to 12 weeks by feeding the same diet. Our next experiment with a separate flock is in progress and the target is now to achieve 950g. Depending on our findings, we will test our results at farmers' households by rearing birds under both extensive and intensive conditions, in the next phase of our project. Different levels of supplementation with home-made balanced feed for scavenging birds will also be examined in addition to cost benefit analysis of such efforts.

I am pleased to let the participants know that Dr. M. A. Saleque of International Network for Family Poultry Development visited our flocks at project site when he came to Bangladesh Agricultural University.

Like the situation in Swaziland, we would like to conserve native germ plasm to create an asset of our own for which there is already a special market. We have also our target to train up farmers so that they can apply our research findings in due course. I also agree with Dr. Bagnol Brigitte that there should be multiplication centre from where farmers are able to purchase chicks after 3 weeks of age. It may be mentioned here that one of my research projects with scavenging indigenous ducks of Bangladesh is nearing completion, the results of which are very much encouraging and could be shared with participants in future, if necessary.

I would like to see family poultry production as a complementary to commercial/industrial production and policy makers should adopt policies accordingly.

Message No 56

Dr. Salissou Issa
Dept of Animal Productions, INRAN, Niger.
salissouissa@yahoo.fr

Dear Participants,

I would like to say I agree with Dr. Sujit Nayak, and I have just added few comments.

1. **What should be the purpose of family poultry policies?**
    - FP policies should work out the roadmap where the socioeconomically disadvantaged / poorest of the poor could use FP as a potent tool for livelihood and women's empowerment.
    - FP policies should work to promote sustainable poultry production in countries with low population (Sahelian countries).
2. **Is policy changing a prerequisite to steer family poultry development towards meeting the needs of the poor?**
    - The dynamics of poverty and resource accessibility is ever-changing; we have to possibly re-program various aspects with newer advances in technology &

research and also increase participatory approaches.

- Policy accordingly has to adapt. I think we should use the paradigm of IAR4D (Innovation platforms and value chains analysis) in developing FP.
- In addition, we should encourage research that promote the use of thermo-labile vaccines, FP poultry workers training, local alternatives feedstuffs (grains, legume trees pods, etc.), and reduce chicks mortality in especially guinea fowl in Niger and Burkina Faso.

3. **Have needs and priorities of the commercial poultry industry negative impacts on the policies for family poultry?**
   - Of course, with biosecurity, food safety, international trade, SPS issues, there will always be a negative impact but as some contributors said they may complement each other as well.
   - For example, in Niger a new private hatchery is supplying small family producers thus contributing to FP development.
4. **What arguments and facts are required to achieve pro family poultry policies?**
   - Livelihood, poverty alleviation and women's empowerment should be enough motivators, if properly presented and policy-makers are convinced.
   - In addition, in countries which are traditionally livestock (ruminants) producers we can argument with reduction of poultry product imports, contribution to labor provision , and health aspects (less cholesterol in poultry meat).

Message No 57

Auvijit Saha Apu
Assistant Professor, Department of Animal Breeding and Genetics, Bangladesh Agricultural University, Bangladesh. auvijit_bau@yahoo.com
Dear All,

Thanks a lot to the moderators for arranging the e-conference in the present issue. I would like to contribute in the theme of week 3 in the following way:

1. Women empowerment through sustainable family poultry development.

Development of family poultry makes a significant contribution to the women's empowerment. Women usually rear family poultry as a source of extra income which can contribute to maintain their family. Sometimes selling of eggs help them to bear the educational expenses of their children or buy daily necessities. As the women can contribute to the family, so, her contribution in the decision making in the family increased. Besides the rearing of poultry, a large number of women vaccinators were trained by the NGOs to gear up and monitoring the activities of poultry rearing, vaccination and build up awareness among the mass people of Bangladesh to the grass root level where it is not possible to reach by the govt. staffs. According to the documentation of the work in BDGP01 of SAPPLPP (2009) (www.sapplpp.org), the following contributions of women were observed:

- 19,900 trained women vaccinators got a sources of extra income from vaccination

- Reaching out to over 2.47 million women poultry rearers in all districts of Bangladesh.
- Poultry mortality reduced from 21.3% to 7.6% in just one year.
- Annual income of poultry rearers between Tk 400 to Tk 2919.
- Family consumption of eggs raised from 43 to 186 and meat from 1.6 kg to 16.7 kg per year (SA PPLPP, 2009)

However, being a poultry vaccinator not only provides self employment opportunity but also generates community respect, empowerment, self confidence and dignity among the women involved. Furthermore, money in hands of women tends to also bring educational and nutritional benefits to children.

But some constraints for contribution of family poultry to women empowerment also revealed that there need to be training and also the transfer of technologies in time to the hand of the women poultry rearers because they are mostly remain out of network especially in developing countries. Disease is one of the major constraints for family poultry, so effective vaccination measures should be ensured. Moreover, development of marketing system will encourage them to rear more number of chickens and get actual price and become profitable. From my experience, I observed that family poultry development have no negative impact rather have significant positive effect. Women and sometimes their children remain in charge of taking care of them. Moreover, as they rear scavenging chicken, they need less attention and it does not increase their workload anymore. The reports of the past projects implemented in Bangladesh showed that family poultry rearing had a significant positive impact on increase of family income and women's empowerment. So, to promote family poultry, holistic approach should be taken and the interested farmers who wish to rear family poultry should be selected irrespective of gender, cast or class.

2. Influencing policy for family poultry.

Though a lot of discussion is in the ground and research have been done in the recent days but attention in family poultry development in the current poultry development policies is still low. Moreover, the implementation of the policies is very much slower beyond the expectation. So, specific issues should be included in the policies to promote the family poultry in the households and gear up and monitor time to time for its effective implementation.

Message No 58

Dr. Mamta Dhawan
Programme Manager, South Asia, GALVmed, (Global Alliance for Livestock Veterinary Medicines), 201, Regus Level 2, Elegance Towers, Mathura Road, Jasola N.Delhi 110025. mamta.dhawan@galvmed.org

Dear All,

I have been following this interesting and informative discussion and would like to share my views especially on the ND control in backyard poultry through vaccinations.

Since ND causes huge losses to small poultry farmers, mostly women, its control in South Asia through vaccination is paramount. There are three issues here-

- Appropriate vaccine ie thermo-stable, small pack size
- Awareness amongst farmers to vaccinate their flocks
- Delivery mechanisms in place

Despite I2 and V4 vaccines available and used in BY poultry both in Africa and a few South East Asian countries, it is not allowed in India due to regulations that do not permit a foreign strain to enter the country. Hence GALVmed is currently supporting research on D58 thermo-stable vaccine suitable for Backyard poultry in Indian Subcontinent. Indigenous ND strain- D58 was developed in TANUVAS, Chennai in India and field trials of pellet vaccine produced here has so far given promising results as it is found suitable for Indian rural conditions. Detailed report would be published shortly and vaccine production moved to a commercial partner.

In order to create a model that ensures ND vaccination in BY poultry that is sustainable, the supply line has to be viable and each stakeholder should make a decent profit to remain in the system. The Animal Husbandry department has constraints of resources and manpower to reach small poultry farmers spread wide topographically, and this gap can be bridged by trained community animal health workers. Since ND is endemic in the region, vaccinations need to be carried out regularly, every three months for Lasota and every 6 months for R2B. Ongoing GALVmed ND Pilot projects in Orissa and Nepal have shown that once farmers see value in vaccinating birds against ND, they are ready to pay both for services and vaccine that would ensure a small income for the community animal health worker and vaccine retailer for the system to sustain!

Message No 59

Eric Fermet-Quinet
efq@laposte.net

Dear All,

As I have told several times for the last 10 years in different forum and conferences, the first sustainable experience well documented about ND vaccination in rural family poultry dates 1978 in Burkina Faso.

Today, my information is that there are around 30 millions rural chicken vaccinated per year on that way mostly in West Africa and also in the rest of the world. **Since 35 years,** many other vaccination programs have been implemented with the same vaccination strategy.

- Type of vaccine: **inactivated injectable vaccines** (brand names such as Itanew, Newcavac, Immopest,...). Many companies produce this type of vaccine. Better to check quality (international standards) and relevant strain (even if many cross immunity are possible). **ALL INACTIVATED vaccines ARE THERMOSTABLE BY EXPERIENCE**.although it cannot be written and partern as such. The advice is keep them in the fridge at veterinarian level, then the farmer can use it in the village during several weeks (usually we say 2 weeks in a fresh place (water pot)). Experience shows that thermostability is very good anyway. I proposed several times to make scientific experiences, but they were never financed.
- Injectable**, is the easiest way.** Everybody can make an injection in poultry

breast muscle. No risk of missing the dosis or point.

- **easiest dosis to inject is 0.5 ml** because most syringes have this type of graduation (better than 0.3 ml which need an insulin type syringe)
- **A single shot, without any booster, is enough to protect the flock or population.** It is done ideally 2-3 months before the epizootic season (usually windy or cold season). All poultry more than 1-2 months old are vaccinated. The immunity last at least 6-8 months. It is quite enough to protect a population and decrease drastically the death toll.
- Then after years, some people may like to do 2 injections per year for reproductive flocks.

The strategy of implementation which is successful and sustainable is when the veterinarians buy and sell the vaccines to farmers which have been sensitized and trained to do vaccination on their poultry and those of their neighbors/village/community.
The only public cost is massive advertising and communication.
Usual cost is for the farmer around 0.1 USD/poultry. It is very profitable as poultry are usually sold 6 months later at around 3 USD.
The only added information that could reduce again mortality is "protection of chicks" against predation.

All this is well documented in a CD ROM called "health and protection of village poultry" published by African Union International Bureau of Animal Resources and French Cooperation.
If you want this CD ROM, I can try to upload and send it. Hope this could help.

Message No 60

Dr. S. D. Chowdhury
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Single versus multiple (integrated) interventions for sustainable development of family poultry.

Are interventions in family poultry production systems required or are they so well adapted sustainable systems that they should continue as they are?

I think interventions in family poultry production systems are required to augment production which is essential for more income generation. Such interventions should be aimed at developing a well adaptable sustainable production system acceptable to the FP farmers. Since this is the main challenge, access to indigenous birds with interventions, local SFRB and other available facilities should be ensured.

Do holistic interventions (integrating health-genetic improvement-feeding-marketing) obtain better results in family poultry development than single interventions in one field?

There is no doubt that holistic interventions in terms of integrating health-genetic improvement-feeding- marketing will yield better results but we should aware of limitations affecting such approaches under local situations. Local scientists can better assess local situation and can go for intervention (single or multiple)

accordingly in order to make efforts successful and sustainable.

Single vs. multiple interventions - What are the costs and benefits?

Nature of intervention will determine costs and benefits. Taking an example of single intervention, say improvement in diet, cost incurred for it must be justified. Supplementary feeding for scavenging (foraging) birds in contrast to full feeding in total confinement should also be cost-effective. In general, the output achieved in terms of meat or egg must be justified over the cost of intervention made for it. Again, this is also challenging but may not be difficult.

How should interventions for family poultry deal with the need for supplies and access to the market?

Family poultry has already access to the market. It is unlikely that interventions for improved productivity will affect marketing so long the product retain their original quality as they are now. Researchers in marketing/agri-business sector may deal with interventions that matches need for supplies and access to market.

Do all interventions require investment in skill building for family poultry producers?

Not necessarily. Basic education is a must as the farmers will be dealing with science and this could be well followed with training. Skill will develop with the advancement of farming which he/she will share with other FP farmers.

Message No 61

Sujit Nayak
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Dear Moderators and Contributors,

I find Dr. D.P. Singh's observation very interesting and relevant. Integration with horticulture and almost symbiotic relationship with Banana & Guava orchard by controlling the problem of insects and pests by up to nearly 60 - 80% is really noteworthy. I would like to share the picture of poultry in the banana orchard, which I took during one of my visits to the field in Bihar and I was unaware at that time how the nature's bounty is best used by both animals and plants. This makes me realize that there are so many things to learn.

Scavenging in banana orchard

E-conference of the International Network for Family Poultry Development (INFPD) in collaboration with FAO and supported by the International Fund for Agricultural Development (IFAD)

Strategic interventions for Family Poultry
What can be achieved through Research & Development activities

PART III

Summary and conclusions

Prepared by
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Contents

List of Acronyms

BPL	Below poverty line
CPS	Commercial Poultry System
DOC	Day Old Chick
FPS	Family Poultry Systems
HPAI	Highly pathogenic avian influenza
ND	Newcastle disease
R&D	Research & Development
SFRB	Scavengeable Feed Resource Base

1. Executive Summary

Discussions, which were conducted in three languages (English, French and Spanish) on the theme "Strategic interventions for Family Poultry – What can be achieved through Research & Development activities", focused on the following eight major issues under the subtopics:

1. The contribution of research to the development of family poultry production systems.
2. The development for livelihoods through family poultry — cost and opportunities.
3. Competing or complementing commercial poultry production systems?
4. Single *versus* multiple (integrated) interventions for sustainable development of family poultry.
5. Good organizational models for sustainable family poultry development.
6. Women empowerment through sustainable family poultry development.
7. Influencing policy for family poultry.
8. The future contribution of INFPD and other networks to family poultry development.

In discussing the first subtopic of the conference (What is the contribution of research to the development of family poultry production systems?), there was agreement among the participants that family poultry research, though not taking place in all the countries that need it most, contributes to the development of family poultry systems (FPS) as shown most clearly in India, Bangladesh, Pakistan and other countries in Asia, and in Burkina Faso, Senegal, Mozambique, Tanzania, Togo and other countries in Africa. The greatest results were obtained in the development of new genetic breeds, strains and hybrids particularly in Asia, where breeds were reported coming from India, Sri Lanka, Indonesia etc. Different supplementary feeding resources and thermostable vaccines (V4, I2, D58) were investigated and sustainable vaccination protocols were developed. It should be mentioned that a significant number of research and development (R&D) activities were supported by donor funds from outside the recipient countries. This is an important point that retards research from being done in sufficient quantity and quality and makes application of the results (i.e. development) more difficult. There is need to promote FPS R&D with in-country funds and to link such activities with the national extension system.

Discussants of the second subtopic (The cost and opportunities of family poultry development for livelihoods) agreed that livelihoods, especially of women and children, benefit from keeping family poultry. The issue of sustainability was raised and the threat to FPS posed by rising urbanization and changing lifestyles was also countenanced. The opportunities for FPS from organic farming tendencies were highlighted and the warning sounded of the danger of extinction of native breeds due to FPS development schemes. FPS will contribute more to livelihoods if cooperative activity and micro-financing help to diversify farming business.

In addressing the third subtopic (Is family poultry competing with or complementing commercial poultry?) participants indicated that the two systems may pose dangers to one another. For example, during the highly pathogenic avian influenza (HPAI) epidemic, a lot of FP birds were destroyed as they were seen as a source of the virus. On the other hand, the high consumer preference for FP in most countries trims the market for commercial poultry among certain consumers. On the positive side, the advances made in commercial poultry systems (CPS) benefit family poultry systems (FPS) while the "green or organic" name of FPS gives CPS more

acceptability than other livestock products. This tension between the two systems may not go away and may be beneficial to both systems.

Subtopic 4 (Single *vs.* multiple intervention) was decided in favour of integrated interventions. Where resources were limiting, it was recommended that single interventions be sequential in an additive way. It was agreed that the priority should be on health (with housing) and nutrition before genetic intervention. A value chain approach was recommended with emphasis on market development, input supplies and training as well as access to credit and markets.

On subtopic 5 (Good organizational models for sustainable family poultry development), different models were identified. The "African model" is based on vaccination as the lead intervention but in a holistic programme. The "Asian model" adopts a more market-based approach with the private sector (commercial and NGO) playing a prominent role in model implementation. A "Latin American model" was mentioned but details were not provided. Three other models were listed arising from private companies, international development assistance and even individuals and institutions. Successful and sustainable models shared a common interest in value chain approach and group involvement.

Discussants did not hesitate to state that subtopic 6 (Women empowerment through sustainable family poultry development) was a real issue and gave examples of how women were empowered through FP. The most significant empowerment occurred when women acted as vaccinators and poultry advisers which assured them an income and enhanced prestige within the village and greater opportunities to have a say in family decision making.

The role of policy in FP development (subtopic 7: Influencing policy for family poultry) is becoming clearer. Examples from FP programmes in countries like India, Ethiopia, Uganda and Swaziland confirm the influence of generating the right policies. Discussants mentioned international organizations and programmes (e.g. FAO, IFAD, ILRI, World Bank, INFPD, DAD-IS) to have influenced policy on FP in various countries. Some countries (e.g. Indonesia) have developed a policy against FP (in the wake of the HPAI epidemic) which is neither to be encouraged nor emulated.

The final subtopic (The future contribution of INFPD and other networks to family poultry development) stumped most participants. However, the clear influence of INFPD and other networks on the development of policies and programmes in developing countries shows the way ahead. There is need for INFPD and other networks to collaborate more closely with country level policy makers for the benefit of FP development.

2. Introduction

The UN General Assembly has declared 2014 to be the International Year of Family Farming. To mark this important initiative, FAO plans to publish in 2014 a major study on family farming and agricultural innovation systems (AIS) in its State of Food and Agriculture (SOFA) series, which is FAO's major annual flagship publication. Our network, INFPD, can claim that we have been paying attention to family poultry farming for the past twenty years. As part of INFPD's IFAD-funded and FAO-implemented project, a series of three electronic conferences was held between January 2011 and June 2012. This third and last e-conference, held from 28 May to

15 June , had the theme "Strategic interventions for Family Poultry – What can be achieved through Research & Development activities".

During the 3 weeks of the e-conference, the least number of interventions came in the first week with a total of 11 interventions from 8 different countries (Belgium, Canada, India, Tanzania, France, Senegal, Nigeria and Indonesia) 2 in Europe, 2 in Asia, 1 from North America and 3 from Africa. There were 3 interventions from India and 2 from Canada during this first week. The second week saw the greatest number of interventions; a total of 24 interventions from 15 countries (Belgium, Ecuador, Australia, Angola, Bolivia, Bangladesh, Togo, India, UK, Sri Lanka, South Africa, Burkina Faso, Mali, Pakistan, Indonesia) 2 from Europe, 2 from South America, 1 from Oceania, 5 from Africa and 5 from Asia. There were 6 interventions from India, 2 each from UK, Bangladesh, Australia, Angola and Togo. In the third and final week, there was a total of 22 interventions from 12 countries (South Africa, Bangladesh, Niger, India, UK, Pakistan, Burkina Faso, Mali, France, Swaziland, Botswana, Turkey) 6 from Africa, 3 from Asia, 3 from Europe, 5 from India and 3 from Bangladesh and 2 each from South Africa, Burkina Faso and Swaziland.

In all, there were 61 interventions, not including those from the 3 moderators, from 24 countries (Angola, Australia, Bangladesh, Belgium, Bolivia, Botswana, Burkina Faso, Canada, Ecuador, France, India, Indonesia, Mali, Niger, Nigeria, Pakistan, Senegal, South Africa, Sri Lanka, Swaziland, Tanzania, Togo, Turkey, UK)- 11 from Africa, 5 from Asia, 4 from Europe, 1 from North America, 2 from South America, and 1 from Oceania. The greatest number of individual interventions (9) came from Sujit Nayak from India. Clearly, the conference was well attended and tackled the topic adequately.

3. Summary of the conference topics

The conference assumed that the participants had a common understanding of family poultry but it was soon clear that there is a need to define or redefine the term. **Teno** (3[3]) drew attention to the problem that the term raises confusion as to whether it refers to "small scale with exotic species" or "traditional with local species" and he proposed that the term be re-examined and clearly defined. **Rangnekar** (5) posited that "FP is 'producer centered' in the sense that the *'producer does not have to approach retailer or consumer for sale but they approach the producer'*. While the producers may get lower prices for the products they consider the savings in drudgery/hassle/time/energy spent on selling the product, which savings are used for other livelihood activities". The point he is making is that resource-poor people depend on many risk-aversion methods including FP and that many activities in FP development may be shifting FP away from low external inputs and so increasing risk to the resource poor. The issue of definition of which poultry production systems qualify to be included in family poultry is still very much unsettled. Thieme et al. (2012, pers comm.) recommend that FP should be understood to include 4 production systems – small scale extensive scavenging, extensive scavenging, semi-intensive and small scale intensive - with a pointer to the last three as of interest because they are open to interventions (scientific, technological and economic) since they have the objective of higher productivity and income. This should be borne in mind as the discussion during the conference is reviewed.

[3] The numbers given with the references refer to the list of messages prepared from the contributions to the e-conference.

3.1 The contribution of research to the development of family poultry production systems.

On this subtopic of FP research and its effect, there was a surprising harvest of information. From Africa, **Mwambene** (2) identified research areas in FP in Tanzania as mainly focused on locally available feed resources, animal health and production as well as on their socio-economic contribution at household levels but not on genetics. This is a surprising claim as important work on the genetics of local chickens in Tanzania has been done at the Sokoine Agricultural University in Morogoro, Tanzania. **Traore** (6) from Senegal observed that from the creation in 1962 of the Centre Nationale Aviculture/ Mbao, it focused exclusively on CPS until FAO and INFPD began to draw attention to FPS in the 1990s. Since then, diagnostic or baseline surveys have identified health (Newcastle Disease - ND) as the first constraint, then feeding, lack of or inappropriate housing and lack of organization of value chain actors. Research results have given ND treatment calendar, thermostable vaccine (I-2) and proper usage of liquid vaccines. Along with health, research has also resulted in improvement in genetics, feeding, housing and marketing. **Ekoue** (20) in Togo, drawing on experience from 3 projects - Projet de Développement du Petit Elevage dans la Kara (PRODEBEKA), Projet Sécurité Alimentaire/ Diversification (PSA/D), and Projet d'Appui pour l'Elevage Familial (PAEF) implemented by Agronomes et Vétérinaires sans Frontière (AVSF) - identified research as touching on feed and health which have been used in regional and national poultry development plans. Later, research began to focus on characterization of local poultry genetic resources. He observed that many countries have evaluated the phenotypic characters but these have been complicated by the many waves of cockerel exchanges carried out in these countries. It has been noted that cockerel exchange started in West Africa in the early 19th century and has continued unabated till the present. **Pousga** (21) from Burkina Faso agrees that research topics in the poultry sector in general and the family poultry sector in par ticular were mainly based on the nutritional aspects and little attention was given to other research topics such as genetic selection and health status. She recommends further research focusing on poultry production systems suitable for resource-poor people in Burkina Faso. **Swatson** (22) from South Africa reports that the application of research and development activities has had an impact on family poultry production in South Africa mainly through lowered effects of diseases due to improved poultry husbandry practices, supplementary feeding and adherence to a basic poultry health program. Overall, he reports, this has resulted in a 79% increased survivability and a 23% improvement in live weight at 20 weeks of age, an age at first egg of 126 days, a total number of 4 to 5 clutches of eggs of about 47g, and an average of 12 to 15 eggs per clutch produced over a 12 month period.

From Asia came clear report of FP R&D effect. **Rangnekar** (8) and **Nayak** (16) informed that the major contribution of FP research in India has been to develop 'low input varieties of birds (synthetics/hybrids)' that look like indigenous birds and need low inputs. The Indian Council of Agricultural Research-ICAR (as the nodal research agency) has, over the years supported the Central Avian Research Institute (CARI) in the development of the following breeds: Nirbheek (Asil x Naked neck), Shyama, Debendra, UPCARI, HITCARI (Aseel x CARI Red); the Project Directorate on Poultry to develop Vanaraja and Gramapriya. The Central Poultry Development Organization of the Government of India has also developed Kalinga Brown, Chhabro and Colored Crosses (Kaveri). Some veterinary universities have also developed local genetic resources as follows:

e) Sri Venkateswara Veterinary University, Rajendranegar, Hyderabad, Tirupati developed Rajasri;
f) Karnataka Veterinary, Animal & Fisheries Sciences University, (KVAFSU) developed Swarnadhara, Raja II, Giriraja and Girirani ;
g) Kerala Agricultural University, Mannuthy developed Gramslakhmi, Gramrshree and Krishipriya;and
h) Tamil Nadu University of Veterinary and Animal Sciences (TANUVAS) developed Nandanam 99.

Some private organizations in India have also developed and marketed birds suitable for FP, e.g.:

a) M/s Kegg Farms, New Delhi developed Kuroiler;
b) Dr. Yashwant Agritech Pvt. Ltd. Jalgaon, Maharashtra developed Satpuda Desi and
c) M/s Indbro Research and Breeding Farm Ltd., Hyderabad developed Rainbow Rooster

These varieties were recommended for distribution under government schemes for development of family poultry. Research for developing low cost housing based on local material was also done and was most welcome by family poultry producers in India.

Similarly, in Pakistan (**Khan**, 17), the development of new breeds of chicken was one of the major research areas in the 1960's; and in Sri Lanka (**Gamage**, 24) local breeds with different body sizes were developed, i.e. Giriraj and Vanaraj. **Chowdhury** (28) gave examples of FP research done in Bangladesh to include nutritional supplementation of home-made balanced feed for indigenous laying ducks to improve egg production. He pointed to research in progress on supplementation level during scarcity of the Scavengeable Feed Resource Base (SFRB) and on the nutritional requirements of common indigenous chicken in confinement up to 12 weeks. **Singh** (47) was able to conclude that FP research has contributed significantly to the changes and development of (i) Scavenging systems, (ii) Semi-intensive system and (iii) Small-scale intensive system. Since the improvement in each system opens the way for new challenges, further research is required for the sustainability or further development of each system.

Kaphle (1) thinks that some changes, e.g. increasing flock size, make old R&D methods obsolete and points needed research towards marketing and commercialization. **Uwizeye** (11) concurs and listed the following as areas important for FP research to contribute to poverty reduction: marketing flows, the fixation of price, permanent availability of poultry products on market, reduction of intermediaries in the value-chain.

Gilchrist (13) wants to refocus FP research from specialized professional areas (such as genetics, health and nutrition) into the more generalized area of project planning. He listed research topics that are no longer needed to include: indigenous breeds (not the responsibility of development aid funds), local feed ingredients (whose composition is known and thus their nutritional value can be assessed) and specialized vaccines (since effective commercial vaccines are available). See debate with Eric Fermet-Quinet on vaccines later.

Khan (17) says doing FP research is not a priority because things are assumed to be available for indigenous chickens and it is assumed that everything is already known from keeping commercial chickens and so, doing research on non-commercial (i.e. scavenging) poultry is less favoured by the commercial poultry companies, the major

employers of graduates in (animal) poultry science. He alludes to the shortage of publishing outlets for such basic FP research and points to the lack of collaborative research in family poultry science / production / breeding / nutrition / veterinary / economics/ social science as major bottlenecks to FP development.

3.2. The cost and opportunities of family poultry development for livelihoods.

The conference participants indicated that this subtopic canvasses a mute point which was self evident or that there has not been enough data collected to make hypothesis or draw conclusions. Hence the leading questions posed by this subtopic should form the basis for future research.

Kaphle (1), writing from Canada, highlights the dim prospects for livelihoods thru FP due to diseases, high cost of feed materials, reluctance of younger generations to continue with farming or to live in the rural area. He holds out cooperatives as the only way FP can contribute to livelihoods. **Rangnekar** (5), writing from India, maintains that there is a strong linkage between FP and livelihoods. He observes how quickly families re-stock their flocks after these get wiped out by calamities like floods, earthquakes or disease epidemics. He insists that FP contribution to family "nutritional security', ranges from "small" to 50%. From this view point comes his assertion that the current emphasis on hybrids distribution for FP development is "killing" local genetic resources because the supply of chicks of new varieties (synthetics or hybrids) developed by Government or private units is heavily subsidized but there is no support for the traditional family poultry system itself and the indigenous birds.** See Nayak's comments later.

Ekoue (20) reminds us that successful transfer of improved technologies usually require training and results in a practical demonstration of success. FP alleviates poverty via improvement in livelihoods as demonstrated by the local name "koklo" for the chicken in a local language in south Togo which depicts it as one that lifts out of poverty. **Swatson**, (22) wisely cautions that households must be responsible for their livelihoods, they must raise the necessary resources, organize the production of the chickens or chicken products (i.e feathers) as a special product that few people have and many want. He mentions an opportunity that exists in a pilot project in KwaZulu-Natal for associations of women from rural households to supply locally grown indigenous chickens to feeding schemes in targeted schools. **Uwizeye** (11) noted that branding and regular supply of FP products will be important for livelihoods while **Gilchrist** (13) wanted a planning approach to livelihoods development.

3.3. Is Family Poultry competing with or complementing commercial poultry systems?

Governments and commercial poultry industry in many developing countries are asking this question because commercial poultry is seen as very important in the agricultural sector in such countries while the need to support smallholders is increasingly recommending FP for intervention by the government and even the poultry industry.

Kaphle (1) does not think that FP competes with CP in a practical business sense because the lower prices of CP restricts access of consumers to FP, which is seen as a green or organic product, to a small, rich but aged section of the population. He

gives the example of "the hill station of Daunne, Nawalparasi (Mahendra Highway) of Nepal [which] is very famous for its local chickens, but now customers are shying away from that station as commercial chickens are sold in the name of local". **Teno** (3), on the other hand, posits that FP and CP compete for resources in addressing national food security but FP meets mostly socio-cultural and socio-mystical needs. Not surprisingly, he recommends very clear definition of FP and more research on small scale extensive scavenging poultry production system to steer it towards economical objectives.

Uwizeye (11) thinks that since CP are cheap and available throughout the year, FP can only compete if labels and urban markets are developed for FP products in order to avoid fakery.

Yahya (12), based on his experience in Indonesia where smallholder contract farmers are "squeezed" by the CP integrator, recommends that producers of FP, which he defines as small scale intensive poultry, should form cooperatives so as to compete with or at least escape from CP integrator. **Iskandar,** (15) provides the background to the Indonesian situation. With special dishes of native chickens (called Kampung in Indonesia) remaining so popular among chicken meat consumers, particularly in small and medium restaurants, keeping native chicken has been moving towards the intensive system so as to produce larger numbers of kampung chickens that reach market weight of 700 gram to 1.3 kg in 70 - 90 days of age. Kampung chicken producers' cooperatives are developing but there are problems of getting day old chicks (DOC) due to lack of kampung chicken breeding farms as there are at most 4 private breeder companies producing kampung DOC. Some small breeding farms are working to produce a hybrid by crossing male native with modern improved brown hens. In west and central Java, consumers pay less for these hybrids compared to pure kampung chicken. The Indonesian Research Institute for Animal Production (IRIAP) has developed an improved laying type kampung chicken, which achieves 50% hen-day egg production (HDP) and it has been taken up by one of the big private breeding farms for multiplication. It is to be noted that soon after the AI outbreak several years ago legislation was passed forbidding the development of breeds that are adapted to the traditional scavenging system, especially in the populated area. **Gilchrist** (13) believes that developing a niche market for FP is better than competing with CP for the general consumers.

Rangnekar, (8), says that traditional (i.e. small scale scavenging) family poultry units do not compete with CP for feed and are likely to meet food safety and even welfare standards as compared to commercial intensive poultry farms since they do not use growth promoters. It is not proper, he maintains, to compare low external input family poultry and high external input commercial poultry farms in an ad-hoc manner since each has a role to play in the different situations and regions of a developing country. According to **Nayak,** (16), as long as FP is meant for subsistence and no surplus production, requiring organized marketing, is envisaged, there is no question of competition with CP. Slowly however, private industry is becoming interested in this sector and it may not be long before this unorganized sector will also come under the ambit of semi-commercialized system. The commercial poultry industry in India has not criticized the Government program on family poultry, but with the food safety concerns, quality assurance norms, stringent export requirements etc., it is imperative to either keep these two subsectors segregated or devise measures to enable them to co-exist without any breach of biosecurity.

Ekoue (20) also opts for complementarities rather than competition as each type has its own production systems and different markets, e.g. exotic chickens cannot be

used for ritual ceremonies and there are households that do not eat exotic chickens due to the taste. In Togo, CP only meets 1% of the poultry consumption while FP meets the rest but with demographic explosion tastes may have to change towards the CP. **Swatson** (22) asserts that with the formation of the Developing Poultry Farmers Organization (DPFO) in 2011 and with the support of the South African Poultry Association (SAPA), all farmers regardless of whether they are large commercial poultry farmers or small family poultry farmers will receive technical and possibly organizational support. This is in recognition of the fact that family poultry production systems and commercial poultry production do complement each other to meet National Protein Food Security. This is also important in the holistic control of diseases such as Newcastle disease and Avian Influenza. In other situations small-holder poultry growers are contracted to grow for the large integrated operations.

Singh (47) concurs that the large-scale commercial and small-scale family poultry sectors need not be mutually exclusive, nor be in direct competition. Indeed, the commercial sector with its wealth of human, technical and financial resources might play a major catalytic role in promoting family poultry production as a practical and viable option for poverty alleviation. **Chowdhury** (55) refers to his current research project entitled "Development of indigenous (*desi*) chicken as a meat type bird through improved nutrition and management" funded by the Ministry of Education, Bangladesh. Since demand for indigenous chicken ('*desi*') for meat purpose is between 750 to 950g body weight when they are usually priced slightly higher than double the price of broilers, '*desi*' can be raised to achieve 750g body weight at 11 weeks with a feed conversion ratio (FCR) of 3.46 and 850g body weight at 12 weeks with a FCR of 4.26 and still be profitable. Hence on a marketing level, FP and CP do not compete.

3.4. Single versus multiple (integrated) interventions for sustainable development of family poultry.

Majority of participants did not respond to this question as most of us have learnt from experience that success comes with integrated rather than single interventions. **Rangnekar**, (5) opens the short discussion as follows: "Regarding the choice between genetic resources, feed, and animal health for highest degree of improvement, at a lower cost, it is not possible to achieve high degree of improvement with a single intervention. Mono intervention, e.g. breeding, is a reductionist approach to be avoided. FP development is as complex as for other livestock and success depends on the rapport and credibility of the development organization". **Thakur** (14), while not disagreeing, alludes to a World Bank funded ICAR NAIP project on biodiversity conservation and sustainable livelihoods through agro-livestock interventions which focused on genetics mainly - used the local poultry germplasm with selective breeding to develop improved indigenous birds which were reintroduced back to farm families with great benefits to them.

Nayak (23) reminded us that interventions should be need-based and so may be single or multiple. However, a holistic approach may definitely be better if costs are not a constraint and it is applied on a large scale to attain economies of scale. Every intervention requires training as there is little awareness about taking care of birds, identifying unhealthy birds, reporting of unusual mortalities and often FP owners have no skills whatsoever in certain areas like marketing, exchanging birds with neighbours to introduce heterozygosity, white-ant feeding and rice-husk egg-hatching (in some areas), etc. Similarly, **Chowdhury** (60) concurs that there is no doubt that holistic interventions will yield better results but we should be aware of

limitations affecting such approaches under local situations and allow local actors to assess and choose the interventions (single or multiple) accordingly in order to make them successful and sustainable.

Ekoue (30) wrote: In Togo, for example, keeping the birds alive is the first concern, then feeding and housing before phenotype and genetic characterization. A housing model (rectangular or round cage) called Improved Traditional Cage was developed through the Projet Appui à l'Elevage Familial (PAEF) implemented by the NGO Agronomes et Vétérinaires sans Frontière (AVSF) in collaboration with the research and extension service. The project started with vaccination and quickly it was realised that housing was needed since it made vaccination much easier. An isolated intervention (e.g. vaccination) is more costly since flock sizes are small compared with the existing vaccine doses. So an integrated approach is needed. Today, a value chain approach is highly recommended to bring together various stakeholders (traders, processors, sellers of ingredients, veterinary pharmacists, etc). A value chain approach makes integrated projects with multiple interventions necessary.

Dipping back to the content of the second e-conference, **Singh** (47) discussed integration in terms of enterprises. He writes: Natural feed resources for scavenging birds are being reduced day by day due to reduction in kitchen gardens, village allays, multi-cropping in the nearby fields and use of insecticides and pesticides due to which feed supplementation of the birds have become essential. A typical response is the project titled "Holistic Approach for improving Livelihood Security through Livestock based Farming System". To reduce the cost of feeding, the small flocks of scavenging chicken reared by family poultry producers were integrated with horticulture (fruits and vegetables). Earthworms obtained as the by-product of the vermi-compost were also used for feeding the birds. Further, farmers were acquainted with the importance of azolla as a natural source of poultry feed. Scavenging chickens were found to control up to nearly 60- 80 % of the insects and pests especially in guava and banana orchards and in some vegetable garden crops. Use of azolla as the supplementary feed was found to be quite effective in reducing the amount of grains required for feeding chickens.

3.5. Good organizational models for sustainable family poultry development.

Olori, (7), raised questions on what is needed for a sustainable FP development plan: what agencies/institutions do we need to support and advise family poultry producers at the local level? Who will set up and finance them? What will be the mandate of such resource centres? What calibre of personnel is required to achieve this mandate? If we do not have such personnel, how can we go about training them? **Wethli** (10) gave two examples of his development work in South Africa trying to improve FP productivity. These reports are available through the link he provided:

(http://www.farmersweekly.co.za/article.aspx?id=16282&h=Improving-the-%E2%80%98Zulu-chicken%E2%80%99).

Gilchrist (13) says that the hazards that FP planning must aim to overcome to be successful are the same hazards that were overcome by the commercial industry. These include poor genetic capability, malnutrition, disease, inadequate shelter, shortage of credit and seasonality of production. He, therefore, recommends a risk management approach for FP project development which will help to assess the likelihood of these hazards being a factor in any proposed family poultry

development project and to consider appropriate technology to combat them. **Nayak**, (16) informed that the Government of India implemented across the country a national Rural Family Poultry Development program for BPL (below poverty line) beneficiaries. This scheme aims at supporting BPL beneficiary families with tapering assistance, wherein 4-week old chicks, suitable for rearing in the backyard, reared at the 'mother units' are distributed to beneficiaries in three batches of 20, 15 and 10 birds. Further, to raise the birds in a bio-secure manner, a grant of Rs. 750/- per beneficiary for night-shelter etc. is given**. Khan** (17) also informed about a regional project "Development and application of decision support tools to conserve and sustainably use genetic diversity in indigenous livestock and wild relatives" being regionally executed by International Livestock research Institute (ILRI) where, apart from Pakistan, Bangladesh, Sri Lanka and Vietnam are involved and genetic characterization of indigenous chicken is an intended outcome. Some of the activities can be seen at the individual project sites [Pakistan: http://www.fangrpk.org/; Bangladesh: http://www.fangrbd.org/; Sri Lanka: http://www.fangrsl.org/; Vietnam: http://www.fangrvn.org/] and the main project site [http://www.fangrasia.org/].

Nayak (26) then reminded participants that sustainability is defined by FAO as: *"The management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment of continued satisfaction of human needs for present and future generations. Such sustainable development conserves (land), water, plants and (animal) genetic resources, is environmentally non-degrading, technologically appropriate, economically viable and socially acceptable".*

Olori (27) further suggested the establishment of Family Poultry Resource Centres (see **Bagnol** 41) and FP Product Marketing Board (see **Badubi** 39). In order to achieve success and sustainability, FP projects must use the Value Chain approach and Group formation as shown by PRODEBEKA (Projet de développement du petit élevage dans la Kara) in Togo (**Ekoue**, 20). Extensive field experience has shown that as **Nayak** (29) indicated, successful project models focus on specific segments of the value chain and not the entire value chain at the same time; e.g.

- "Asian model" / Bangladesh(BRAC) - (now extended to Pakistan, Afghanistan, Nepal, Philippines, Fiji, and African countries) - Self-Help Groups, Micro-financing
- "African model" / Mozambique - (extended to Kenya, Morocco, Benin, Burkina Faso) - Newcastle Disease vaccine
- "Latin American model" / Cuba (extended to Nicaragua, Haiti) - epizootiological monitoring and surveillance
- Danish Development Agency (DANIDA) model - extension/ training/ farmers field school
- Kegg Farms model (a private company) - supply chain
- PRADAN model (an NGO in Kerala) - market access facilitation
- Indian Council of Agricultural Research (ICAR) model– germplasm flow
- National Board for Agricultural and Rural Development (NABARD) model - techno-economic considerations and credit flow

Alders (34) clarified that the "African/Mozambique model" focused on ND control (in response to farmer priorities) but also made reference to appropriate housing, creep feeding of chicks, marketing and biosecurity. The ACIAR ND training manual

(http://aciar.gov.au/publication/mn086) provides an overview of this model. **Mogbekuma Ngalo Jean-Didier** (36) wondered why only five countries have used the Mozambique (vaccine) model (Mozambique, Kenya, Morocco, Bénin, Burkina Faso) and informed that four other countries that have experimented with the model with little but encouraging results are Rwanda, Cameroun, Mali and Sénégal. Responding, **Bagnol** (37) asserts that there are positive results for the Mozambique model in three other African countries (Tanzania, Malawi and Angola) where the ND vaccine I2 is produced and used in the villages by trained community vaccinators. In Swaziland, focus is on commercialization of the semi-intensive sector by connecting vendores to buyers and by training on housing, feeding and reproduction.

Information technology and digital mapping are new technologies that FP R&D must deploy for information dissemination and surveillance, respectively in order to be successful and sustainable (**Nayak,** 29). **Rahman** (31) and **Lizarraga** (32) raised the issue of caution and disaster management, respectively in project design for sustainable FP development in order to avoid or manage tragic results.

3.6. Women empowerment through sustainable family poultry development.

Diallo (19), speaking from Mali, one of the world's poorest nations says that 63.8% are poor while 21% are extremely poor; poverty is more in the rural areas and among women. Poultry is important for reducing poverty among rural women, for food security, more protein for children, more money for the family and reduction of vulnerability. In the last years, there has been a reduction of income from poultry leading to increased malnutrition, food insecurity and inability to pay school fees, etc. Two NGOs created a strategy for Kati Circle (in Mali) to improve production and organizational capacity of female farmers. As a result, average family flock size increased by close to 50%, mortality rate reduced by 27%. Women empowerment favoured adoption of innovations which improved housing, hygiene, greater access to markets and services and the contribution of poultry to the women's income ranged from 5,000 – 35,000 FCFA. 16% of the income was used for health and school fees, 37% for food clothing and housing, 38% for income-generating activities and 9% for savings. The projects showed that FP improved living conditions.

Badubi (39) states that the development of family poultry can make an important contribution to women's empowerment as the study of Badubi et al. (2006) in Botswana showed that most family poultry are reared and cared for by women. He lists the requirements for empowerment to include: access to markets or pronounced marketing systems, feeds which will promote growth rates and should be affordable to the farmer, vaccination programs which will assist in disease control and reduce mortality rates and lastly slaughtering facilities which are up to the standard of the Abattoir and Slaughter Facilities Act. The Botswana Network of People Living with HIV/AIDS (BONEPWA) has made a big difference such that most women have been able to buy goats out of the proceeds of chickens.

Nayak (42) offers two sayings in the Telegu language to illustrate that FP in India is so closely associated with women: "What the chicken eats should never be counted because they only multiply wealth in your home, which remains with you" and "Only the daughter-in-law knows the amount earned from the poultry in the house." He informs that gender-budgeting is now mandatory for most of the GOI beneficiary-oriented schemes including FP and implementers are advised and expected to include at least 30% women among the beneficiaries in the program.

Saleque (44) observes that development of family poultry production not only enhances the cash income of women, it leads to their greater empowerment when they participate as extension workers and vaccinators. Being a poultry vaccinator not only provides self employment opportunity but also generates community respect, empowerment, self confidence and dignity among the women involved. Moreover, this practice is worthy of replication because it empowers rural women to actively participate in the rural economy both as buyers and sellers of services. Studies conducted by BRAC (the largest NGO in the world) at different periods in Bangladesh and in some African countries (Uganda, Tanzania) identified the requirements for women empowerment to include: access to training, credit, inputs and markets in a sustainable way. A number of projects in Bangladesh (SLDP, PLDP, IGVGD, and PFN) have shown positive impact of family poultry development on women's empowerment. Similar positive impact on women empowerment have been reported by projects in other countries in Asia (www.sapplpp.org). To the extent that a woman can contribute to the family income, to the same extent can she contribute to family decision making. Furthermore, money in hands of women tends to also bring educational and nutritional benefits to children.

Auvijit Saha Apu (57) reports that the following contributions of women were observed in the Bangladesh project (BDGP01) as published by SAPPLPP (2009) (www.sapplpp.org):

- 19,900 trained women vaccinators got a sources of extra income from vaccination
- Reaching out to over 2.47 million women poultry rearers in all districts of Bangladesh.
- Poultry mortality reduced from 21.3% to 7.6% in just one year.
- Annual income of poultry rearers between Tk 400 to Tk 2919.
- Family consumption of eggs raised from 43 to 186 and meat from 1.6 kg to 16.7 kg per year (SA PPLPP, 2009).

3.7. Influencing policy for family poultry.

Badubi (39) thinks that policies should aim at: increasing productivity of FP, easy access to financing, cheap feed resources, land availability especially for women and youths, provision of slaughter facilities, and genetic conservation of family poultry. He confirms that FAO's DAD-IS has directed attention in Botswana to FP, has influenced policies and giving rise to family poultry projects which aim at poverty eradication especially in settlements. **Bagnol** (41) informs that in Swaziland, the Ministry of Agriculture (MofA) is pushing the production of indigenous chickens (Swazi breed) by promoting special markets in the capital of the regions, supporting the creation of indigenous poultry groups/associations, and training farmers in improved management practices. The MofA is also supporting a multiplication centre for farmers who want to increase their flock or start to raise chickens to be able to buy 4 weeks old chickens. Clearly, **Olori's** concern (27) is addressed by these policies in Botswana and Swaziland. Similarly, KeggFarms's enterprises with the Kuroiler (**Sharma**, 43) are made possible by the appropriate policies of both the governments of India, Uganda and Ethiopia. Kuroilers - dual purpose, multi-coloured & hardy birds produce 200 eggs (4 to 5 times more than non-descript hens), grow faster (a male Kuroiler reaches 1 kg body weight in 6 to 7 weeks compared to 18 to 20 weeks by non-descript cocks). Every year, KeggFarms distributes about 10 million Kuroiler chicks to 800,000 poor families across Uttarakhand, Uttar Pradesh, West Bengal, Assam, Orissa, Jharkhand, Chhattisgarh, Bihar and the North-eastern states through 1,500 mother units. These mother units buy 400 to 2,000 birds at a time,

rear them till 3 to 4 weeks and then supply them to the nearby villages through mobile vendors on cycles. The Govt. of Uganda had imported Kuroiler hatching eggs and the Kuroilers outperformed the indigenous birds in growth rate, body weight, eggs production, egg size and hatchability which transforms to a 133% increase in meat production, 462% increase in egg production and a 341% increase in income for rural poultry farmers. KeggFarms exported Kuroilers hatching eggs to Ethiopia on the initiative of Flow Equity, a U.S. based Fund.

Némaoua Banaon (49) stated categorically that for sustainability, four types of policies are necessary: quality vaccines should be available; vaccinators should be well trained; feed for chicks should be available from local production; and there should be access to credit. With regards to the importance of FP in current poultry development policies and how to influence the policies; Burkina Faso currently supports FP by maintaining local species but there are challenges as the current supply does not meet the demand for FP leading to very high prices for live chicken (from 1,500 to 2,000 FCFA in the last five years). In the last 30 years in Burkina Faso, there has been a transition from local poultry development to national development programme. But the challenge remains the same: how to significantly reduce mortality of guinea fowls so that there will be enough adults which can be sold. There should be a movement towards industrial production of guinea keets. Now support from the World Bank is available to all stakeholders in the sector but the result may be long in coming if a more pragmatic approach is not embraced. Responding to the question of the role of local government in promoting FP, **Némaoua Banaon** gave the example of the poultry fair in Poa, Boulkiemde Province which started more than fifteen years ago and has led to more than ten community poultry fairs which promote FP.

Nayak (54) made the following specific recommendations:

- *What should be the purpose of family poultry policies*?

  FP policies should work out the roadmap where the socioeconomically disadvantaged / poorest of the poor could use FP as a potent tool for livelihood and women's empowerment

- *Is policy changing a prerequisite to steer family poultry development towards meeting the needs of the poor?*

  The dynamics of poverty and resource accessibility is ever-changing; we have to possibly re-program various aspects with newer advances in technology & research and also increase participatory approaches. Policy accordingly has to adapt.

- *What can policies do to support family poultry?*

  Policies can lay the milestones and as reflected by many contributors, create an enabling environment for the FP.

- *How much importance has been given to family poultry in the current poultry development policies and what needs to be done to influence that*?
  Government of India has taken into cognizance the immense importance of FP and is implementing a program on FP. This, however, may need many interventions along the way.

- *Have family poultry development projects influenced policy, if so, why and how*?

FP in Bangladesh, Africa and FAO programs have indeed influenced policy in India who were into the research since long (since 1990s) and were building capacity for production of low-input birds, but could launch a nation-wide program only as late as 2009. Notable is the fact that this was despite the fear of Avian Influenza in the backyard flocks- thus the importance of FP is self-explanatory.

- *Have needs and priorities of the commercial poultry industry negative impacts on the policies for family poultry?.*

  Of course, with biosecurity, food safety, international trade, SPS (Sanitary and Phytosanitary Standards) issues, there will always be a negative impact but as some contributors said they may complement each other as well. However, it is to be seen whether the urge to sustain and flourish further with higher yielding poultry would bring some transitory farmers on crossroads with commercial poultry conflicts.

- *What arguments and facts are required to achieve pro family poultry policies?*

  Livelihood, poverty alleviation and women's empowerment should be enough motivators, if properly presented and policy-makers are convinced.

- *Who are the stakeholders that should work for smallholder friendly poultry policies?*

  Central and local Government are the biggest stakeholders with social responsibilities. Self-Help Groups and NGOs (decentralized) play the crucial role in ground implementation. University and Research institutions provide important backward and forward linkages. However, some of the private low-input bird suppliers in India are playing a vested role like vertical integrators where they ensure supply of birds to the farmers' doorstep and also the healthcare. If niche market develops they even (and in case of eggs already doing) may buy back the produce.

- *What can international organizations and institutions do to achieve FP friendly policies?*

  Networking and knowledge sharing facilitated by international agencies across different countries and continents are proving a great boon for extrapolating and replicating the experiences.

- *Is there a role of local Governments in promoting family poultry?*

  Family poultry without help of Local Government would not sustain as all aspects from IEC to training will have to be supported by them.

Salissou Issa (56) largely agrees with **Nayak** (54) and adds his own recommendations:

What should be the purpose of family poultry policies?

- FP policies should work to promote a sustainable poultry production in countries with low population (Sahelian countries).

Is policy changing a prerequisite to steer family poultry development towards meeting the needs of the poor?

- I think we should use the paradigm of IAR4D (Innovation platforms and value chains analysis in developing FP).

- In addition, we should encourage research that promote the use of thermostable vaccines, FP poultry workers training, local alternatives feedstuffs (grains, legume trees pods, etc.), and reduce chicks mortality in especially guinea fowl in Niger and Burkina Faso.

Have needs and priorities of the commercial poultry industry negative impacts on the policies for family poultry?

- Not necessarily. For example, in Niger a new private hatchery is supplying small family producers thus contributing to FP development.

What arguments and facts are required to achieve pro family poultry policies?

- In countries which are traditionally ruminants producers we can argue for reduction of poultry product imports, contribution to labour provision, and health aspects of poultry (less cholesterol in poultry meat).

Finally, **Auvijit Saha Apu** (57) summarises this section succinctly: "Though a lot of suggestion have been made and research has been done but attention to family poultry development in the current poultry development policies is still low. Moreover, the implementation of the policies is very much slower, below the expectation".

3.8. The future contribution of INFPD and other networks to family poultry development.

D.P. Singh (47), one of the earliest to join INFPD, gave the only response to this section. In the last two decades, INFPD and other networks have been able to turn the attention of the governments in most of the developing countries to the potential of family poultry production and development. However, the proper development of family poultry projects and programmes has not yet received the appropriate share of government budget. It is the duty of the INFPD and other networks to support and boost further growth of family poultry research and development by disseminating the updated global technical knowhow and developing the needed capacity.

3.9. Extra Discourse on Vaccine and Vaccination

Taking off at a tangent from subtopics 4 and 5, **Eric Fermet-Quinet** (45) started an important discussion about family poultry vaccination against Newcastle disease when he asserted that there is no need to be studying or evaluating new thermostable vaccines as inactivated vaccines adapted to family poultry are already available, with many brand names, from very well known veterinary pharmaceutical companies and that only one shot of these inactivated vaccines is needed for the production cycle of family poultry population. **Dibungi Luseba** (46) insisted that a thermostable vaccine (not merely inactivated) is almost obligatory for the African FP in the SADC region as, except for South Africa and Zimbabwe, a cold chain is just not possible. **Amadou Moctar Diallo** (50) referred to a 30 year experience in Mali with thermostable commercial vaccines which showed their characteristics as: affordable price, ease of application (one injection of 0.5 ml for at least 6 months), inactivated nature and thermostability, their provision in 100 doses that reduces wastage.

Mamta Dhawan (58) intervened that since ND causes huge losses to FP producers, mostly women, its control in South Asia through vaccination is paramount. There are three issues here:

- Appropriate vaccine (i.e. thermostable, small pack size).
- Awareness amongst farmers to vaccinate their flocks.
- Delivery mechanisms in place.

Despite I2 and V4 vaccines availability and use in FP in a few African and South East Asian countries, it is not allowed in India due to regulations that do not permit a foreign strain to enter the country. Indigenous ND strain (D58) was developed in Tamil Nadu University of Veterinary and Animal Science (TANUVAS), Chennai, India and field trials of pellet vaccine produced in India has so far given promising results as it is found suitable for Indian rural conditions. In order to ensure sustainable ND vaccination in FP, supply line has to be viable and each stake holder should make a decent profit to remain in the system. Where ND is endemic, vaccinations need to be carried out regularly, every three months for Lasota and every 6 months for R2B.

Eric Fermet-Quinet (59) then gave more information:

- Type of vaccine: **inactivated injectable vaccines** (brand names such as Itanew, Newcavac, Immopest). Good to check quality (international standards) and relevant strain (even if many cross immunity are possible). **ALL INACTIVATED vaccines ARE THERMOSTABLE BY EXPERIENCE.** The advice is to keep it in the fridge at veterinarian level, then the farmer can use it within 2 weeks if kept in a cool place (e.g. water pot).
- I**njection, is the easiest way.** Everybody can make an injection in poultry breast muscle.
- **Easiest dose to inject is 0.5 ml** because most syringes have this type of graduation (better than 0.3 ml which will need an insulin type syringe)
- **A single shot, without any booster, is enough to protect the flock.** It is given ideally 2-3 months before the epizootic season (usually windy or cold season). All poultry more than 1-2 months old are vaccinated. The immunity last at least 6-8 months. 2 injections per year may be given for mature cocks and hens.

The strategy of implementation which is successful and sustainable is for the veterinarians to buy and sell the vaccines to farmers which have been sensitized and trained to do vaccination on their poultry and those of their neighbours /village /community. The only public cost is massive advertising and communication. Usual cost to the farmer is around 0.1 USD/bird. It is very profitable as mature birds are usually sold at around 3 USD. In addition, reduce mortality of chicks by protecting them against predation.

3.10. Closing

Sujit Nayak (61) had the last word: "This conference has made me realize that there is so much more to learn".

4. Conclusions and Recommendations.

Subtopic 1.

There was agreement among the participants that high quality family poultry research had been done, though not in all the countries, and has contributed to the development of family poultry programmes in India, Bangladesh, Pakistan, Burkina Faso, Senegal, Mozambique, Tanzania, Togo, Bolivia, Cuba and Ecuador. The development of new breeds, supplementary feeding resources and vaccines and vaccination protocols were the main achievements of FP research. It is recommended that governments, the poultry industry and NGO should promote FPS R&D and to base FP development programmes on the results of research done within the national agricultural innovation system.

Subtopic 2.

Livelihoods based in part or whole on FPS are under threat from the accelerating pace of urbanization and changing lifestyles preferred by the youths. Ironically, FPS development schemes that are not carefully planned increase the danger of extinction of native FP breeds. For FPS to contribute more to livelihoods, cooperative activity and micro-financing that promote transformation into a business approach are recommended.

Subtopic 3.

Participants indicated that the FPS and CPS may pose dangers to one another under different circumstances. It is recommended that though the tension between the two systems may not go away, the advances made in CPS should be made to benefit FPS while the "green" nature of FPS can give CPS products more consumer acceptance.

Subtopic 4.

Interventions should be integrated. If single interventions are used, they should be sequential in an additive way: health (with housing) > nutrition > genetic intervention. A value chain approach is recommended with emphasis on market development, input supplies and training as well as access to credit and markets.

Subtopic 5.

Three different general family poultry development models – "African, Asian and Latin American" - were identified. For a successful and sustainable model, a value chain approach and group involvement are recommended.

Subtopic 6.

Women empowerment by family poultry development is most significant when women are the vaccinators and poultry advisers which brought them income for their family and prestige within the community. It is recommended that not less than 30% – 40% of the beneficiaries of FP project should be women.

Subtopic 7.

International organizations and programmes (e.g. FAO, IFAD, ILRI, World Bank, INFPD, DAD-IS) have influenced policy on FP in various countries. The right policies in India, Ethiopia, Uganda and Swaziland have resulted in their own successful FP programmes. It is recommended that modern planning tools such as risk analysis and return on investment be applied to development and evaluation of FP policies.

Subtopic 8.

The clear influence of INFPD and other networks on the development of policies and programmes in developing countries shows the need for INFPD and other networks to collaborate more closely with country level policy makers in FP policy formulation and analysis for the benefit of FP development.

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Distribution of the contributions from the participants by country

Country	Number of messages	Message No
Australia	4	13, 18, 33, 34
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