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Process and Results of the Farmer Innovation Contest Organised in Cameroon During 2017 by the Programme of Accompanying Research for Agricultural Innovation

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Executive summary

This report aims at narrating on the farmer innovation contest (FIC) activity organised in Cameroon in 2017, as per planned in the 2017 annual work plans and budgets (AWPB) of both the Forum for Agricultural Research in Africa (FARA) and the Cameroon Institute of Agricultural Research for Development (IRAD), within the framework of the Programme of Accompanying Research for Agricultural Innovation (PARI). Innovation is the result of the interaction of a multitude of actors, agents and stakeholders within particular institutional contexts. Without stepping much into the scholarly debates on innovation, PARI is mainly concerned with identifying hidden and high potential innovations originating from farmers and that are worth refining and scaling to contribute to the improvement of livelihoods of smallholder farmers. PARI seeks farmers innovations related to agricultural food value chains and that can contribute to improvements in food and nutrition security in PARI countries and the world.

In Cameroon, the FIC activity was realised through five sequences of activities each built on the other to create awareness to different audiences that were involved. These were concept note development, scoping visits, planning meetings and budgeting which took place between December 2016 and June 2017. During this phase, the three Green Innovation Centre (GIC) sites in Cameroon were confirmed for this activity and were coded as Mifi, Vina and Fako. The next activity was training of scouters in which between 60 and 80 people were trained in each region in July 2017 and immediately after, the applications started. Jingles for the announcement were prepared by IRAD and approved of by FARA in French, English, Pidgin and Fulfulde. These radio announcements were accompanied by church announcements, pasting of posters in public places and word of mouth through the extension workers and other people that could diffuse the information. At the end by September 8, 162 applications were completed carrying innovations in the broad fields of processing and post-harvest management, crop production, animal production and mechanization. An evaluation meeting was organised on September 25 and 26 2017 with panel members setting up evaluation criteria of originality, affordability, replicability/adaptability, politico-socio-cultural acceptability, profitability, and climate adaptability/environmental friendliness. At the end, the grades from the three groups were combined and five applications were selected per category per region giving 15 per GIC site and 45 in all. After the evaluations, a field visit was organised to verify the applications in which nine winning applications were selected as winners per site. A prize award ceremony was organised in all sites following the opportunity of a national event and prizes awarded to 3 men, 3 women and 3 youth applicants per site.

The organization of the FIC in Cameroon was very successful but not without constraints. Comparing and rating innovations from different segments and commodities can be subjective and biased with respect to the development of a particular sector or of a particular commodity since each sector and commodity is important in its own way. Farmers are aware of the challenges of food and nutrition security and have pushed innovations at the level of farming and cultural practices, animal production, food processing and food preservation. The contest is a smart incentive for farmers to share the wealth of knowledge they possess and also bring out some good and malpractices taking place in the agricultural value chain. Local post-harvest and food processing activities are growing so fast unaccompanied by research and development institutions. However, this can be a health danger to consumers who rush for such products and technologies. This only underline the need for research to refine, repackage and disseminate these innovations through joint efforts with the farmers and

partner institutions. This contest can spur up product development but it will be most interesting if specific commodity value chains or areas of product development (e.g. mechanization, post harvest, food preservation, food sales, food packaging etc) are targeted to capture innovations for all its segments.

FIC has been learning and doing process and today there are atleast 200 people (researchers, technician, extension workers and the FIC and PARI team in Cameroon) in the agricultural value chain that have learnt about this initiative and can organise similar activities. Reasons for farmer's innovations were interesting to note. The first reason for innovation was competition among farmers for prizes. We found out that some of the innovations resulted from the farmers wanting to win prizes during the agricultural show. So too some farmers will start trying new things so as to compete in any future events that may come their way. This means that opportunities to win a prize or to gain something can be a natural stimulant to make people think out of the box and develop new innovations. Thus, PARI, governments and other innovation stakeholders need to multiply events of competition or create opportunities like sure markets to stimulate farmers to generate new innovations.

Introduction

This chapter outlines the genesis and course of the Farmer's Innovation contest (FIC) organised in Cameroon. It addresses the purpose of the Cameroon FIC report; what is meant by FIC; why PARI is interested in the organisation of a FIC, and steps followed for the organisation of the FIC in Cameroon.

Purpose of the report

This report aims at narrating on the FIC activity organised in Cameroon during 2017, as per planned in the 2017 annual work plans and budgets (AWPB) of both the Forum for Agricultural Research in Africa (FARA) and the Cameroon Institute of Agricultural Research for Development (IRAD), within the framework of the Programme of Accompanying Research for Agricultural Innovation (PARI). Indeed, in their 2017 AWPB, FARA and IRAD jointly endorsed the responsibility to organise a Bottom-up or Farmer Innovation Contest in Cameroon, and to deliver to the PARI – 1) a list with description of eligible innovations; 2) detailed information on winning innovations; and 3) compiled data from application forms. This report compiles all the FIC deliverables as per organised in Cameroon. The following section recalls how one may understand bottom-up or farmer innovation contest and the reasons for its organisation in the context of the PARI programme.

Definition and motivation for farmer innovation contest

Innovation is the result of the interaction of a multitude of actors, agents and stakeholders within particular institutional contexts. If agricultural research and extension are important to agricultural innovation, so are markets, systems of government, relations along entire value chains, social norms, and, in general, a host of factors that create the incentives for a farmer to decide to change the way in which he or she works, and that reward or frustrate his or her decision (Beverly et al., 2009, Worldbank, 2008, Bragdon and Chelsea, 2015). Different understandings exist about what an innovation is, and hence what a farmer or bottom-up innovation and a farmer/bottom-up innovation contest may be. While some scholars consider innovations as "perceived new or renewed" products (technical, technological, organisational, or institutional) (Rogers, 2003, Bachmann et al., 2014, Läpple et al., 2015), others see innovations as continuous processes of networking, (social) learning, experimenting, testing, and negotiation (among networks' members) continuously leading to perceived new or renewed – knowledge, institutions, organisations, technics/practices, technologies, etc. (Leeuwis, 2004). Even though some scholars consider socioeconomic benefits as inherent/implicit in innovation processes and/or products, others admit it is "perceived new or renewed" technologies, technics/practices, knowledge, institutions, organisations, etc., as innovations only when they provide innovators and/or adopters with socioeconomic (especially financial) benefits/gains (Olwig, 2012, Tambo and Wünscher 2014, Prolinnova and McKnight Foundation 2016, Adekunle et al., 2016).

Building on these scholarly considerations, one may therefore define farmer or bottom-up innovations as "perceived new or renewed" processes and/or products emanating from farmers and implicitly or explicitly contributing to socioeconomic well-being of farmer innovators and/or farmer-adopters. It results from this understanding that, a farmer or bottom-up innovation contest is a procedure in which farmers compete for prizes and acknowledgement by sharing their independently developed innovations (Tambo and Wünscher, 2014, Leeuwis, 2004). It is a contest in which awards serve as incentives to overcome innovation secrecy. Farmer innovation contest has therefore been found as a

relevant instrument in scouting local innovations (Tambo and Wünscher 2014, Adekunle et al., 2016).

Without stepping much into the scholarly debates on innovation, PARI is mainly concerned with identifying hidden and high potential innovations originating from farmers and that are worth refining and scaling to contribute to the improvement of livelihoods of smallholder farmers. More specifically, PARI seeks farmers innovations related to agricultural food value chains and that can contribute to improvements in food and nutrition security in PARI countries and the world. As such, production of crops, fishery, livestock, food processing, transport, handling, storage, marketing of agricultural products, etc., are targeted by the farmer innovation contest. Farmer innovation contest is one of the PARI research objectives, and the identified innovations are expected to be refined by researchers in collaboration with the farmers, and scaled through the green innovation centres (GIC) of the GIZ.
The bottom-up Innovation contests was already organised by PARI in four Eastern and Southern African countries (Ethiopia, Kenya, Malawi, and Zambia) in 2016. During 2017, PARI implemented this contest in two (2) other countries from West and Central Africa (Cameroon and Mali). Another aim of PARI is to secure and enhance investments in the Green Innovation Centres (GICs) in a sustainable way by means of dedicated cooperation between research and application.

The outputs and outcomes expected from the Farmers' Innovation contest activity for 2017 were:

- List and descriptions of high level innovations in three GIC /GIZ sites in Cameroon ;
- detailed information about the winning innovations including photos ;
- Compilation of data on all listed innovations from the application forms ;
- Award of three best innovations per category of men, youth and women in the three sites;
- Detail report on the implementation process of the farmers innovation contest in Cameroon as well as the constraints and limitations ;
- Projection of the potentials of most sound innovations and future research path ways for enhanced development and dissemination of these innovations in the near future;
- Building experience on the organisation of farmer's innovation context in Cameroon that can be replicated and used by other national structures in the future.

Key activities conducted by IRAD and FARA

The design and implementation of the FIC followed a number of steps that ran from December 2016 to February 2018. First was the design of a concept note by the Cameroon team which presented the broad understanding and perspectives of the IRAD team members together with a proposed budget and timeline on the farmer innovation contest activity in Cameroon. Through email exchanges with the FARA team, a final concept note was designed and shared with the country by FARA. This final concept note spelled out the full program and steps for the implementation of the farmer innovation contest as on Table 1. Since the innovation contest was planned to be implemented between Cameron and Mali, the concept note was made global for these two countries for the purpose of harmonising the methodology.

Table 1: Proposed steps for the implementation of the farmer innovation contest

Activities	Date of execution	Sub-activities	Deliverables	Implemented by
Design and validation of concept note	December to April 2017	- Appointment of the FIC focal person in IRAD - Design of a concept note by the Cameroonian team - Comments on this concept note by the FARA team - Corrections - Approval of final concept note by the Cameroonian team	- Concept note designed and approved upon by both parties - Potential collaborators identified - Road map for the implementation of the FIC activity in Cameroon drawn up	FARA and IRAD Cameroon
Scoping meeting with partners in Cameroon on the Farmers innovation contest (Cameroon, and Mali)	23rd to 29th of April 2017	- Visit each country and Introduce country partners with the Concept, the Process, and the Conditions necessary for the successful implementation of the Innovation Contest (IC) - Select in each country, three (3) areas (districts, counties, municipalities, departments, districts etc.) where the IC will be implemented. The areas should be as much as possible covered by GIZ's Green Innovation Centres (GIC), and have a great innovation potential. - Visit selected areas to brief potential local partners (radio stations, agricultural advisory services, local governments, etc.) with the FIC concept and prepare them for their fruitful contribution to the process - Establish with country partners, the FIC implementation roadmaps - Identify with partners – potential awards and their monetary values; radio advertisement options and prices; perdiem and remuneration rates for innovation scouters; etc.	- Selected FIC implementation areas. - List of key FIC implementation partners - FIC implementation roadmaps - Budget lines and prices of key items - Radio announcement jingles (draft) - BTORs of scoping missions	FARA & Cameroon National partners

		- Agree on most popular radio stations, jingle content, negotiate cost of advertisement, and launch the design of radio announcement jingles.		
2.1 Validate the FIC implementation budgets and transfer funds to each concerned country	-	- Assist country partners for the elaboration of FIC implementation budgets - Transfer funds to country partners	- Validated FIC implementation budgets - Evidences of fund transfers	FARA and National partners
2.2 Launch the innovation contest in each of the 2 PARI countries (Cameroon and Mali)	-	- Development/adaptation of training and innovation scouting (application) materials - Multiplication of training and scouting materials - Training of partners and potential innovation scouters - Distribution of scouting materials to local FIC coordinators (to be appointed by IRAD and IER) - Launch of radio advertisements and innovation scouting process - Prepare ground for the formation of innovation application pre-screening committees and the pre-screening process - Prepare ground for the formation of valid/preselected innovation application evaluation committee and the evaluation activity	- Adapted training materials - Adapted innovation application forms - BTORs of launches - Radio announcement jingles - List of members of pre-screening committees	FARA & National partner (in collaboration with other key stakeholders in the respective countries)
2.3 Participate to the evaluation of Innovation applications in each of the 2 FIC countries	-	- Gather all preselected/valid innovation applications in one place per country - Agree with committee members on final evaluation criteria per country - Train evaluation committee members on evaluation process per country - Launch the evaluation of the applications per country - Gather and process evaluation results per area in each country and announce winning farmer innovations - Visit, check (materiality) and document top five farmer innovations per country area	- Application forms - Evaluation results	FARA & National partner

2.4 Follow up of award process	-	- Monitor awarding process reports from three sites	- Awarding process reports	FARA & National Partners
2.5 Document the FIC outcomes	-	- Collect and present the outcomes of the FICs	- List and descriptions of the eligible innovations - Detailed information about the winning innovations including photos	FARA & National Partners

The final articulations of the concept note were: background, purpose and objectives, outputs and outcomes, approach and activities, location, duration, collaborators and three annexes on Annex 1: activities, deliverables and responsibility for the implementation of bottom-up Innovation Contest, Annex 2. Detailed Innovation Contest Implementation programme and Annex three Budget. The steps spelled out in this concept note were respected in Cameroon first because the IRAD authorities were able to provide some prefinancing for activities, second because of the motivation from the FARA team and lastly because the researchers were passionate about the project idea.

After this introductory part, the next sections address the methodology and the FIC results in Cameroon. Then the 27 winning innovations are presented, their research areas as well as some factors that hindered the proper implementation of the contest. This is followed by a discussion and conclusion.

Methodology

Scoping visits

This was done through two main field consultations to proposed working sites. First was a visit of the team members from FARA to Cameroon followed by another mission of IRAD team members to the sites for fine-tuning, discussion and planning. The mission of the FARA team aimed at mutually learning about the FIC organised by the programme of accompanying research for agricultural innovation (PARI), and the scope of the Cameroon context, collecting information necessary for budgeting and planning the implementation of the contest in Cameroon. The IRAD mission on its part aimed at preparing the ground for the follow up FIC activities, which consisted of defining the training venues, logistic and finance requirements, and identifying and appointing reliable collaborators.

To reach the missions' objectives, the FIC team interacted with key partners from IRAD, GIZ, MINADER, MINEPIA, CRTV and NGOs, involved in one way or the other in agricultural extension and development. Consultations were held in Yaoundé, Southwest (Buea), West/Northwest (Foumbot) and Adamawa (Ngaouandere) Regions of Cameroon.

Interactions and deliberations during the FARA team visit addressed essentially the concept and process of bottom-up innovation, selection of the contest areas, scoping visits to the selected contest areas, the FIC implementation road map and budget items. This mission succeeded in informing people met about the philosophy behind, and the process of implementation of the bottom-up innovation contest, and discussing key issues with the partners. The innovation contest team also got to appreciate the scope (distance between regions, and potential costs of budget items) of the Cameroon context. In all, the scoping mission participants learnt about how concerned Cameroon partners are with the management of property rights of innovators, and with political equity in the selection of the innovation contest regions. During the discussion of the concepts, process, and the FIC organization conditions, the FARA team shared information with Cameroon partners on the PARI project, bottom-up innovation contest philosophy, process, expectations, and conditions for the successful implementation of the contest. Here, discussions focused essentially on protection of property rights of innovators; criteria for selection of innovation contest areas; and awards. On protection of property rights of innovators, partners wanted to know more about how this will be handled during and after the implementation of the FIC. The FARA team explained to the participants that this issue is partially addressed in the application form where farmers are asked to state whether they would like their innovation to be shared with others or not, and the conditions for sharing. Interactions on this property right issue ended

up with the idea that IRAD team should monitor and manage to guarantee the rights of the innovators, with the support of FARA and ZEF.
On Radio announcements, awards, and remuneration of scouters, four spots were produced in French, English, Pidgin and Foulfoulde for diffusion. The team also agreed on the bottom-up innovation contest implementation plan earlier proposed with the expectation that there will not be major changes.

Planning meetings for the identification of scouters and innovations
The scoping visit was followed by a planning visit which served to further plan the training of scouters. This visit consisted of identifying scouters and meeting some key field partners for further discussion on the training of scouters, broadcasting and dispatching of farmer innovation applications. For this purpose, the Farmers Innovation Contest Focal person visited the selected contest sites. Together with the field supervisors in each site/region, local authorities of MINADER, MINEPIA, PNVRA and MINRESI were visited for a one to one discussion on all the aspects of the organisation of the FIC in Cameroon. During these visits, most discussions focused on what a farmer innovation is and the line between livestock and farming innovations in these processes. It was agreed that since MINADER and MINEPIA collaborate closely through the national extension program (PNVRA), the national coordinator of PNVRA had to be visited and briefed about the FIC activity and administrative letters had to be sent to the Ministers of Agriculture and Livestock. After these meetings, field partners recommended that a set of criteria should be developed and shared during the training so that people could further understand what farmer innovation contest is and strategies to identify innovative farmers. Other results from this visit were:

- The next activities were agreed upon;
- The contact with key people at each regional institution was established;
- The list of scouters was to be identified by the regional teams and forwarded to the FIC focal person before the training mission;
- Ideas to be discussed during the training mainly regarding the orientation of the scouters on the working approach and how to identify innovations;
- Training venues for the scouters and modalities for using these venues were established. These were CRRI Bafoussam for the Mifi Division, IRAD Ekona for the Fako Division, and CRRI Ngaoundere for the Vina Division;
- List of authorities in each region to be potentially involved in the FIC process was made;
- Payment modalities of scouters were discussed and clarified;
- The PNVRA regional coordinators were agreed in all three cases to be the main liaison between the rural extension agents and the FIC process while IRAD was to be the main contact institution (being IRAD Foumbot for the Mifi Division, IRAD Ekona for the Fako Division and IRAD Wakwa for the Vina Division);
- Future spaces and events for the award of the prizes were discussed and since there was no suitable event in the making, authorities were advised to inform the FIC focal person in case there were any strategic events that could be used.

Training of Scouters

The training of scouters and FIC facilitators was done by a team from FARA supported by IRAD in the three sites from 24th to 28th July, 2017. In all, the training sessions were attended by

about 150 scouters who were expected to submit about 300 valid farmer innovation applications within the six weeks slated for the scouting and submission of applications.

Figure 1: Training of Scouters in the FIC regions

Evaluation of innovations and field visit to verify potential winning innovations

From the 23rd to 30th September 2017, an evaluation committee consisting of 15 experts from the IRAD, Cameroon, and the National Programme of Agricultural Extension and Research (PNVRA/MINADER, Cameroon), evaluated 162 farmer innovation applications from Mifi (West Region), Fako (South West Region), and Vina (Adamawa Region) of Cameroon. The applications were coded as F for female, M for male and Y for youth. Each sites was coded as F for Fako, M for Mifi and V for Vina. This means that all the applications were coded up front by category before the beginning of the evaluation meeting.

Photo 1: The FIC Application Evaluation Team, Yaounde, September 2017

Each of the applications was evaluated based on six criteria (originality, affordability, replicability/adaptability, political-social-cultural acceptability, profitability, and climate adaptability/environmental friendliness) jointly and initially defined by the evaluation committee members. These criteria were weighted as 25%, 15%, 15%, 10%, 20% and 15% respectively. The evaluation team was divided into three groups and each application was evaluated by these groups each at a time. The mean weighted marks of the three groups were used to rank innovations. This was presented and approved during a plenary session of the evaluation team. At the end of two days of evaluation, 45 outstanding innovations (15 youths, 15 women and 15 men) were shortlisted for the three FIC regions. This was followed immediately by field visits to pre-selected innovative farmers which allowed the evaluation committee to verify the innovations and their real origins, and to select the 27 best innovative farmers (3 youths, 3 women and 3 men per region and for the three regions.

In all, the evaluation panel commended the methodological process followed by the contest and the evaluation. For the field verification of the innovations, an interview guideline comprising two sections was designed (Annex 1). The first section was addressed to the innovator, and the second one to the scouter/extension agent. The questions to the innovators focused on: name; title of the innovation submitted; details regarding the source of the innovation and its originality. While responding to verification questions, the innovators were requested to kindly describe how the preselected innovations work while the evaluation team take pictures/videos of evidence. Simultaneously, the evaluation/verification team continues verifying where the innovator got the idea of their innovations and what makes the innovations different from other traditional practices. The innovativeness verification question was articulated in many ways to find out what was really innovative about what the farmer was describing compared to others. Next the evaluation team investigates the level of diffusion and utilization of the farmers' innovations. Finally, a quick question was asked to know if the farmer was to be the winner what he/she will preferred to be offered that will help him/her continue to move his innovation forward and the farmers were also allowed to ask questions of their choice.

With regard to the extentionists, questions focused mainly on what they liked/disliked on/in the initiative of the Farmer Innovation Contest, how they appreciated the process and their main learning points in the process. They were further asked to provide suggestions for improvement of future Farmer Innovation Contest initiative in Cameroon.

After the verification of the innovations, final results for the best innovations were brought out by concerting with the field team and considering the results from the evaluation panel. Main considerations made in the final decisions on the ranking of innovations after the field verification process relate essentially to originality/innovativeness, the origin and the functionality of the innovations.

Results and Discussion

Results on the planning process and scoping activities

During these phases, the three selected regions were visited both for interaction with key partners, appreciation of the scope of the areas, and preparation of the following phases (training, evaluation, awarding, and documentation) of the innovation contest. During these field visits, the project team learnt that the contest regions were:

- diversified agro-ecologically, and culturally (language and agricultural practices included), far from each other (300 to 1400 km, i.e. 4 to 16 hours of car drive from Yaoundé, and the

road network was not very good with high traffic congestion of up to four hours when crossing Douala;

- structured as follow (management and extension wise):
  - Each region is divided into Divisions (5 in Adamawa region; 6 in South-west region; 8 in the West region, and 7 in North-West region);
  - Each region is headed by 1 to 2 regional supervisors of extension agents (1 for livestock sector, and 1 for crop sector),
  - Each division is also headed by two departmental supervisors of extension agents (1 for livestock sector, and 1 for crop sector),
  - Divisions are divided into *Subdivisions and there were* 21 in Adamawa region; 32 in South-west region; 38 in the West region; and 34 in North-West region and these were also headed by 2 sector level supervisors of extension agents (1 for livestock and the other for crops).
  - Under sector/subdivision level extension supervisors, there are zone level extension agents (AVZ), whose profiles and number vary from *one subdivision to the other*. In all, one could count more than 100 extension agents per region.
  - The road network within the regions was relatively poor and some extension workers could need more than a day to get to the capital city of the regions.

This means that without further selection criteria, the innovation contest team could have to train around 100 extension agents per region, and hence around 400 extension agents, and application screening and validation partners in total for Cameroon. Considering budgeting and time constraints, further brainstorming were made to reduce the execution site to suit reality. Thus the three main divisions with the capital city were retained for this activity. These were Vina for the Adamawa region, Fako for the Southwest region and Mifi for the West region (Figure 2).

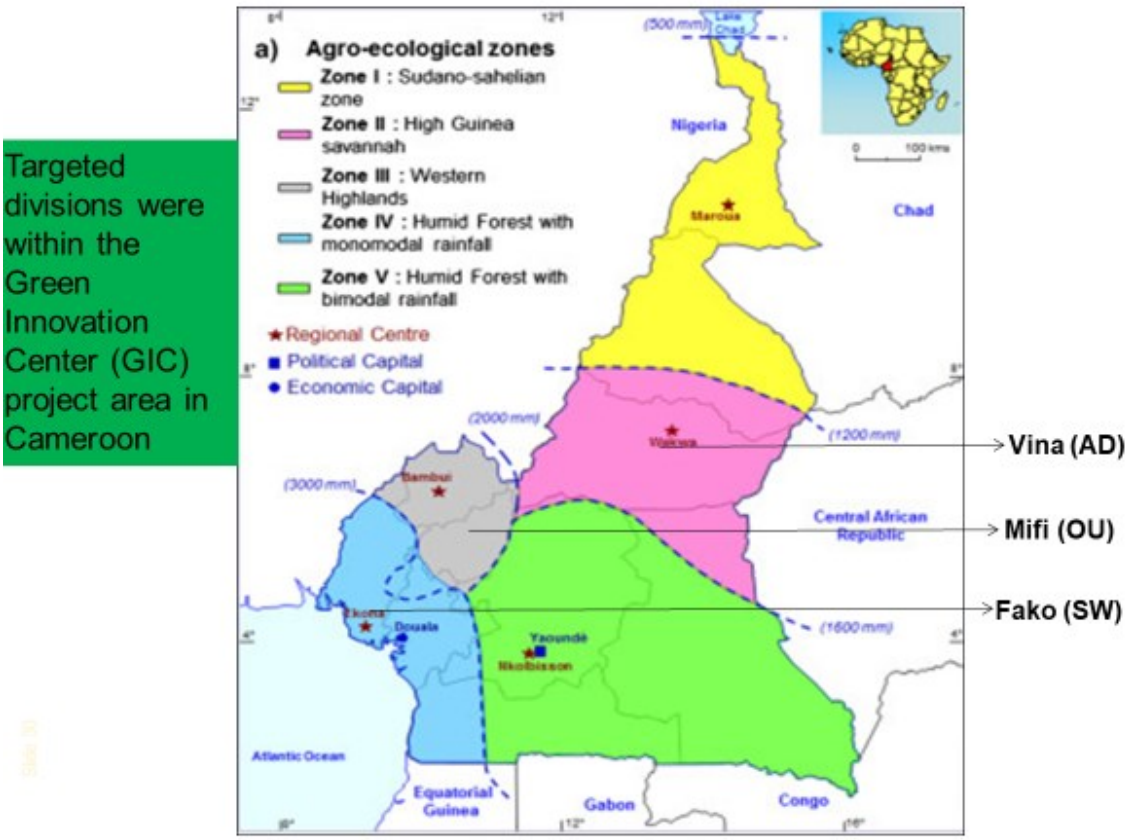


Figure 2: Map of Cameroon with the three Divisions of the farmer innovation contest

Results on Site selection

The main criteria initially used for the selection of the bottom-up innovation contest areas, were the presence of green innovation centres (GICs) of GIZ, and these were:

- Adamawa Region: Northern Cameroon, Agro-ecological Zone II, Sahel Savanah Zone; French speaking area;
- West and North-Western Regions: High Savana zone, Agro-ecological Zone III, French and English speaking area; and,
- South-West Region (part of agro-ecological zone IV, humid forest zone with monomodal rainfall pattern, English speaking area.

The main issue raised on these choices suggested considering entire agro-ecological zones instead of part of them as it is the case in the South-Western region. Why not considering all the 10 Cameroon regions, and why selecting only those three, were also few questions raised by participants of scoping meetings. Building on the experimental concern of the contest and budget limitations, the innovation contest implementation team explained to participants that the 2017 innovation contest activity in Cameroon was just at its beginning, and can be extended to other parts of the country by any development partner who would like to implement it. The FARA team suggested to IRAD partners to manage to find politically correct ways of explaining the choices to politicians in case of disagreements.

Results on Pre-screening and Evaluation process and activities

Out of 193 applications received from farmers, a total of 31 were rejected in the three regions. In Mifi, 5 were rejected because they were not completely filled while 10 came in late. In Fako, 10 applications came in late and were automatically rejected while in Vina, 6 applications came in late. On the 162 applications that reached the final evaluation stage, it was interesting to notice that 54.4% of scouters interviewed people they knew were innovators. In the other cases, 31.1% of scouters were informed by other people that some of the respondents had innovations; and interestingly 13.9% of farmers contacted the scouters with their innovations. Although some scouters complained of a poor understanding of the process, others did not want to participate because they expected an upfront payment. However, the team was able to anonymously draw the 45 prospective winning applications during the evaluation exercise. Then, after the field visits, 27 winning applications were retained. coming from all the regions and categories as planned. A key observation at this stage was the tendency of some innovators especially from the west region had continued to hide information about their innovations. This was because they were not convinced that if they shared their innovations, they were going to be the winner or benefit from sharing. Therefore, a handful of applications were received with a lot of coded information.

Some statistics on the applications

The overall process of the farmer's innovation contest respected the calendar as planned at almost every stage except during the prize award which needed a budget. The training took place in the three sites with an average participation of 50 trainees. These were staff of the Ministry of Agriculture and Rural Development, the Ministry of Animal husbandry and fisheries, the Ministry of Scientific Research and Innovation through two main structure, IRAD and the Regional Centre of scientific research and Innovation for West; Southwest and Adamawa and a number of other NGOs. The participants were of middle age group and also included young researchers of IRAD meaning that young people were involved in it and it served as a learning process to them. This means that the IRAD/FARA concept of the farmers' innovation contest has a large institutional coverage in the areas that it was implemented.

The scouting of innovations was challenging as of the three hundred applications forms dispatched to the field, only a total of 162 farmer innovation applications with 25.3% from Mifi (West region), 28.4% from Fako (Southwest Region), and 46.3% from Vina (Adamawa region) of Cameroon were recorded.

The geographic coverage of the location of the extension workers was quite broad. Figure 3 suggest that they reported a total of 27 locations in 113 applications. This covered 18 subdivisions. This suppose that the innovations that are being recorded are quite representative of the three divisions that were chosen for this study. In the Adamawa and the southwest regions, this work focused only on the chosen divisions whereas in the west regions, innovations were scouted from the Menoua, Haut plateau and Haut Nkam divisions. About 90% of the innovations were from individuals with less than 10% of group applications. The innovation applications which relate to processing and post-harvest management (33%), crop production (26%), animal production (15%), and mechanisation (6%) were submitted by 31 Youths, 46 Women, and 85 Men. Most of the innovators were male with approximately 70% response and female with approximately 30% response. The average age of the innovators was 44 years. Whereas only 20% of the innovators were less than 25 years, the majority of about 70% where between, 35 and 60 years and less than 10% were above 60 years of age. The level of education of the innovators was quite impressive. While 27.8% have

never been to school, 22.2% attended primary school, 32.5% attended secondary school and 17.5% attended university education.
The profile of the extension workers that were involved in the completion of the application forms was mostly crop production (63.3%) seconded by animal production 20% and food technology 10.9%. Other domains as forestry made up only 10% of the profile of extension workers.

Results on the scoring of applications
The 162 applications identified in the three sites were ranked as on Table 2 which presents results from the ranking of farmers' innovations as studied during the evaluation meeting. On Table 2, FM, MM and YM stands for female, male and Youths in Mifi; while FF, MF and YF was for female, male and Youth Fako; and FV, MV and YV stand for female, male and Youth from Vina.

Table 2: List of Innovations and scoring of Applications

No	Code	Name of Innovator	Title of the innovation	Overall score from the evaluation committee
VINA FARMER INNOVATION				
1	YV1	Moumini	Prevention of weevils attack on potatoes fields using woodash	2,7
2	YV2	Haouaou	Maize processing into flour and its conservation	2,583
3	YV3	Aissatou Djaboule	Dong (Pepper)	1,867
4	YV4	Nani Bouba Elisabeth	Production of yaourt from soya beans	2,733
5	YV5	Djaoli Andre	Planting crop under crops residue cover	2,95
6	YV6	Fendju Djatio Nadine Leonie	Conservation of irish potatoes using saw-dust for up to six months in the house	3,117
7	YV7	Mohamed Aboubakar	Planting yams with a cavity underneath the soil	2,683
8	YV8	Ndeckebai Gilbert	Traditional conservation of irish potatoes seeds in a shed	2,267
9	YV9	Koonmonne Lamon Inocent	KLIN (Therapeutic drink using 'naredje tree')	2,167
10	YV10	Ileck-Bassou	Technique of producing big sweet potatoes tubers in ridges	1,5
11	YV11	Nana Issa	Production of wild honey	0,667
12	YV12	Nkitia Christina	The use of snurf to fight against destructive birds	1,25
13	YV13	Souley Manoub Abbda	Maize production	0,667
14	YV14	Djaoro Hayatou	Maize production	0,667
15	YV15	Daieferle Wanso	Felere Juice	1,5
16	YV16	Abba Ilyassa	Cocoyams Production	0,667

17	YV17	Gic Des Femmes Dynamiques Du Lac Mabanga	Fight against rodents like bush fowl (*Francolinus bicalcaratus)* during maize planting	3,283
18	FV1	Houma Pauline	Reduction of post harvest looses linked to storage	1,5
19	FV2	Mecka Emgbang Jacqueline	Chocoginger – Processing of cocoa beans into ginger flavoured chocolate.	2,383
20	FV3	Hawa Hamayadji	Cassava chip conservation during the rainy season	2
21	FV4	Hawa Hamayadji	Conservation of cassava cuttings for up to six months during the dry season	3,35
22	FV5	Hazaraton	Traditional soap making	2
23	FV6	Halimatou Adjia Madeleine	Processing of white yams (*Dioscorea alata*) into garri	3,133
24	FV7	Mayo Francoise	Processing of soyabeans into meat	2,033
25	FV8	Halimatou Adjia Madeleine	Processing of maize flour and enriching it with soyabens, sesame and irish potatoes flour	2,25
26	FV9	Halimatou Adjia Madeleine	Fight against the destruction of plants by bush fowl at shooting by the use of fowl droppings	1,767
27	FV10	Halimatou Adjia Madeleine	Production of insecticide using tobacco and small grain pepper	2,85
28	FV11	Ngwa Rose Ngwin	Natural technique of eliminating terminates	2,05
29	FV12	Mayo Francoise	Transformation of soyabeans into ‘akassa’ (a traditional meal) loaf	2,2
30	FV13	Societe Coopereative Agro-Pastoral De Production Animal	Animal production	1
31	FV14	Djeromonie Madeleine	Production of long fruit okra	1
32	FV15	Djeromonie Madeleine	Transformation of maize into a flour	1
33	FV16	Moindok Victorine	Treatmeant of maize field attached by leave caterpillar	1,717
34	FV17	Mairiama	Preparation of honey loaf	1,917
35	MV1	Yaya Paul	Control of goats destruction of crops	2,35
36	MV2	Hamidou Garga	Raising of a calve that loses its mother from birth	2,783
37	MV3	Ndotoua Jupeo	Ventigel	3,117

38	MV4	Yaya Hamaselbe	Maize conservation	1,75
39	MV5	Yaya Hamaselbe	Disinfection of cattle	1,75
40	MV6	Bessala Sanje	BESS 707	1
41	MV7	Yaya Moustapha	NAFKI CODER (NPK)	1
42	MV8	Ganguile Robert	GAN-Post	2,3
43	MV9	Robit Valery	Improvement of piggery feed	2,467
44	MV10	Aboubakar Mohaman	Fabrication of maggi cube for edible mushroom substrate	2,017
45	MV11	Halidou Soufianou	Raising of chicks from eggs abandoned by a hen	2,35
46	MV12	Ahmadou Tijani	Production of sweet potatoes using organic and chemical fertiliser	1,917
47	MV13	Sawalda Pierre	Increase of maize yield in the farm	1,917
48	MV14	Hamidou Koulapna	Facilitation of storage and conservation of yams	2
49	MV15	Ibrahima Nana	Nursery	1,917
50	MV16	Alim Iyawa	Drying of maize in the rainy season	1,8
51	MV17	Mohamadou Awalon	Prevention of foot-and-mouth disease or hoof-and-mouth disease (*Aphthae epizooticae*)) in calves	3,617
52	MV18	Oumarou Hamadicko	Treatment of contageous diarrhea in calves	3,233
53	MV19	Abbo Nouhou	Raising of a calf that loses its mother from birth	3,333
54	MV20	Abbo Nouhou	Savon bark (hollal). Hollas is a tree whose bark serves to dresses like savon	1,95
55	MV21	Fongang Emmanuel	Improved of rasing of local brids	1,917
56	MV22	Fongang Emmanuel	Apiculture	1,7
57	MV23	Nana Souaibou	Drip irrigation in the dry season	1,9
58	MV24	Mohamadou Babba	Yam seed multiplication technique	1,917
59	MV25	Yakoubou Laminou	Management of plantations	0,667
60	MV26	Babba Dahirou	Maize production	1
61	MV27	Salihou Adamou	Cattle feeding from the leaves of a tree	1,933
62	MV28	Baguene Antoine	Irrigation system from a well situated uphill for providing water to plants in an orchard	1,333
63	MV29	Ibrahima Dejele	Maize production	1,333
64	MV30	Mohamadou Bassirou	Maize production	1,333

65	MV31	Alim Garga	Sugar cane production	1,333
66	MV32	Yaya Aboubakar	Animal production (Goats)	1
67	MV33	Babba Ahmadou	Irish potatoes production	1
68	MV34	Aboubakar Mohaman	Creation of a humidity favourable climate for the production of mushrooms in the dry season	1,6
69	MV35	Alim Iyawa	Drying system from a hangar called “Mbanga” which leads to an easy degraining of maize	1,45
70	MV36	Aboubakar Mohaman	Fabrication of sterilisation from a local material to (Fut) to produce edible mushrooms seeds	2,05
71	MV37	Babba Ahmadou	Production of wild honey	1
72	MV38	Yaya Aboubakar	Maize production	1
73	MV39	Nana Oumarou	Yam production and storage technique	2,517
74	MV40	Fobit Valery	Pig farm disinfection and treatment of ticks in pigs, goats and sheeps	1,383
75	MV41	Panyere Pedakan	Conservation of Irish potatoes in the farm	1,667
Fako Farmer Innovation				
76	YF1	Ajoacha Dorine Mbe-Boh	Charcoal used in preventing odour	2,517
77	YF2	Mbezam Neigha Osee Nicolas	Manufacturing of bathing soap using snail as the main ingredient	2,067
78	YF3	Tewang Leonel Mbanwie	Making of compost manure	1,467
79	YF4	Lyonga M. Samuel	Honey production, bee wax, mead and propolis	2,233
80	YF5	Charles Mefende	Cake production	1,583
81	YF6	Emenyi Lovelyn Ngu	Conservation of chicken by deep smoking for preservation in hot non-refrigerated condition (wood oven)	2,35
82	YF7	Friends in Nature	Petit Business (out of context)	1,033
83	YF8	Nkiafu Berry Nadia	Reduction of too much salt in food using flour pellet	1,667
84	FF1	Likove Common Initiative Group	Honey transformation	2,517
85	FF2	Fombutu Magdalen Keyeba	Preservation of grains from post harvest losses	2,967
86	FF3	Mary Amuh	Plantain juice	2,6
87	FF4	Mary Amuh	Production of Potash using dry plantain peels	2,85

88	FF5	Mary Changsin	Compost manufacturing from oil palm bunch waste for cocoa farm fertilization	2,733
89	FF6	Mbeboh Pamela	Making of ching-ching without eggs and butter	1,583
90	FF7	Mbeboh Nicoline	Use of African egg plant (wild type) for treatment of witlow and poison	2,117
91	FF8	Mbeboh Nicoline	Production of coconut oil using the fridge to avoid long period of boiling	2,917
92	FF9	Mbeboh Confort	Use of forest plants (Lekep) to treat diarrhea	1,617
93	FF10	Tekwe Fomuwot Albert	Processing of plantains into flour, chips, juice noodles and bioethanol	1
94	FF11	Greenanswers	Green Answers (production of granulated organic fertilizers) (it is like an industrial proposal)	1,767
95	FF12	Melmat Enterprise	Production of medical soap using tree barks	1,35
96	FF13	Melmat Enterprise	Production of food supplements for diabetics and AIDS patient	1,8
97	FF14	Angoh Njeck Susana	Prevention and treatment of fowl disease	3,683
98	FF15	Angoh Njeck Susana	Increase cassava production by cutting the tip during young growth	3,283
99	FF16	Nto Ako Prudencia	Plantain peeling solution as limestone	2,2
100	FF17	Ngu Ursla	Using chromolena (a wild plant used for feeding pigs) and achu soup (a traditional sauce prepared with much spices and palm oil) to increase pig breast milk flow	3,667
101	FF18	Nto Ako Prudencia	Snails in form of soya and plantain	1,7
102	FF19	Nto Ako Prudencia	Snails soya	1,367
103	FF20	Peppetua Ngum	Use of small intestines of pigs for sausage making	1,783
104	MF1	Ebule Batholomew Nodom	Transformation of honey and its by-products into other products	2,483
105	MF2	Ebule Batholomew Nodom	Integrated fish farming	2,183
106	MF3	Ndah Michele	Plantain and banana multiplication	2,717

107	MF4	Keptchume Martin	Use of groundnut oil for the preservation of grains	3,4
108	MF5	Agbor Edward	Use of local materials for poultry housing	2,783
109	MF6	Fonkuer Salack Ebenezer	Making of a solar mobile equipment for the drying of cocoa	2,933
110	MF7	Ndong Njoh Timothy	Dissolving NPK (20:10:10) and Urea to fertilize maize farms	2,017
111	MF8	Ndja Ntchimou	Maize and beans cultivated in the same hole	2,383
112	MF9	Leke Asongtia	Rearing of snails in a cage with eggs hatched in a container	3,217
113	MF10	Likombe Oil Palms Farmers Cig	Oil palm processing and transformation of palm oil into soap	2,167
114	MF11	Njoh Nganda	Fresh fruit bunches harvesting knife (multi purpose harvesting knife)	2,55
115	MF12	Boyo Nkem Atabong	Free range chicken breeding	2,85
116	MF13	Boyo Nkem Atabong	Production of Cameroon standard goat meat	2,817
117	MF14	Mf14	Agroforestry (propagation of NTFPs)	2,267
118	MF15	Achimbi Joseph Ndong	Use of coconut trees on the boundary	1,483
119	MF16	Atoh Isaac Mutanga	Local tree killer	3,433
120	MF17	Nyaboko Francis Nji	Corn stick charcoal as medicine	1,6
121	MF18	Likomba Group Farmers Cooperative	Share mobilization using cocoa produce	2,733
Mifi Farmer Innovation				
122	YM1	Kenfack Jose	Fertilisation of maize with a combination of human urine and Tithonia leaves	1,717
123	YM2	Noumbou Gaston	Production of Maggots	1,65
124	YM3	Nanfack Tsafouet	Maize, beans and leguminous cropping system in mountainous areas	1,167
125	YM4	Nanfack Tsafouet	Production of a highly concentrated conservable manure from Tithonia leaves	2,25
126	YM5	Noumbou Kana	Treatment and fattening of irish potatoes using tetonia and a suitable cultural practice	3,2
127	YM6	Simo Brice	Detergent packaging in 180g and 100g	1

128	FM1	Matafo Ruth	Conservation of SAFOU fruits for exportation	1,7
129	FM2	Magne Djoukam	Composition of spices	1,35
130	FM3	Gic Areucc	Modern dryer for food products that uses gaz and electricity	1,867
131	FM4	Kengni Brigitte	Utilisation of woodash and Mimosa for the protection of stored maize	1,95
132	FM5	Kengni Brigitte	Fight against weevils in maize	2,917
133	FM6	Mintchougom Sidonie	Preventive and curative treatment of rabbit diarrhoea	2,25
134	FM7	Mintchougoum Sidonie	Concoction against Irish potatoes and beans leave blight and maize borers	2,317
135	FM8	Ndja Ntchimou	Fruits basket	1,333
136	FM9	Kanmogne Ep Nouanegue Louise	Black fruit and plums conserve in open air for one year	1,817
137	MM1	Melitsowa	Incorporation of Calyandra and Moringa in chicken feed	3,683
138	MM2	Mboo Jean	Tse-Tse	2,483
139	MM3	Tamo David	Lop-Lop	1,833
140	MM4	Nganga Jean	Banana Aperitif	1,667
141	MM5	Nganga Jean	Pineapple ligour	1,5
142	MM6	Nganga Jean	Lemon Aperitif	2,167
143	MM7	Meli Jean	Conception of a steriliser	2,533
144	MM8	Mba Albert	Production of onion seeds	2,483
145	MM9	Boyom Michel	Incubator with a triple energy source of gaz, electricity and charcoal	1,533
146	MM10	Kakeu Michel	Planting of banana plantain from PIF plants	1,633
147	MM11	Mebiata Gustave	Treatment for pig pest	2,533
148	MM12	Mebiata Gustave	Dictation of heat	1
149	MM13	Tatiekam Pokam	Fabrication of an insecticide for maize conservation	3,05
150	MM14	Tchinda Pascal	High sweet potatoes yields using improved land preparation techniques and good cultural practices	3,117
151	MM15	Fotie Samuel	Fight against maize borers	2,367
152	MM16	Sitedhio Jacob	Irrigation	1
153	MM17	Dongmo Tezong	Oil drainer with a screw	2,167
154	MM18	Demesse Frederick	Organic fertiliser using honey wax from hives	2,483

155	MM19	Nzono Gomiel	Maize grinding mill with a moto byke for providing electric energy	2,233
156	MM20	Abra Robert	Abrarobert (Pruduct name) cacao	2,85
157	MM21	Fotsing Jean	Egusi cracking machine	3,233
158	MM22	Tamto Emmanuel	Coffee been roaster and coffee grinding machine	2,65
159	MM23	Ndjaha	Identification of fertile eggs from local birds	2,033
160	MM24	Dankou Lucas Delegue Gic Dalucam	Multi energy source incubator that uses kerosene, gaz, charcoal and electricity	3
161	MM25	Kuate Tegho Eric	Rabbit cages with semi-automatic feeding troughs and water racks	2,967
162	MM26	Nganga Jean	Mango Aperitif	1,35

These results suggest that some rural extension workers understood the process and were able to report the innovations in a clear and understandable way, e.g., making of a solar mobile equipment for the drying of cocoa; conservation of cassava cutting in the dry season; processing of yams into garri and many others. Others reported normal farm activities that could not give a reader what was innovative about it. Examples are production of maize, yams, cocoyams, animal production, management of plantations, irrigation, mango aperitif etc. Other innovation names were written in the traditional language without an explanation of what this may mean BESS 707, NAFKI CODER (NPK), GAN-Post. This analysis suggests that the skills of the extension workers were in some cases weak to properly report what was innovative in an innovation and therefore, for the book of innovations, all these innovations needs to be visited and verified as there may be some very interesting innovations that were poorly reported. The content of Table 2 also suggests that the local organizing committees did not properly prescreen the innovation applications before validating and sending them to the evaluation committee. Consequently, and for further contest, the FIC focal person or coordinator in Cameroon should make sure that the prescreening step takes place and is properly conducted per region/division.

Innovations Ranking and Identification of Winners

The first highly rated applications were on the incorporation de Calyandra and Moringa in poultry feed by a male farmer in the West region and the prevention and treatment of fowl disease by a female in the Southwest region. Next was the application on chromolena and achu soup for increased pig breast milk in the South West region. Then, the fourth and fifth were on the prevention against Foot-and-mouth disease or hoof-and-mouth disease (*Aphthae epizooticae*) in calves from the Adamawa region and the production of a local tree killer from the south west region (Annex 2). This demonstrates that generally the applications from the West and Southwest region were highly rated. However, from field visits, it was noticed that some of the innovations (like FF15- increase cassava production by cutting the tip during young growth; MM21 – egusi cracking machine etc) were not as outstanding as were presented on the write up.

Following this ranking, five best applications was selected in each site for female, male and youth applications for field verification. After the field verification, three was retained per each category for the prize award. This makes a total of nine applications per region/division and twenty-seven winning applications in all Cameroon as presented in Table 3. These winning applications are further detailed in the section below.

Table 3: List of Winners of the Farmer Innovation Contest in Cameroon

Vina Farmer Innovation Contest Winners		
Men Category		
Hamadjoulde Tonga	Fight against rodents (bush fowl - *Francolinus bicalcaratus*) during maize planting	1st
Mohamadou Awalon	Prevention of foot-and-mouth disease or hoof-and-mouth disease (*Aphthae epizooticae*)) in calves	2nd
Abbo Nouttou	Raising of a calf that loses its mother from birth	3rd
Women Category		
Halimatou M. epse Adjia	Processing of white yams (*Dioscorea alata*) into garri	1st
Hawa Hamayadji	Conservation of cassava cuttings for up to six months during the dry season	2nd
Mecka Emgbang Jacqueline	Chocoginger – Processing of cocoa beans into ginger flavoured chocolate.	3rd
Youth Category		
Nani Bouba Elisabeth	Production of yaourt from soya beans	1st
Moumini	Prevention of weevils attack on potatoes in fields using woodash	2nd
Fendju Djatio Nadine	Conservation of irish potatoes using saw-dust for up to six months in the house	3rd
Mifi Farmer Innovation Contest Winners		
Men Category		
Dankou Lucas (Gic Dalucam)	Multifonctional incubator that uses kerosine, gaz and electricity	1st
Melitsowa Robinson	Incorporation of calyandra and moringa into chicken feed	2nd
Tchinda Pascal	High sweet potatoes yields using improved land preparation techniques and good cultural practices	3rd
Women Category		
GIC AREUCC	Modern dryer for food products that uses gaz and electricity	1st
Mintchougoum Sidonie	Concoction against irish potatoes and beans leave blight and maize borers	2nd
Kengni Brigitte	Utilisation of woodash and Mimosa for the protection of stored maize	3rd
Youth Category		
Nanfack Tsafouet Magellan	Production of a highly concentrated conservable manure from Tithonia leaves	1st
Noumbou kana	Treatment and fattening of irish potatoes using tetonia and a suitable cultural practice	2nd

Kenfack José	Fertilisation of maize with a combination of human urine and Tithonia leaves	3rd
Fako Farmer Innovation Contest Winners		
Men Category		
Name of innovator	Innovation	Rank
Atoh Isaac Mutanga	Local trees killer	1st
Leke Asongtia	Rearing of snails in a cage with eggs hatched in a container	2nd
Fonkuer Salack Ebenezer	Making of solar mobile equipment for the drying of cocoa	3rd
Women category		
Mbeboh Nicoline	Production of coconut oil using the fridge to avoid long boiling	1st
Ngu Ursla	Using chromolena (a wild plant used for feeding pigs) and achu soup (a traditional sauce prepared with much spices and palm oil) to increase pig breast milk flow	2nd
Angoh Njeck Susana	Prevention and treatment of fowl diseases	3rd
Youth category		
Mbezam Neigha Osee Nicolas	Manufacturing of bathing soap using snail as the main ingredient	1st
Emenyi Lovelyn Ngu	Conservation of chicken by deep smoking for the preservation in hot non refrigerated condition	2nd
Boyo Nkem Atabong	Free range chicken breeding	3rd

Detailed Description of the Winning Farmers innovations in Cameroon

Case 1

Title of innovation:	Processing of white yams (*Dioscorea alata*) into garri  Photo 2: Processed package garri
Name of Innovator	Halimatou m. Épse Adjia
Gender	Female
Description	Yams is peeled, washed and boiled with palm oil. When cooked it is grated and spread on Roofing sheets for drying under sunlight. After it is reheated on the fire and spread out again to completely take out the moisture. The dried powder is then stored in an air tight container and used as garri.
History/Source of innovation	The farmers produce yams and if they could not be sold, most of the yams got bad. Through constant search and participation in trade fares, she discovered “garri”. Then she started imagining how she could also make garri but cassava was scarce in Ngoundere where she lives. After several thoughts she decided to try to make garri with yams. She started by grating fresh yams

	but before it could get dry it was black and even when she fries the paste it was awful in the mouth. Through continuous search she discovered the present formulae and has been practicing it since 05 years now.
Innovativeness of the innovation	Processing of yams into a product with a longer life span - garri
Contribution to Development	Development of a product that is time and energy saving to women during food preparation, diet diversification.
Level of Diffusion	The innovation has been spread over the national territory and beyond since she is constantly participating in national and international trade fares
Problems with the innovation	Limited sales/marketing of the innovation although during trade fares all the processed product that is exposed is often totally sold. The farmers lack the ability to detect the amount of moisture in the finished product and thus work by trial and error.

Case 2

Title of innovation	Conservation of cassava cuttings for up to six months during the dry season  Photo 3: Demonstration on how cassava cuttings are stored
Name of Innovator	Hawa Hamayadji
Sex	Female
Description	After cassava is harvested, the cassava cuttings are arranged and tied in a bundle. A hole of about 1m is dug and the bundle of the cassava cuttings are placed inside upright and the soil refilled to level the hole with the rest of the surface. The cuttings can stay in that position for up to six months and will still be good for planting. Some buds may start sprouting but depending on the level of development, this may be cut off or planted as such and rooting will develop there after
History/Source of innovation	Cassava is usually harvested in the dry season and poorly conserved. Therefore, during planting seasons, farmers lack cassava cuttings for planting. Hawa noticed that sometimes when soil accidentally covers some cuttings, they germinate but without roots and in a case where the soils covers cuttings together, some could be collected for planting.
Innovativeness of the innovation	Storage of cassava cuttings for about six months before planting. This helps ensures the availability of seeds for the next planting season even when cassava is harvested in the dry season.

Contribution to Development	With this innovation, farmers can harvest all their cassava when they needed to use it and still preserve cuttings for future planting. At first, they either had to forgo harvesting the cassava when they needed it which made it that at the verge of the raining season many cassava-based products were very cheap since everybody harvested cassava at the time so as to use the cuttings for planting. This innovation helps farmers to have access to cassava cuttings during the planting season even when they harvest their cassava in the dry season. This is particularly important here because they have a Sudano Sahelian climatic patterns with longer dry season and therefore problems of storing seeds like cassava cuttings. It also helps them to save time since they collect the cassava cuttings while harvesting and during planting, the just use what had been preserved. At first, they had to travel long distance to collect cassava cuttings and sometimes where unable to pant their fields because they did not have the cuttings.
Level of Diffusion	Some women (say 30 in her community and neighbouring communities) in the community ask her how she manage to have cassava cuttings and she told them. Others saw the cuttings stored on her farm and did the same and during the next planting season they also had cuttings. She has also shared her experience with her sisters when she went back to her village of origin and they now also preserve cassava cuttings during harvesting for future use.
Problems with the innovation	No problem

Case 3

Title of innovation	Chocoginger  Photo 4: Ginger flavoured chocolate and some ingredients
Name of Innovator	Mecka Emgbang Jacqueline
Sex	Female
Description	She produces cocoa butter and uses the residues for the production of ginger flavoured chocolate bars called chocoginger. The residue, ginger powder and sugar are put in a pot under light heat and stirred until a sticky past is obtained.

History/Source of innovation:	She use to make cocoa butter and to throw away the residue. However, she loves chocolate and sometimes adds sugar to this residue and it tastes like chocolate. Since she likes cooking, she tried several things and came up with this recipe.
Innovativeness of the innovation	The processing of residue from cocoa butter into a product that is like chocolate and can be easily stored and sold.
Contribution to Development	This product can serve as a snack. Many women could be trained and cocoa that is not normally consumed locally could be promoted.
Level of Diffusion	Only in trade fares
Problems with the innovation	The moisture content is not known. The chemical properties have not been diagnosed. There is very low marketing of the product and many people don't know about it although the few that see ad taste it appreciate it.

Case 4

Title of innovation	Raising of a calf that loses its mother from birth
Name of Innovator	Abbo Nouhou  Photo 5: Demonstration of the preparation of the concoction
Sex	Male
Description	The ingredients used are: Sugar, groundnut paste, water, calabash and feeding bottle. Soak groundnut in water and remove back. Pound in a mortar, add water to the paste and mix. Add sugar and give it to the young calf using a feeding bottle. Drain the liquid and give at least two litters daily to the calf using a feeding bottle. Give it to the calf thrice daily and later on twice daily. Through adventure, he associated this with raw eggs that he gives weekly to the calf to serve as vitamins and give the calf appetite to eat.
History/Source of innovation:	His parents used a similar mixture for saving the lives of kids (baby goats). During adolescence he lost two cows and calves and his parents loss many due to different epidemies. About fifteen years ago, one of his pregnant cows gave birth and shortly after delivery it became evident that the cow may not survive so they decided to slaughter it. But the calf that was only a

	few hours old was a big problem to him. He decided to try what his father use to do with goats. But since the calf was bigger than a goat, he adventured abit and decided to buy a feeding bottle to put the mixture inside before giving the calf. When the calf did not take the mixture normally he added something based on experience with human babies and what animals eat. After several trails he arrived at this present mixture which he has been using since then.
Innovativeness of the innovation	The use of feeding bottle and eggs to stimulate appetite in a calf.
Contribution to Development	He has been giving this to calves that that would have otherwise died thereby reducing his cattle herd size.
Level of Diffusion	He advised a neighbour who had a similar problem and naturally some of them used it and others did not. He knows of 10 people that have acknowledged to have used the technology.
Problems with the innovation	Groundnut is expensive but he uses some groundnut from his farm

Case 5

Title of innovation	Fight against rodents like bush fowl (*Francolinus bicalcaratus*) during maize planting  Photo 6: Shrub from which liquid is extracted
Name of Innovator	GIC des femmes dynamiques du lac Mabanga (Hamadjoulde Tonga)
Sex	Women Group
Description	The inner part of the bark of a shrub locally known as “la’a gnemme” is collected and dried. During the planting season, the bark is boiled in a pot for about an hour with water approximately the same volume as the back being boiled. After one hour, the liquid is allowed to cool and as it cools it will reduce to a chocolate brown sticky paste. Maize seeds are enrolled in this paste and dried under sunlight. When the seeds are planted, the bush fowls and other birds or rodents avoid eating the seeds because this sticks into their throats and suffocate them.
History/Source of innovation:	This technique was initially used by lazy people for hunting in the past but most animals escaped the grains enrolled in the paste. So, the innovator tried it in the fields

	and it worked and since more than 10 years, he has been using this technic for planting maize on large fields with no problem.
Innovativeness of the innovation	Use of the technic formally applied in hunting as deterrent to rodents on planted fields
Contribution to Development	This innovation helps to prevent losses in planted seeds due to rodents and to gain time that was previously employed for replacement of seeds destroyed by rodents.
Level of Diffusion	This technique is being used within the framework of a GIC
Problems with the innovation	No problem

Case 6

Title of innovation	Prevention of weevils attack on potatoes fields using woodash  Photo 7: Potatoes field that was planted and treated
Name of Innovator	Moumini
Sex	Male
Description	It consists of fighting against weevils attack on sweet potatoes and increasing the size of the potatoes. First, he prepares the furrow, then cover with soil, add wood ash on it and mix. Then sweet potatoes stems are planted in the mixture and later on add soil on it. This wood ash prevents weevils attack, acts as fertilizer, and makes the potatoes stay longer in the field.
History/Source of innovation:	Got inspiration from the dust bin where people dump kitchen waste and especially wood ash. He noticed that sweet potatoes grow better where woodash was dumped.
Innovativeness of the innovation	The process of collecting and storing the woodash beginning three months to the planting date and its subsequent application during land preparation.
Contribution to Development	Start gathering wood ash three months before the planting season begins i.e April – May

Level of Diffusion	He limited the idea only to his relatives and to those who are in other villages so that he can have enough wood ash from the other households.
Problems with the innovation	Collecting and storing woodash and subsequently transportation of the woodash to the farm since he has to be transported in push trucks. As well in the event that rain does not fall after application, the wind blows off the wood ash so the farmer has to water the woodash shortly before applying into the field

Case 7

Title of innovation	Conservation of irish potatoes using saw-dust for up to six months in the house  Photo 8: Demonstration on how potatoes tubers are conserved
Name of Innovator	Fendju Djatio Nadine Leonie
Sex	Female
Description	This innovation consists of preserving Irish potatoes using saw dust in a dry room. This method preserves potatoes for upto six months. After harvesting Irish potatoes, the farmer spreads the potatoes outside under the sunlight and selects the blemished ones. Then, she spreads a layer of saw dust on the floor in a dry room or a cage made of wooden boards and adds an equivalent layer of Irish potatoes. The process is repeated until all the potatoes are protected or the cavity is filled. This process must end with a layer of saw dust over the Irish potatoes.
History/Source of innovation:	The farmer uses to process Irish potatoes and it gets green or rotten when stored ordinarily. She tried several things like using the small saw dust and wood ash before she finally discovered this. Her discovery came about since she used saw dust to cook and the remaining ash was used for storing the potatoes.
Innovativeness of the innovation	Storage method that can keep Irish potatoes for two to three months without it getting green or rotten.

Contribution to Development	She can now preserve her Irish potatoes during harvesting season and sell during scarcity period for at least 2 times the selling price during the harvesting season
Level of Diffusion	She shared the idea with her colleagues in school 12 of them as well as in her women's group of 18 members.
Problems with the innovation	You need to have enough space and courage to practice it. Saw dust is not common. She has an advantage in that she keeps poultry and when her potatoes stock is finish, she uses the saw dust in poultry farm. After the poultry farm, the waste or used saw dust is used as manure on her farms. In some cases the used saw dust is sold to other farmers as manure.

Case 8

Title of innovation	Production of yaourt from soya beans  Photo 9: Yoghurt production
Name of Innovator	NANI BOUBA ELISABETH
Sex	Female
Description	She roast, cracks and winnow soya beans grains and then soak in water over night. The next day, she grinds and extract the milk. This is left to sleep overnight for fermentation and the next day it will become Yogurt.
History/Source of innovation:	When she was young, their family used to use soyabeans paste to cook food and make other food. One day they were tired after the milk was made and they could not continue to process. They abandoned the milk in the open. The next day she wanted to throw away the abandoned milk and realised that it was thickened and looked like yogurt. She tasted it and realised effectively it was Yoghurt. She called her sisters and they then added sugar to it and used the milk as yoghurt instead of throwing it away as they earlier wanted to do. From then, they started trying to improve the process to reduce the smell of soya beans in the Yoghurt by varying the processing and fermentation time and adding flavour.
Innovativeness of the innovation	The act of processing soyabeans milk into yoghurt.
Contribution to Development	Soya beans is very rich in proteins and therefore this could increase its intake in the northern area which have Yoghurt as an important component of the diet. Plus, this area produces much soya beans but do not have practical means of consumption. This can be a very important training activity for women and young children and could also help in creating jobs.
Level of Diffusion	She started making it to sell for about six months but soon after she got married and got the entrance examination into the teachers training college. Since then she stopped and only made it for the house. Her sisters and friends know of it but sometimes they hide the practice to people because it discourages people from eating in the house when people know it is soya beans. But when they do not know, they eat normally.

Problems with the innovation	Some people as soon as they heard that it was soybeans, they change their impression about the yoghourt. She also lack storage facility for the yoghourt once produced.

Case 9

Title of innovation	Prevention against mouth and foot disease in cattle  Photo 10: Demonstration on the preparation of concoction for the treatment of mouth and foot disease
Name of Innovator	MOHAMADOU AWALON
Sex	Male
Description	He uses pure ground honey that has lasted one year in the house and add an egg from local breed birds and mix together. This is given to the calf
History/Source of innovation	It is a traditional practice to use old honey to fight against mouth and foot disease in cattle in a calf. It is also common to give eggs to calves to increase their appetite. So he thought combing the two will make his calf have appetite and prevent the fever and it works so well.
Innovativeness of the innovation	Mixing old honey and eggs from local to enhance appetite and prevent mouth and foot disease in calves. Most people lose their calves because of mouth and foot disease. When only honey is used for the prevention, sometimes the calves still get attacked because they do not eat well. Therefore combining honey and eggs increases the appetite of the calf. The calf eats well and stays healthy.
Contribution to Development	It helps save the lives of calves and consequently increases the herd size.
Level of Diffusion	A few people in the village were told but because of some exiting taboos, he avoids informing people about it because when people have a problem with their herd he will be accused.
Problems with the innovation	It needs to be verified. As he heard size increases he needs to modernise its practices to contain the large herd size.

Case 10

Title of innovation	Local tree killer  Photo 11: The effects of the local tree killer mixture after two weeks of application
Name of Innovator	Atoh Isaac Mutanga
Sex	Male
Description	A mixture is prepared using ingredients as 10 fingers of ripe banana, 3 cups of garri, 1 litter of kerosene, 1 litter of palm oil. The Bananas are mashed and the rest of ingredients added to it and mixed in a plastic bucket and using a stick or spatula to a thick paste. The back of the tree to be killed is removed using a cutlass upto about 50cm high and the paste is applied to this peeled section. After about three weeks the tee will be completely killed and all the leaves will shed reducing canopy cover on the field. After this, the tree can then be felled down easily.
History/Source of innovation	By trying many things to reduce the pain of felling down trees when establishing new cocoa farms or when they want to reduce shade trees in a cocoa field.
Innovativeness of the innovation	The making of a mixture to kill standing trees
Contribution to Development	The innovation helps in the elimination of unwanted trees in cocoa farms during land preparation or on old fields and thus saves labour
Level of Diffusion	He told his friends in a meeting group about 10 of them
Problems with the innovation	Once the mixture is prepared, it has to be used because it can be very toxic and acidic. A brush and a hand brush is needed to apply the mixture to a tree to protect ones hand from the acidic mixture

Case 11

Title of innovation:	Rearing of snails in a cage with eggs hatched in a container  Photo 12: Demonstration of snail house made with iron rodes
Name of Innovator:	Leke Asongtia John
Gender:	Male
Description	He picks snail eggs and put in plastic containers with holes for breathing and monitor them until they are hatched. They are then sent back to the snail shell to avoid losses. When they are mature they are either consume by family or the rest sold in the market The snails are grown in a cage constructed using rod and cement. He used rod 6 to make a cage. Blocks are used to build round with a door. Then he put the snails inside with food (pawpaw leaves, pawpaw, apple, water melon, cassava chaffs, cocoyam leaves). In case there are warms eating the snail, he removes all the snails and kill the warms. Snails go to hide. To avoid much water because of heavy down pour from the rain or heat from the sun, he covers the house with plastic paper or plantain leaves. He also covers the house with a wire mesh (net) to prevent lizards from entering as they are attracted by the food. He also decided to build an iron cage because of theft.
History/Source of innovation:	To gain time and have snails he started trying many things and got to understand that he could pick and hatch the eggs instead of picking the young snails.
Innovativeness of the innovation	Picking and hatching the snails and rearing the snails in an iron cage to avoid theft of the mature snails by snails hunters
Contribution to Development	This saves time and has opened a new niche to research on snails eggs production and hatchery in Cameroon to provide young snails for snails breeders
Level of Diffusion	Not yet
Problems with the innovation	The cage is very expensive to construct. They are often attacked by some nematodes that kill the snails

Case 12

Title of innovation:	Prevention and treatment of fowl disease  Photo 13: Demonstration of the preparation of treatment for fowls
Name of Innovator:	Angoh Njek Susana E.
Gender:	Female
Description	When fowls are two weeks old, squeeze fresh leaves of stinging nettle leaves and let the birds drink twice weekly. For the treatment, use nettle with red garlics and give thrice weekly. For animals mix the nettle juice with red garlics and give them twice weekly for prevention and for treatment add bush pepper and traditional palm nut oil. It addresses the prevention and treatment of flu and intestinal diseases.
History/Source of innovation:	She applies a combination of knowledge to arrive to this particular innovation. Generally, she prepares treatment using herbs for many human diseases some of which she learns from groups others which she develops through her personal knowledge and other combinations. So, when she keeps poultry, she imagined that problems of watery stools in poultry could be solved with a similar concoction prepared against stomach disorders in humans. Thus, she prepared it and gave the chicken at different doses and she found that it was working.
Innovativeness of the innovation	Use of this herb in poultry
Contribution to Development	Could help in reducing the cost of poultry production by providing cheap/local veterinary services and strategies for the prevention of pest and disease attack on poultry
Level of Diffusion	Limited but done through word of mouth but not sure if it is adopted or not
Problems with the innovation	Needs verification

Case 13

Title of innovation:	Free range chicken breeding  Photo 14: Chicken in the free range
Name of Innovator:	Boyo Nkem Atabong
Gender:	Male
Description	Crossing of local breeds of chicken with exotic breeds to produce off springs with specific characteristics. Developing the characteristics of free range birds to attain nearly 8 kg of market size.
History/Source of innovation:	Curiosity developed because of his interest in agriculture and through trying many things
Innovativeness of the innovation	High capital investment in free range chicken breeding with the poultry farm located in a palms plantation.
Contribution to Development	A key factor that can pull agricultural growth is high capital investment and the passion and expertise (ability and willingness to learn) of the entrepreneur. This is the first strength of this innovation and innovator. The technology helps maximizes the use of land and other resources (human resources, farm houses, land, plantation spaces etc) since the birds are allowed to feed in the wild within a big palm plantation. Also, the owner of the farm is the son of a very rich man and he himself is a chartered accountant in the USA who has return home to engage in farming. His social status and level of achievement can serve as a motivation to people with average and high incomes sources to engage in agriculture. Finally, this experience is unique as it creates employment as he recruits staff to work on this farm and guard the birds, serves as a place for student internship and also is a practical demonstration of how people with high capita can invest into agriculture profitable.
Level of Diffusion	Many people come and visit the farm and he receives students on internship
Problems with the innovation	It needs additional know how and institutional support

Case 14

Title of innovation:	Using chromolena (a wild plant used for feeding pigs) and achu soup (a traditional sauce prepared with much spices and palm oil) to increase pig breast milk flow  Photo 15: Demonstration of the preparation of mixture to stimulate increased breast milk flow
Name of Innovator:	Ngu Ursla
Gender:	Female
Description	Prepare achu soup. Give the culmilina and the achu soup simultaneously before giving them feed. Do this twice daily. This will solve the problem of breast milk shortage. Cut culmilina and wash. Warm water, add palm oil, salt and lime stone to form achu
History/Source of innovation:	Personal inspiration from the fact that achu soup is used for increasing breast milk flow in women. Culmilina is a herb highly appreciated by pigs and therefore promotes the consumption of the achu soup
Innovativeness of the innovation	The use of an artificial substance (achu soup) to increase breast milk flow in pigs
Contribution to Development	Reduce mortality of piglets due to lack of sufficient milk
Level of Diffusion	She has told some people
Problems with the innovation	Achu soup is expensive to prepare

Case 15

Title of innovation:	Production of coconut oil using refrigerator to avoid long boiling  Photo 16: Demonstration of putting the coconut juice in the fridge (right) and coconut oil (left) after preparation
Name of Innovator:	Mbeboh Nicoline
Gender:	Female
Description	The coconut is cracked, grind, wash, sieve to separate from chaffs and put in the refrigerator for two days. Once it is remove, oil is being collected at the top. The oil collected is then boil for 10 to 15 minutes to make sure any water left in it is dried. The chaffs obtained save as feed for chickens while the oil is then package for sale. Price depend on the quantity of the oil
History/Source of innovation:	The innovator once started to prepared coconut oil and disconnected the process after she had already grated the coconut and drained it. So she decided to preserve the mixture in a refrigerator to continue the next day. In the morning she realised that there was a hard layer on the surface. On pressing she realised there as water under. From then, she decided to take out all the oil and start
Innovativeness of the innovation	A technic to drain coconut oil from water to reduce boiling time
Contribution to Development	Reduce time and fuel for cooking coconut oil
Level of Diffusion	Locally shared with friends and family members about 30
Problems with the innovation	A refrigerator is expensive and grinding is complicated.

Case 16

Title of innovation:	Conservation of chicken by deep smoking for preservation in hot non-refrigerated condition  Photo 17: Smoking of chicken
Name of Innovator:	Emenyi Lovelyn Ngu
Gender:	Female
Description	This is done as follows, chicken is cleaned, and ingredients of your choice are added to it for seasoning. From here it is taken to the oven for smoking for 7 to 10 hours at different stages for different t period. Stage 1: preparation of place (fire wood oven Stage2: preparation of chicken, seasoning Stage3: smoking on hot oven with deep smoke created by wetting the wood and the wood shavings Stage 4: calculation: report writing. At the beginning, the weight of the carcass was observed and noted; at the end the weight is noted. Conclusively, the percentage of weight loss due to moisture loss gives the duration of the chicken at ambient temperature.
History/Source of innovation:	She studied this in school where the smoking was done using a modern oven. But now she has adapted the technique to traditional oven and she carries out the same process using this traditional oven with the same results.
Innovativeness of the innovation	Adaptation of the oven for smoking to a traditional oven
Contribution to Development	Seasoning of chicken before smoking and the smoking of seasons chicken on a traditional oven
Level of Diffusion	She had trained some women in her meetings on this technique
Problems with the innovation	Too expensive to practice and people do not have too much chicken until they need to store it for future use.

Case 17

Title of innovation:	Manufacturing of bathing soap using snail as the main ingredient  Photo 18: Samples of soap
Name of Innovator:	Mbezam Neigha Nicolas
Gender:	Male
Description	Ingredients: bark of some trees, white kernel oil, yellow stone, aloe vera, gengseng roots, moringa seeds, hardener to make the soap hard. Procedure: Ferment the tree barks for 3 days in water with genseng roots, then boil to extract the juice, grind the aloe vera roots, moringa seeds, yellow stones to powder, finally mix the powder products with the boiled extracts to produce a homogenous mixture. Then mix the solution with hardener (kernel oil) until it solidifies in a mould. The solid now soap is shaped as desired In the second recipes, the following ingredients are measured and put in a bowl, water, carrots, green calaba chalk, aloe Vera, grind snail shell, the brownish liquid from snails, palm oil, tomatoes, fuleri and colour. The entire content is then mixed until it becomes uniform. Prepared a big flat tray. The content is left to cool and solidify. Following the desired size is being split and package in its ready-made cottons with designs and a snail drawn on it
History/Source of innovation:	His wife grew up in a family that use to produce soap for laundry. But they have developed this technology and added other natural substance to the original mixture and now they are producing soap for bathing with a number of dermatological virtues.
Innovativeness of the innovation	Shifting from laundry soap to bathing and dermatological soaps.
Contribution to Development	They help resolve dermatological problems locally, create employment, valorise agricultural products and provide income and livelihoods to their family and employees
Level of Diffusion	The soap is sold in some cities in Cameroon although the publicity and marketing space is weak
Problems with the innovation	Needs some substantial capital investment to improve on the marketing

IRAD/PARI/FARA contribution to this innovation	A motorbike to ease transportation and movement in the search for ingredients and marketing of the soap

Case 18

Title of innovation:	Making of solar mobile equipment for the drying of cocoa  Photo 19: Drying of cocao
Name of Innovator:	FONKUER SALACK EBENEZER
Gender:	Male
Description	A shed is constructed using transparent papers over a drying surface made up of tapoline paper. This place is left in the open and during August September small cocoa picks of up to 5 bags are spread over for drying and on sunny days the plastic is rolled up.
History/Source of innovation:	Too much rain during the peak of the rainy season and waste of small harvest of cocoa. Since the paper retains heat and sun can penetrate it, the farmer tried and used this technology successfully.
Innovativeness of the innovation	A local dismantlable and mobile cocoa dryer that can be used at the peak of the rainy season for cocoa drying
Contribution to Development	It helps to reduce loss of cocoa beans
Level of Diffusion	Some farmers more than 30 saw it on his field and some of them have adapted theirs (about 10 that he knows).
Problems with the innovation	The dryer can only contain up to four to five bags of cocoa meaning that it is difficult to use in the case of having much cocoa beans.

Case 19

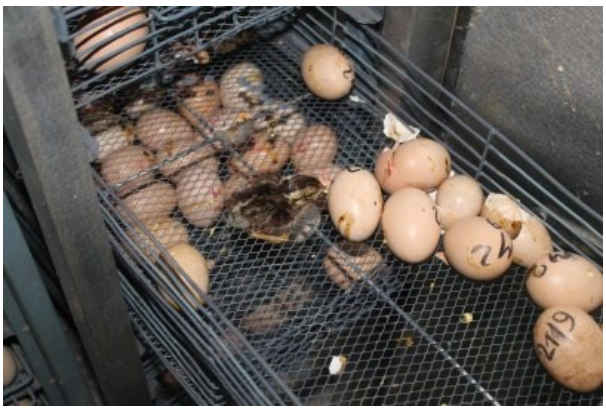
Title of innovation:	Incorporation of calyandra and moringa into chickens feed  Photo 20: Ingredients for the preparation of chicken feed
Name of Innovator:	Melitsowa Robinson
Gender:	Male
Description	After harvesting the calyandra and moringa leaves, dry them in the oven and later grind and put them in a bottle and cover. When composing 100kg of feed, I kg of moringa and 1kg of calyandra are incorporated in the feed to replace minerals.
History/Source of innovation:	The formulae for using moringa was developed when he was working with an NGO. But as time went on he has improved on the doses and finally dropped the job to be a business man keeping birds. He has developed a formulae that has been successful. Different formulae have been developed for different traditional birds and broiler. According to the farmers, this innovation improves the quality of eggs and meat and increase the rate of laying of birds. These plants replace mineral elements that are usually added in chicken feed. But all these assertations need to be verified.
Innovativeness of the innovation	The incorporation of on moringa and Calyandra (natural substances) into chicken feed
Contribution to Development	Reduction of cost of feed for poultry activities and easy access to hogh quqlity feed.
Level of Diffusion	Local
Problems with the innovation	No laboratory analysis to confirm the efficiency of this concoction/mixture of feed

Case 20

Title of innovation:	High sweet potatoes yields using improved land preparation techniques and good cultural practices  Photo 21: Investigating the productivity of potatoes after 12 weeks of planting
Name of Innovator:	Tchinda Pascal
Gender:	Male
Description	Association of old layer dungs (chicken) with straw to produce large white sweet potatoes for flour. He starts by cutting piles of imperata grass and allow to dry for 10 days. After he places them in furrows 1.5m away from each others. Then, ground is filled on the furrows to create ridges from around the 25th of May and wait until 10th of June to start planting. 5 days later, he starts verifying to make sure his potatoes cuttings are already sprouting.
History/Source of innovation:	He started attending agricultural shows and was challenged because he was unable to win a prize. Then, he recalled the traditional cultural practices in producing sweet potatoes. The first time he did it he got the 10th prize. This encouraged him and so he started thinking of ways of improving on his innovation to win awards. So, he increased the quantity of fowl droppings but realised he had more leaves and less tuber. Next, he reduced the fowl droppings but increased the straw with less soil and realised that the potatoes tubers were growing outwards and he had to mulch a lot. So, after several trials he came up with the recent cultural practice which now enables him to have very large tubers with good flour producing capacity.
Innovativeness of the innovation	Cultural practice for the production of large sweet potatoes tubers for flour production. The process of associating fowl droppings, straws and ridges as

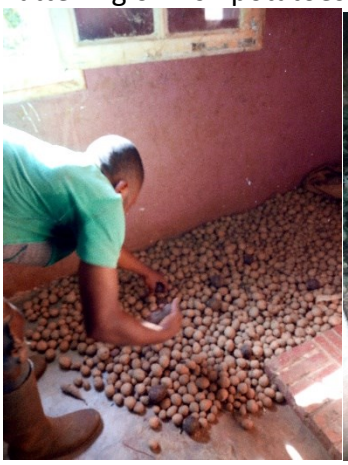
	well as the technique of building up the ridges for potatoes production is innovative.
Contribution to Development	On far storage sweet potatoes for upto 2 months after the planting season. Increase farm yield of sweet potatoes from 5 bags of 25kg per ridge to 7 bags of 25kg per ridge
Level of Diffusion	He does not want anybody to come around his farm during land preparation t come and see the process of preparing his ridges since this is his idea and he is benefitting from it. But has shared his innovation by word of mouth during agricultural show to more than 100 people and if they can do exactly what he is explaining to then it will be their luck. He suspects that about 10 people are now doing like him successfully because he saw his potatoes on the market and it came out that these people were does in the Agricultural shows they have been moving around with.
Problems with the innovation	Although potatoes production increase, the process of land preparation requires high energy and time investment. Also the increase potatoes needs a transportation means to carry it to the market

Case 21

Title of innovation:	Multi-energy multipurpose incubator  Photo 22: Eggs in the incubator
Name of Innovator:	Dankou Lucas
Gender:	
Description	Multi energy source incubator that uses kerosene, charcoal, gaz and electricity
History/Source of innovation:	Thanks to this innovation, areas void of electricity incubate their chicks using kerosene/charcoal making it easy for all. He started rearing birds when he was 8 years old. Since he was staying in a plank house, he use to wet the

	walls so that cockroaches could fall and the birds eat. He did this for some time and succeeded but after some time his birds started dying. As a way to save the eggs that were already being incubated, he decided to light a bush lamp and put the eggs above in a bamboo incubator and turn them manually. He succeeded to get some eggs hatched and later in 1986 he started developing this idea into modern hatchery incubator. Since then he has been adapting the idea to different circumstances and realities in the society. Totally he is able to incubate about 1000eggs per round and an incubator cost 800000frs
Innovativeness of the innovation	Locally constructed multi energy source incubator that uses kerosene, charcoal, gaz and/or electricity
Contribution to Development	Incubation of eggs even in rural areas
Level of Diffusion	He has sold 30 of the incubators to GIZ and some farmers groups. He has attended scientific and other events to exhibit the innovation.
Problems with the innovation	Many farmers are unable to purchase it and many people do not yet know about the strength of the incubators and therefore he does not have a good market as he would have expected.

Case 22

Title of innovation:	Fattening of Irish potatoes using Tithonia and a suitable cultural practice  Photo 23: Tithonia preparation for use as manure on potatoes field
Name of Innovator:	Noumbou Kana
Gender:	Male
Description	He piles a mixture of Tithonia leaves, kitchen waste, food crop waste and fowl droppings in a room and then he pour some water on the pile to make it moist and humid. As the pile starts decaying, he brings in more Tithonia leaves and add and turns the pile to place some of the decaying matter over the new plants. This is done through-out the year. When he starts with land

	preparation, more Tithonia leaves are placed on the furrows where he intends to build the mounts for planting his potatoes. Then some soil is added to the leaves and left for seven days after rain falls on it at least once. After this, he brings that mixture from the house and put around the spots where the potatoes seeds will placed. Then three days after, he plants his potatoes and two weeks after germination, he starts praying the potatoes with another concoction to avoid an attack
History/Source of innovation:	He grew up in a farming household and his parents used Tithonia for fertilising the soil. He has continued to cultivated potatoes to sustained his school and personal needs. But the soil on the land he was renting was too poor that he worked at a lost in 2012. He added fowl droppings in 2013 but this was too expensive. So he thought of mixing the Tithonia and the fowl dropping to reduce cost. He did the first time but the decay process was slow since it was left to decay unassisted. He decided to moisten the pile be watering and turn over the leaves and the process was faster
Innovativeness of the innovation	Process of producing an organic fertiliser from a mixture of Tithonia, fowl droppings and kitchen waste, a watering this mixture the facilitate the decay process.
Contribution to Development	Fertiliser formulae the can be easily accessible to farmers
Level of Diffusion	He shared with his 6 parents who are doing the same things now
Problems with the innovation	Too cumbersome and time consuming. Best for someone with smaller surface area

Case 23

Title of innovation:	Production of a highly concentrated conservable manure from Tithonia leaves  Photo 24: Sample of stored manure from Tithonia by the innovator
Name of Innovator:	Nanfack Tsafouet Magellan
Gender:	Male
Description	This innovation consisted of transforming green Tithonia leaves to a conservable organic fertilizer which will go a long way to boost agricultural production. This organic fertiliser will solve the problems arising from high cost of mineral fertilizer. They start by harvesting green Tithonia leaves

	especially those that don't yet bear flowers. Put in a back and keep foe some days. Once it decayed with a dark green colour, he dried it and applied it in the farm like mineral fertiliser. Planting is done five days after applying the Tithonia in the farm.
History/Source of innovation:	From an agricultural household, his parents use to send them to go and harvest Tithonia leaves around the village to use in fertilising their fields during land preparation. This process was so tedious and painful as they often had to carry large piles of fresh Tithonia leaves across the village. As they grew older, everybody left the house and the work became more tedious for their parents. Being an agronomy student, he started to think how he could make the work lighter for himself and his parents. Once he cut the Tithonia and never had time to transport it. On coming back after three weeks, it was rotten and part of it was getting dry. Then he decided to gather the decay and dry leaves and carried to the farm to use as mineral fertiliser. The harvest was as well good and this made him to start preparing the manure in this form to keep. In this was, when he had abit of time he could go and cut the leaves and put in a pile. After some time he pass and turn it and expose it to dry. Then about two days after or so he will go round with bags to load the manure inside which at this point is lighter and easier to transport.
Innovativeness of the innovation	The transformation of Tithonia leaves into a conservable manure
Contribution to Development	This technology increases and diversifies organic fertiliser that can be used by farmers at all levels
Level of Diffusion	His parents and some other people (say 30) around the village are now using the technique
Problems with the innovation	He has not evaluated the mineral content of the fertiliser

Case 24

Title of innovation:	Fertilisation of maize with a combination of human urine and Tithonia leaves  Photo 25: Maize field

Name of Innovator:	Kenfack Jose
Gender:	Female
Description	This innovation consists of associating human urine with Tithonia leaves for the ferilisation of . Ground Tithonia leaves are applied ten days after planting while the human urine is applied 3 weeks later. Stage 1: She begins by collecting 1500-2000 litters of urine a month before the start of the planting season. This could be used for a surface area of 1 hectare Stage 2: Preparation of Tithonia leaves Stage 3: Combination of the urine and Tithonia liquid, apply 3 times per week for 2 weeks Stage 4: Three weeks after, apply just human urine after six week of planting
History/Source of innovation:	She heard about the use of human urine in fertilisation of crops from a friend and tried it. To reduce the use of human urine she decided to add Tithonia leaves to the process and she had a very impressive harvest.
Innovativeness of the innovation	Use of human urine and Tithonia leaves for fertilisation
Contribution to Development	Reduction of pollution from urine and cheap and affordable organic fertiliser
Level of Diffusion	Just amongst their 5 person household
Problems with the innovation	Difficulty in collecting human urine

Case 25

Title of innovation:	Utilisation of wood ash and Mimosa for the protection of stored maize 

	Photo 26: Stored maize in the ban with Mimosa specie and wood ash (right) and demonstration of woodask collection (left)
Name of Innovator:	Kengni Bridgitte
Gender:	Female
Description	She spreads wood ash over Mimosa grass and the throws the maize with cobs over in a ban for drying/storage. She repeats this is layers until all her maize has been stored. The Mimosa stops rodents like rats from coming on the maize while wood ash fights against weevils.
History/Source of innovation:	Her parents used Mimosa to prevent against rodents on maize fields and in some cases when maize was harvested and left on the field while awaiting transportation to the house. They also used woodash to preserve maize in the house. As she grew up, she continued to practice what her parents use to do. About four years back, she moved to a house with a lot of yard and bushes around. Then she realised that using only the woodash at home for maize storage was not efficient since most of the maize was now being eaten by rodents. So, she carried some Mimosa grass to her house and left on maize that was stored before being prepared for the ban and she realised that the rodents did not attack the maize much. That's how an idea came that she should put some Mimosa on the ban and it reduced the level of attack of her maize.
Innovativeness of the innovation	The use of wood ash and Mimosa grass for storing maize in a ban
Contribution to Development	This innovation helps to fight against post-harvest losses
Level of Diffusion	She has shared with members of her associations (three associations in all with about 50 members). Some do not have the facility o a ban while others think that it is hard and painstaking to practice it.
Problems with the innovation	Some people think that it is hard and painstaking to practice it. For instance, Mimosa is difficult to harvest and transport because of the thorns on it.

Case 26

Title of innovation:	Concoction against Irish potatoes and beans leave blight and maize borers  Photo 27: Prepared and stored concoction by innovator
Name of Innovator:	Mintchougom Sidonie
Gender:	Female
Description	This is done by combining three different plants and allow to ferment for 14days. After this she use the product obtain to spray her farm at an interval of two weeks for prevention or at first symptoms, 2 litter of the product in 18 litters sprayer for treatment. The exercise is repeated at an interval of two weeks and at least thrice before harvesting. Generally, before planting season, she prepares a large quantity of the product and keep at home.
History/Source of innovation:	She had an accident 18 years ago and after her treatment many people we keeping away from her and she could not go to the market. She had no food and when she cultivated her field, she had a very bad harvest because of blight attack. Through word of mouth, she head about the possibility of a mixture that could assist her treat potatoes blight. She started trying it out with different mixtures and finally arrived at the present mixture after several trials. Since it worked for her beans field, subsequently she decided to try it on maize borers and it was successful. To confirm her experiment, she started spraying her field as usual but did not finish because she fell sick. The section that was sprayed produced so well compare to the one that was not sprayed. Subsequently her fields became a reference in the village and people were asking her what she was doing to have such a production. This is how she got involved in agricultural show and other trade fair expositions where she has won several prizes. Even at this stage she is still trying many other things since she has to compete for the agricultural show and this innovation is already being shared with farmers so she is thinking of something else.
Innovativeness of the innovation	The production of an efficient organic fungicide and insecticide using traditional herbs that can be at the reach of all farmers

Contribution to Development	An organic fungicide/insecticide/pesticides
Level of Diffusion	Her technology has been shared with atleast 1000 people some in her village and others during agricultural show events
Problems with the innovation	No laboratory tests has been carried out to affirm its efficacy and active ingredients. Also it needs a lot of water to use the product

Case 27

Title of innovation:	Modern dryer for food products that uses gaz or electricity  Figure 28: Picture of modern dryer
Name of Innovator:	GIC AREUCC
Gender:	Group of women mostly but mixed
Description	It is a dryer that uses domestic gaz and/or electricity at harmonised temperature to dry agricultural products
History/Source of innovation:	The inventor grew up in an agricultural household in a time when fridges were not common. Their household used to lost a lot of harvest due to lack of storage and soon after the harvesting season was over, they went hungry in their home. They dried some food items especially leafy vegetable but it was complicated for fruits, fruits vegetables and other food stuff. And even the sun drying was not effective as some of the food stuff started moulding after some time because it did not dry well. Growing up with such a daily challenge, This stood as a challenge to the inventor who regretted loosing most of their family harvest each year. He made the first dryer to compete for a prize while in school. Since then he has been improving on it and trying the regulate the temperature and reduce drying time of agricultural products while maintaining their natural forms. On sunny days, some of the

	crops were often dried in the sun and brought into the dryer to finalise the drying at the regulated temperature
Innovativeness of the innovation	A cheap and affordable means of drying food stuff and other agricultural products
Contribution to Development	This innovation prevents post-harvest losses and increase conservation of crops when dried.
Level of Diffusion	He has sold 10 of the dryers to some agricultural firms and Common initiative groups
Problems with the innovation	Lack of wide market for the dryers

The prize award ceremony

The award ceremony in Mifi was organised on October 21, 2017 at the esplanade of the Regional delegation of the Ministry of Agriculture and Rural Development. The prizes varied greatly depending on the requests of the farmers and need for the development and out scaling of the innovation. These are presented on Table 4 and Figure 29.

Table 4: Prize award in Mifi – West region

Name of innovator	Innovation	Position	Code	Prize Item
Dankou Lucas Delque Gic Dalucam	Multi energy source incubator that uses kerosine, gaz and electricity	1	MM24	Documentary
M Melitsowa Robinson	Incorporation of calyandra et Moringa into chicken feed	2	MM1	A grinding mill
M Tchinda Pascal	High sweet potatoes yields using improved land preparation techniques and good cultural practices	3	MM14	A motor bike
M Nanfack Tsafouet Mageline	Production of conservable fertiliser from Tithonia	1	YM4	A motor bike
M Noumbou kana	Treatment and fattening of irish potatoes using tetonia and a suitable cultural practice	2	YM5	A motor bike
M Kenfack Jose	Fertilisation of maize with a combination of human urine and Tithonia leaves	3	YM1	School items
GIC AREUCC	Modern dryer for food products that uses gaz and electricity	1	FM3	A documentary
Mme Mintchougoum Sidonie	Concoction against Irish potatoes and beans leave blight and maize borers	2	FM7	A well
Mme Kengni Brigitte	Utilisation of wood ash and Mimosa for the protection of stored maize	3	FM4	50 sheets of 3m Roofing sheets

Photo 29: Winners of the prize award in Mifi – West region

In Vina, the prize award ceremony took place on November 11, 2017 during the open door day of the Vina Divisional delegation of the Ministry of Agriculture. Prizes awarded are presented on Table 5 and Figure 30 and 31.

Table 5: Prize award in Vina – Adamawa Region

Name of Innovator	Innovation	Position	Code	Prize Item
M Mohamadou Awalon	Prevention against mouth and foot disease in cattle	1	MV17	Complete Moto pomp + Roofing sheets
Gic des femmes dynamique du lac Mabanga	Fight against rodents like bush fowl (*Francolinus bicalcaratus*) during maize planting	2	YV17	Roofing sheets+push truck
M Abbo Nouttou	Raising of a calf that loses its mother from birth	3	MV19	Complete Motopomp
Mme Halimatou Madeleine epse Adjia	Processing of white yams (*Dioscorea alata*) into garri	1	FV6	Shop
Mme Hawa Hamayadji	Conservation of cassava cuttings for up to six months during the dry season	2	FV4	Roofing sheets
Mme Mecka Emgbang Jacqueline	Chocoginger - transformation of cocoa into ginger flavored chocolate	3	FV2	Shop
Mme NANI BOUBA ELISABETH	Production of yaourt from soya beans	1	YV4	A deep freezer
M. Moumini	Prevention of weevil attack on potatoes fields using wood ash	2	YV1	Motopomp
Mme Fendju Djatio Nadine	Conservation of irish potatoes using saw-dust for up to six months in the house	3	YV6	Ceiling board and blank

Photo 30: Winners of the price award in Vina – Adamawa Region

Photo 31: Some Prizes in Vina – Adamawa Region

In Buea, the award ceremony took place in Ekona during the scientific animation meeting of IRAD on January 25, 2018. Prizes awarded are presented on Table 6 and Figure 32.

Table 6: Prize award in Buea FAKO – Southwest region

Name of innovator	Innovation	Rank	Code	Prize item
Atoh Isaac Mutanga	Local trees killer	1	MF16	Roofing sheets
Leke Asongtia	Rearing of snails in a cage with eggs hatched in a container	2	MF9	Snail house
Fonkuer Salack Ebenezer	Making of solar mobile equipment for the drying of cocoa	3	MF6	Complete Atomizer
Mbeboh Nicoline	Production of coconut oil using the fridge to avoid long boiling	1	FF8	Complete Grinding mil
Ngu Ursla	Using chromolena (a wild plant used for feeding pigs) and achu soup (a traditional sauce prepared with much spices and palm oil) to increase pig breast milk flow	2	FF17	Roofing sheets
Angoh Njeck Susana	Prevention and treatment of fowl diseases	3	FF14	Roofing sheets
Mbezam Neigha Osee Nicolas	Manufacturing of bathing soap using snail as the main ingredient	1	YF2	Moto Byke
Boyo Nkem Atabong	Free range chicken Breeding	2	MF12	Roofing sheets
Emenyi Lovelyn Ngu	Conservation of chicken by deep smoking for the preservation in hot non refrigerated condition	3	YF6	Roofing sheets + cement

Photo 32: Winners of the price award in Buea, Fako – Southwest region

Outcomes and Perspectives

Outcome of the FIC in Cameroon for future research

All the innovations registered in this process may need further scientific verification and repackaging to confirm whether or not these innovations are working. Considering the case of the winning innovations, we were able to categorise them into various research domains of mechanisation, crop production, post harvests storage, mechanisation, food preservation and food processing and pharmaceutical industry. This wide diversity of the twenty seven innovations confirm the fact that no matter where farmers are located, they can create innovations in so many domains. These innovations by research domain are presented as follows:

Mechanisation

- Kerosene, gaz, and electricity multifonctional incubator
- Making of solar mobile equipment for the drying of cocoa
- A multipurpose food crops dryer

Pharmaceutical industry

- Manufacturing of bathing soap using snail as the main ingredient

Animal production

- Incorporation of calyandra et Moringa into chicken feed
- Using chromolena (a wild plant used for feeding pigs) and achu soup (a traditional sauce prepared with much spices and palm oil) to increase pig breast milk flow
- Raising of a calf that loses its mother from birth
- Prevention against mouth and foot disease in cattle
- Prevention and treatment of fowl diseases using local concoctions
- Free range chicken breeding
- Rearing of snails with eggs hatched in a container

Crop production/Storage

- Fertilisation
  - Improvement of the production of sweet potatoes
  - Production of conservable fertiliser from Tithonia
  - Treatment and fattening of irish potatoes using Tithonia
  - Fertilisation of maize using human urine et Tithonia leaves
- Crop Pest and Disease prevention
  - A concoction against potatoes and beans leave blight
  - Prevention of rodents like Grey Partridge (*Francolinus bicalcaratus Francolinus bicalcaratus Francolinus bicalcaratus Francolinus bicalcaratus*) bush fowl) during maize planting
- Land preparation
  - Local trees killer

Preservation/Storage

- Conservation of cassava cuttings for up to six months during the dry season
- Storage of maize using wood ash in a ban

- Conservation of irish potatoes using saw-dust for up to six months in the house
- Prevention of weevils attack on potatoes fields using woodash Food processing
- Processing of white yams (*Dioscorea alata*) into garri
- Chocoginger - Transformation of cocoa into ginger flavoured chocolate
- Production of yaourt from soya beans
- Production of coconut oil using the fridge to avoid long boiling
- Conservation of chicken by deep smoking for preservation in hot non refrigerated condition

Implications of the contest for PARI and other key agricultural innovation stakeholders

As noted earlier, PARI seeks farmers innovations related to agricultural food value chains and that can contribute to improvements in food and nutrition security in PARI countries and the world. During the execution of this activities in Cameroon, 162 innovations in the broad fields of processing and post-harvest management, crop production, animal production, and mechanization were identified in just three divisions. This shows that at farmers levels, there is quite much going on in the agricultural value chain both the plant and animal production domains. Therefore, by refining and repackaging these innovations, PARI can create a great impact in the countries of execution and beyond.

Reasons for farmers' innovations were interesting to note. The first reason for innovation was competition among farmers for prizes. We found out that some of the innovations resulted from the farmers wanting to win prizes during the Cameroon agricultural shows. Consequently some farmers will start trying new things so as to compete in any future events that may come their way. This means that opportunities to win a prize or to gain something can be a stimulant to make people think out of the box and develop new innovations. Thus, PARI, governments and other innovation stakeholders may need to multiply events of competition or create opportunities like sure markets to stimulate farmers to generate new innovations.

The second reason is the challenges that farmers face like the death of a cow after putting to birth or death of a hen that was incubating eggs or storage of food for future consumption etc. This confirms the theory according to which, when farmers face new challenges they develop strategies to overcome them. Therefore, a way to identify strategic innovations at the local level is to look at past calamities that affected grassroot actors and investigate strategies that were employed to cope with these challenges.

The outcome is also exiting to know and sets the way forward. Comparing and rating innovations from different segments and commodities can be subjective and biased with respect to the development of a particular sector or of a particular commodity since each sector and commodity is important in its own way. Farmers are aware of the challenges of food and nutrition security and have pushed innovations at the level of farming and cultural practices, animal production, food processing and food preservation. The contest is a smart incentive for farmers to share the wealth of knowledge they possess and also bring out some malpractices taking place in the agricultural value chain. Local post-harvest and food processing activities are growing so fast unaccompanied by research and development institutions. However, this can be a health danger to consumers who rush for such products and technologies. This only underline the need for research to refine, repackage and disseminate these innovations through joint efforts with the farmers and partner institutions. This contest can spur up product development but it will be most interesting if specific commodity value chains or areas of product development (e.g. mechanization, post harvest,

food preservation, food sales, food packaging etc) are targeted to capture innovations for all its segments.

Conclusion

The organization of the FIC in Cameroon was very successful since all the activities were implemented and innovations identified. It involved a wide range of 162 local actors in the three regions. This has been learning and doing process and today there are atleast 200 people (researchers, technician, extension workers and the FIC and PARI team in Cameroon) in the agricultural value chain that have learnt about this initiative and can organise similar activities. The approach of training many extension workers was strategic for the scouting of diversified innovations. However, it is also very expensive to manage since some scouters identified innovations in really far off places. Contrarily to traditional believes that innovations were more common in rural areas, innovations were present in the rural and urban areas depending on the challenges that each set up presented. Urban areas faced the challenges of food preservation for consumption on future dates and therefore more food processing innovations were present here. Urban areas offered more markets for processed products so people tried to process foods for sales as well as develop poultry activities, agricultural intensification and improved cultural practices and use of organic manure and insecticides to maximise land, labour and capital. Since the scouters are many and their are of intervention vast, innovations were identified in all directions and in some cases in areas with far off distances. Therefore, the verification process was very complex and could be high time and energy consuming especially in Vina where the distance between subdivisions were very far and on bad roads and one had to each time come back to Ngoundere before taking the next direction. This far distances also discourage some scouters from scouting and coming back to give their completed questionnaires.

The training time was quite small and follow up was weak and this result to less completed applications or scouters completing applications haphazardly. However, this was the best approach with the financial limitations. But if finances could permit, it would have been best to organise a follow meeting with all the scouters midway with a meeting to share difficulties and challenges so as to improve on the process of documenting the innovations. Although the evaluation teams was made up of a college of exerts from almost all fields, this process still remain challenging. This is because, comparing and rating innovations from different segments and commodities can be subjective and biased with respect to the development of a particular sector or of a particular commodity.

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