

Report of Farmer Innovation contest in Bungoma, Kakamega and Siaya Counties

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Executive Summary:

Smallholder farmers engage in production activities under varied agro-ecological conditions thus blanket recommendations are not always appropriate meaning context specific solutions in form of farmer led innovations are sometimes required. These innovations often remain invisible or 'below the radar' of research scientists. In order to scout for these innovations and also encourage farmers to innovate, a farmer innovation contest was conducted in Bungoma, Kakamega and Siaya counties by KALRO PARI scientists with financial support from ZEF through FARA. The contest involved scoping, sensitization and training of scouters, publicity on electronic and print media, innovator applications, screening, evaluations, validation and awarding of prizes. Scoping involved a reconnaissance visit to the counties to collect key county information. This visit also helped to identify the best media for publicizing contest information. Sensitization and training sessions for extension staff in the three counties were thereafter held where local farmer innovations concept was introduced and explanations on how to fill the contest application forms given. This was followed by radio announcement jingles in West and Mayienga FM at prime hours in both local and Swahili languages. Application forms were filled and submitted to the sub county extension officers and forwarded to the county offices. An evaluation panel was constituted comprising of extension offices, researchers and PROLINNOVA Kenya network staff and innovators. The submitted applications were screened and five innovations selected per gender category per county and validation field visits made to the innovators fields where new scoring was done and three winners per category determined. The selected innovations comprised 96% technical innovations that included 53.8 % crop value chains and 42.3% livestock value chain innovations and one organizational innovation on marketing. The winners were then awarded prizes in various functions in the counties. In conclusion, the contest demonstrated that farmers have innovations that can be improved and promoted for impact and the winning and non-winning farmers' innovations deemed useful to other farmers can be disseminated and up-scaled within and to other counties.

REPORT ON THE FARMER INNOVATION CONTEST

1.0 Introduction

Innovation is essential for agricultural and economic development (Hayami and Ruttan, 1985; World Bank, 2011). In the past, in agriculture, generation of innovations was mostly externally driven with farmers often considered as adopters. However, as result of the rapidly changing economic environments, many farmers are not only adopters but are also generators of innovations (Reij and Waters-Bayer, 2001). Because of this, in recent years there has been a concerted effort to promote farmer innovations. This is because farmers innovate;

- To address the challenges they are frequently faced with;
- To complement the highly promoted externally-driven innovations in addressing the increasing challenges conflicting agriculture;
- To develop local innovations that are context specific since their production is under varied agro-ecological conditions which render blanket recommendations inappropriate for all conditions.;

Since their innovation processes are claimed to be relatively cheaper, easily accessible, and locally appropriate (Reij *et al.*, 2009; Waters-Bayer and Bayer, 2009). Farmer innovations include; creating an entirely new (and better) way of doing things; modifying or adding value to common practice; modifying external technologies or adapting them to local conditions. Any practice along the food chain (crops, livestock and fish values chains production, processing, transportation, handling, storage, marketing) that is done differently from commonly known or traditional practice and is developed primarily by a farmer or group of farmers themselves (without direct support from extension, development agents or formal research) qualifies as a farmer innovation and this can be technical, organizational or institutional.

The Program for Agricultural Research in Innovations (PARI) in its effort to identifying high-potential bottom-up farmer innovations instituted farmer innovation contests in 12 African countries including Kenya because innovators often lack incentives to share their newly developed practices. The farmer innovation contest is a procedure in which farmers compete for prizes and share their independently developed innovations. The awarding of prizes to the winners serves as an incentive to overcome innovation secrecy and has been found to be a good instrument in

scouting local innovations (Tambo and Wunscher, 2014). It is also a way to encourage farmers to be more innovative and/or continue innovating.

2.0 Methodology

The farmer innovation contest in Kenya was spearheaded by the KALRO PARI team, in collaboration with the FARA/ZEF team and Ministry of Agriculture Livestock and Fisheries in the three Counties where the contest was implemented. The study started with a meeting between the PARI team in Kenya and the staff from ZEF and FARA. During the meeting, the team from FARA and ZEF introduced the idea of the farmer innovation contest and the details on what this entailed discussed and agreed upon. The farmer innovation contest was open to male farmers (>35 years), female farmers (>35 years), youth (18-35 years) and groups working in the food value chain in the three counties. By contesting and eventually obtaining prizes (awards), it was expected that the innovative farmers could share information on the innovation. Adoption of these innovations by other farmers could then contribute to increased food security and livelihoods thereby leading to agricultural development.

2.1 Choice of contest study area

In Kenya, the farmer innovation contest was carried out in Kakamega, Bungoma and Siaya. The three counties were purposively preselected for the contest because this is where the Green Innovation Centre (GIZ) activities are concentrated.

2.2 Introductory visits to the Counties

The first step towards implementing the farmer innovation contest, a PARI team from KALRO headquarters and from ZEF/FARA visited the agricultural offices in each of the three selected counties to sensitize them. During the visits the team met senior staff from the Ministry of Agriculture, Livestock and Fisheries (MoALF), including the County Ministers of Agriculture, Chief Officers, Agriculture and the County Directors of the various departments within the County Agriculture Ministries. The discussions focused on the proposed innovation contest, its objectives and the perceived benefits of the contest to the farmers and to agricultural production in general. The PARI team also outlined the step by step approach to be used to select the farmer innovators and the role that the field extension officers were expected to play as well as the timelines. In each County, a contact person was appointed to be the lead person for all activities pertaining to the farmer innovation contest as well as act as the link between the Ministry of Agriculture, Livestock

and Fisheries and the research team. In addition, he/she was expected to compile a list of the number of extension staff in each of the Sub-Counties within the selected Counties.

The best possible mechanisms through which farmers could get information about the farmers' innovation contest were also identified. These included; through extension officers, local radio stations, text messages, churches and County administrator's barazas/meetings. Others were; farmer organizations such as KENAF, cooperatives, cluster leaders (fisheries) and value chain platforms. During the visit, background information about the three Counties was collected such as the number of sub-Counties and wards in each County. This was in order to have an idea of the number of staff likely to attend the training that was to be subsequently organized.

The most appropriate radio stations for each of the three counties were also identified and visited. The details of the announcements that were to be made were agreed upon and the cost implications determined. Conversely, discussions were also held with some NGOs especially those under the GIZ initiative who were expected to be involved in the contest. Visits were also made to the KALRO Centres located within the three counties including Kakamega and Kibos and discussions held with Centre Directors.

3.0 Training Extension officers

One day trainings were organized and conducted in each of the three Counties where one extension officer from each ward in each of the Counties was trained in addition to the officers from the County headquarters representing the various departments within the Ministry of Agriculture. The trainings were conducted by ZEF, FARA and the PARI team in Kenya. From Bungoma County, 45 ward extension officers and five staff from the County headquarters attended the training whereas from Kakamega County, 60 ward extension officers and three staff from the County headquarters attended. From Siaya, consistent with the number of Wards, 35 Ward extension officers and five County officers were trained. The training included introduction to farmer innovations; how to identify an innovation; examples of farmer innovations; about the farmer innovation contest; who is eligible to apply; the roles of the scouts and rewards. Participants were then taken through the application forms and details on how to apply including the timelines. The extension officers were given six weeks in which to scout for the innovations. The contest was open to male (>35 years), female (>35years) and youth (18-35 years) farmers and groups working in the food value chain in the three counties.

4.0 Scouting for the innovations

Soon after the training the extension officers embarked on scouting for innovations in their various areas of mandate in the subsequent six weeks. To ensure that as many farmers as possible knew about the contest, information on the farmer innovation contest was announced on West FM and Mayienga FM which are local radio stations in the three Counties. The announcements were made in vernacular (local language) and in Kiswahili. The script (announcements) used were prepared and edited by the PARI team in liaison with the radio stations. The announcements included information on where the innovators could obtain more information and collect the application forms. The announcements were for about 24 days within the application period and ended one week before the deadline for application. There were two mobile numbers set aside and kept by two KALRO staff to where farmers could call and inquire about the contest. Many farmers called in and were given full information as well as referred to their extension officers where they could pick the forms.

By the end of the scouting period 75 applications were received from Siaya County, 115 from Kakamega County and 156 from Bungoma County. Assigned staff from KALRO Kakamega and KALRO Kibos went round and collected the filled application forms from the sub-County offices. Due to the large numbers of applications and shortage of time, the forms were not screened to ascertain whether the application was an innovation or not. The evaluation team thus started by screening the innovations before they did the evaluation as discussed below.

5.0 Screening and evaluation of the applications

5.1 Formation of the evaluation committee

An independent team of evaluators was formed for each County to evaluate the applications and score each application. The team consisted of two staff from the Ministry of Agriculture (one from crops and one from livestock), a farmer representative, NGO representative, and two staff from the KALRO PARI team. In addition, there were three representatives of NGOS/farmers from outside the three Counties who were suggested by the ZEF/FARA team – each joined one of the three teams. Each Committee held a three day workshop in their respective County Agriculture / KALRO office to undertake the exercise. Dr. Tambo from ZEF did backstopping across the three Counties.

5.2 Development of the criteria for ranking

To ensure a smooth ranking of the innovations, a criterion for ranking was developed which the evaluation team discussed where five criteria were agreed upon and assigned weights as shown in Table 1 below. The economic potential of the innovation was given the highest weight followed by the innovativeness/originality/uniqueness of the innovation. The lowest weight was on gender friendliness.

Table 1: Criteria for ranking farmer innovations and their weights

Criteria	Weight
Economic potential	0.3
Innovativeness/originality	0.25
Adoption potential	0.20
Environmental friendliness	0.15
Gender friendliness	0.10
Total	1

5.3 Screening of innovations

The applications were initially screened by the evaluation team to ascertain those that were innovations and could enter the contest and those that were common practice and were not innovations. From the 75 applications in Siaya County 42 were innovations while in Kakamega County, out of 115 applications 66 were found to be innovations and in Bungoma, out of the 156 applications 41 were innovations. The application forms for those that were identified to be innovations were separated into three categories; men, women and youth (18 to 35 years old) as shown in Table 2.

Table 2: Summary of distribution of selected innovators by county and gender

<i>County</i>	<i>Male</i>	<i>Female</i>	<i>Youth</i>	<i>Total</i>
Bungoma	17	12	12	42
Kakamega	41	22	3	66
Siaya	29	12	2	43
Total	87	46	18	151

5.4 First level of evaluation

After screening, the evaluation team of about eight in each County then divided themselves into two sub groups of four each. Each sub group went through each of the applications that qualified as innovations and scored them independently against the five criteria that were developed prior to starting the evaluation. The same criteria was used across the three Counties. The criteria were weighted so as to add up to one as shown in Table 1.

Each application was evaluated and given a score against each of the five criteria. The scores ranged from 1 to 5 where 1 was the lowest score and 5 was the highest score. The procedure followed was that the sub group discussed among themselves until they agreed on a common score for each criteria of a given application. The scores were then weighted for each criteria and then summed for each application giving a weighted sum as shown in the equation 1 below:

$$WS_f = \sum_{i=1}^5 score(f_i) * (w_i) \quad (1)$$

Where

WS_f = Weighted sum for farmer f

i = Criteria for scoring (1, 2, ..., 5)

$score(f_i)$ = Score for farmer f in criteria i

(w_i) = Weight for criteria i

An average of the weighted sum for the two sub groups was calculated and the average weighted sum was used to rank the applications from one to last. The highest average weighted sum was number 1 and the lowest average weighted score was last. This was done separately for three categories of farmers (men, women, and youth). Those who ranked from number 1 to 5 in each gender category moved on to the second stage.

6.0 Validation of selected innovations evaluation and final ranking

The team of evaluators for each County gathered again two weeks after the initial evaluations to conduct field validation of the innovations that had been ranked between 1 and 5 in each of the three categories. Farmers were visited in their farms to ascertain that they were the actual innovators and that the innovation actually exists. The validation exercise also involved

interviewing the farmers on the reported innovation. In addition, the team had an opportunity to see the innovation, where feasible. All the fifteen farmers in each County were visited by the independent evaluation team after making prior appointments with the farmers via their mobile phones. After discussing with the innovators and where possible observing and getting a demonstration of the innovation by the innovator, the team made fresh scores using the same criteria described in stage 4 above except that they did not divide themselves into two sub- groups but discussed and agreed on the scores as one group. This was done for all the 15 farmers in each of the three Counties. The scores were again weighted and summed using the same procedure described in equation 1.

7.0 Final ranking

To obtain the final ranking of the innovations, the weighted sum obtained after visiting farmers/farms with the top five innovation (validation) was averaged with the weighted sum obtained in step four (first step of evaluation). The resulting score was considered as the final score and was used to rank the farmers. The first three highest ranking innovators in each gender category in each of the three Counties were picked as the best

8.0 Results

At the end of the evaluation exercise there were three winners in each of the gender categories in each County. Out of the 25 innovations, the highest innovations were on crop protection (40%) while animal health had 28%; post-harvest 12%; livestock production and post- harvest handling had 16 and 12% respectively. A summary of the winners is shown in the Tables below.

Table 3: Winners of the innovation contest in Bungoma County

Name of farmer	Name of innovation	Rank
Female category		
Niva Naibei	Using ‘ <i>Armoorit</i> ’ tree bark for control of ECF and FM Disease	1
Consolata Wanyonyi	Bean storage and preservation	2
Margaret Simuli Sitawa	Fresh sweet potato storage innovation	3
Male Category		
Japhether Kunania	Cross breeding local melon with Hybrid melon	1
John Bitanu Simiyu	Marketing Asian Vegetables	2
Japheth Wekesa	Using ‘ <i>Kumutelende</i> ’ (a local herb) in control of moles	3

Youth category		
Carolyne Wameme	Fresh Sweetpotato storage innovation	1
Omulepo Derrick Omuse	'Egirirol' extract	2
Henry Seda	Charcoal dust as remedy to ant and termites	3

*ECF- East Coast Fever *FMD – Foot and Mouth Disease

Table 4: Winners of the innovation contest in Kakamega County

Name of farmer	Name of innovation	Rank
Female category		
Gladys Igandwa	Inducing cow to heat	1
Berita A. Okila	ITK for Foot and Mouth Disease	2
Margaret Okech	Use for tithonia for nematodes	3
Male Category		
Stanely M. Imbusi	Domesticating stingless bees	1
Yohana Imbusi	One chick dose	2
Wycliffe Mulwale	Health booster for animals	3
Youth category		
Evans Awani	Use of Mexican marigold for cereals	1
Benard Nyaramba	Using pig dung to feed chicken	2
Janepher Nyanga	Using Mexican marigold to kill moles	3

Table 5: Winners of the innovation contest in Siaya County

Name of farmer	Name of innovation	Rank
Female category		
Angeline Musis Odero	Termite Control	1
Pamela Adhiambo Ochieng	Use of Herbs as Pesticide and Liquid Fertilizer	2
Monica Awino Owira	Eye treatment innovation	3
Male Category		
Cornellius Otieno Obonyo	Kodaclomm Chicks Brooder 1996	1
Kenneth Mody Raila	Herbal Treatment of Poultry Coccidiosis	2
Wycliffe Ojal Kuyo	Prevention of Newcastle Disease in Poultry using Fresh Goat Milk	3
Youth category		
Collins Omondi Awandu	Compost Manure from Water Hyacinth	1
Vincent Okoth Otieno	Multi-Grain Thresher	2

9.0 Award of winners (best innovators)

After completing the evaluation exercise and knowing the best three innovators in each category and in each county, an occasion was organized in each County to award prizes to the winners. All the innovators who submitted applications were awarded with certificates of participation. The prizes were awarded as follows:

1st 2nd and 3rd Prizes for best male innovators per county

1st 2nd and 3rd Prizes for best female innovators per county

1st 2nd and 3rd Prizes for best youth innovators per county

The prizes given were:

1st Prize = Equivalent of 75,000 KES (750 USD)

2nd Prize = Equivalent of 50,000 KES (500 USD)

3rd Prize = Equivalent of 30,000 KES (300 USD)

10.0 Challenges

Given that this was the first time the farmer contest was organized in the various Counties, there were a number of challenges. Although the extension officers (innovation scouters) were trained on how to identify innovations, many were still unclear resulting in several common practice applications. This led to disillusionment amongst extension officers and farmers who expected to participate in the competition but could not since their applications were disqualified at the screening stage.

Conversely, the time frame provided for the contest was short thus the applications could not be verified on site. It was also difficult to verify some of the innovations because of the seasonal nature of agricultural production. It was off season for some of the innovations to be demonstrated.

11.0 Highlights of some of the winning innovations

11.1 Storage of fresh sweet potatoes

Innovator: Carolyne Wameme – Best youth innovator, Bungoma County

This is an innovation that addresses the high perishability of sweet potatoes after harvest; which leads to food insecurity and poor marketability. The innovation was intended to reduce the high losses of fresh sweet potatoes after harvest in glut periods and enable the farmers to consume and / or sell at an appropriate time without rushing.

The innovation: Harvested sweet potato tubers, are sorted first to remove damaged ones. A hole dug under a tree is layered with dry grass upon which undamaged tubers are placed. The alternating layering is repeated until the hole is filled up. This is then covered with a layer of dry grass and then soil. During dry season the area is watered to keep the tubers fresh. The layers of dry grass allows fresh air circulation thus keeping tubers fresh. In this way, the tubers can be stored and remain fresh for up to three months availing food. Consequently, there is reduction in losses through perishability and allows consumption over a longer period. The farmer is also able to sell the sweet potatoes when prices are higher (after the glut period) and hence higher income.



Carolyne digging up her preserved sweet potatoes with evaluation team checking the potatoes

11.2 Domesticating stingless bee

Innovator: Stanely Mukhaya Imbusi – Best male innovator – Kakamega County

Stingless bee farming is an innovation that aims to conserve the endangered stingless bee of Kakamega forest and its neighborhood. The genesis of innovation was a concern over the

destructive harvesting of stingless bees (colonies) which is an important source of honey with special medicinal value.

The innovation: Stingless bees are domesticated through use of special hives (15cm*15cm*45cm) with a 1.5cm opening at the bottom to allow for hive cleaning by the bees. The bees are managed through use of different agroforestry species as source of nectar and provision of water. Honey is harvested continuously through staggered colonization of hives.

Benefits of Innovation: They include enhanced conservation of stingless bees as a result of farmers adopting stingless bee keeping. The stingless bee is a source of valued medicine for diseases such as asthma and diabetes while honey is a source of income for the farmers and a source of employment.



Stingless bee

11.3 Kodaclomm poultry brooder

Innovator: Cornelius Otieno Obonyo– Best male innovator – Siaya County

The genesis of the innovation was concern over high chick mortality and feed wastage. The innovation ensures a clean environment for feeding and watering that minimizes feed wastage.

The innovation: The brooder is constructed using various sizes of plastic containers (20 liters round containers to build perforated floor, top and side walls; 10 liter round containers for feed; and two 3 liter containers for water). The water containers are supported and the feed troughs and water containers are filled. Once that is done the constructed brooder is disinfected, dried and

conditioned to room temperature and the hatched chicks (up to 50) are placed in the brooder. Plastic a poor conductor of heat and easy to clean is used to regulate the temperature.

Benefits of Innovation: Minimal chick mortality because of natural source of heat and non-contaminated feeds and water as well as reduced exposure to predators such as hawks. In addition, there is minimal use of veterinary drugs because of the clean feeding and watering environment. As a result, the farmer has higher profits.



11.4 Cross breeding local melon with HB melon

Innovator: Japhether Kunania – Best male innovator – Bungoma County

The genesis of the innovation is concern over the susceptibility of the hybrid water melon to diseases and drought. The innovation yields a water melon that is hardy – tolerant to drought and diseases.

The innovation: The innovator plants the wild water melon as a root stalk and grafts it while it is still young using a hybrid watermelon bud (scion). This is then tied with polythene. After the hybrid water melon shoots, the growing tip of the wild water melon is then cut off allowing the growth and fruiting of the hybrid water melon. The fruits have the same characteristics of hybrid watermelon thus they are many (high yield), and sweet. In addition, because of the wild watermelon root stalk the plant is hardy i.e. it is tolerant to common diseases as well as drought.

In dry seasons, where even the hybrid watermelons fail, the grafted water melon will still bear some fruits.

Benefits of Innovation: The benefits include increased income from the sale of watermelons particularly during the dry season when other farmers are unable to produce them. This means the innovator gets higher prices during such times. There are also environmental benefits because of reduced pesticide use since the plant is disease tolerant.

12.0 Conclusions and Recommendations

The awarding of prizes to the winners serves as an incentive to overcome innovation secrecy and is a good instrument in scouting local innovations (Tambo and Wunscher, 2014). In addition, it makes it possible for farmers to share their innovations some of which are very useful to other farmers. Farmers can also have innovations that can be improved for even better benefits. For impact, there is need to promote and scale up these innovations once proven.

Many farmers were challenged to start and / or continue innovating but these innovations can be screened for possible scientific research. Those that are found researchable, joint research in collaboration with the innovators should be designed and implemented. Similarly both winning and non-winning farmers' innovations deemed useful to other farmers should be disseminated and up-scaled within and to other Counties.

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Annex 1: Selected innovations by county and gender

Bungoma Male

Name of farmer	Name of Innovation	Ward
John Bitanyi Simiyu	Marketing Asian Vegetables	Kimilili
John Wanyonyi Tongolo	Cross breeding local melon with HB melon	Misikwa
Robert Simiyu Wambeo	Beesline milking salve & body	Kabuyefwe
Japhether Kunania	Cross breeding yellow and white maize	Maraka
Mohammed Masai	Treatment of hardening of udder in cows using Kulipyer	Elgon
Wanjala Kundu Fwende	Optimal maize population by gapping using maize seedlings	Webuye West
Vincent Okumu Wamalwa	Tefrosia controlling ticks in cattle	Kanduyi
Chrispus Wepukhulu Kiveu	Cheaper & easy method of filling polythene bags for nursery	Maeni
Japhether W. Wekesa	Deworming herbs using Fig and Albizia barks	Webuye West
Peter Masibo Webi	Pumpkin climber	Kibingei
Mohammed Masai	Treatment of ECF in cows	Elgon
Ernest Sitawa Muyoma	Herbal treatment of fibrosis in dairy cattle	Bukembe East
Wilfred M. Wamalwa	Herbal treatment for foul typhoid	Kanduyi
John Wanyonyi Tongolo	Traditional fertility booster in cows (Lipwoni lie lisaye)	Misikhu
Mark O. Otieno	Water harvesting & minimum tillage in kales	Kibingei
Jotham Wangila	Removing retained placenta using passion fruit roots	Chesikaki
John Wanyonyi Tongolo	Kupwoni to treat black Quarter	Misikhu

Bungoma Female

Name of farmer	Name of Innovation	Ward
Alice Nafula Wepukhulu	Using kumulende in control of moles	Webuye
Consolata Wanyonyi	Bean storage and preservation	West
Niva Naibei	Armootit tree bark for control of ECF and Foot and Mouth	Maeni
Joyce N. Marabi	Herbal treatment for retained placenta	Elgon
Margeret Simuli Sitawa	Fresh sweet potato storage innovation	Kanduyi
Florence Dembeko	Charcoal and Aloe vera for scouring in chicken	Kanduyi
Agnes Naliaka Wekesa	Treatment of fowl typhoid in poultry	Kanduyi
Florence Dembeko	Mexican Merigold for mites in poultry	Maeni
Everlyne N. Juma	Crushed dried chillies for control of stalkborer in cereals	Kanduyi
Teresa Chebesa Mugun	Crushed dried chillies for control of stalkborer in cereals	Kanduyi
Mary Naliaka Barasa	Crushed dried chillies for control of stalkborer in cereals	Elgon
Rehema Women Group	Crushed dried chillies for control of stalkborer in cereals	Maraka
		Kabuchai

Bungoma Youth

Name of farmer	Name of Innovation	Ward
Erick W. Nyanja	Increased production of steady supply of tomatoes	Bumula
Henry Seda	Charcoal dust a remedy to ant and termites	Kanduyi
Benson Jamhuri	Wetland vegetable production	Elgon
Omulepo Omuse Derrick	Egirigirol extract	South Kulisiru
Carolyne Wameme	Fresh sweetpotato storage innovation	Kanduyi
Dayo Josephine	Banana square organic feeding system	Elgon
Omulepo Omuse Derrick	Bacterial treatment for livestock	South Kulisiru
Omulepo Omuse Derrick	Natural livestock drug	South Kulisiru
Naftaly Kurgat	Rabbit urine foliar for crops	Kimilili
Felix Simiyu	Locally made soya milk	Kabuchai
Richard Emmanuel Makokha	Pipe garden	Kimilili

Siaya Male

Name of Farmer	Name of Innovation	Ward
Cornellius Otieno Obonyo	Kodaclomm chicks brooder 1996	Sidindi
John Otieno Obiero	Obiero grafts	Gem
Wycliffe Ojal Kuyo	Prevention of newcastle disease in poultry using fresh goat milk	Bondo
Robert Otiato Munala	Sweet potatoes tumbukiza planting method	South Gem

Kenneth Mody Raila	Herbal treatment of poultry coccidiosis	West Uyoma
Peter Vicky Omondi	Poultry lice control	Central Alego
Gideon Ochieng Obat	Awda (liquid fertilizer)	Gem
James Ooko Opondo	Plastic brooder and wood cage	Siaya
Caroline Akinyi Oduor	Storage of dry cereals and pulses using ash from herbs and dung	North Uyoma
Joseph Henry Onduso	Use of raw cow dung and leucaena leaves to produce liquid manure	West Uyoma
Joseph Odera	Raising high quality tree seedlings from saw dust and top soils	West Asembo
Charles Ogola	Control of moles by use of ants	Ugunja
John Mang'ana Agola	Controlling or prevention of black water disease in livestock	North Uyoma
Charles Sigudi	Local fever herb	Central Alego
Zedekia Adul	Arungu technology	West Uyoma
Andrew Okelo Okoth	Herb for removal of stuck placenta from uterus after giving of birth	Central Alego
Job Nyang'or Obiero	Improve soil fertility	Central Alego
Tobias Otieno	Powdered green manure	North Ugenya
John Otieno Obiero	Ten seedlings	Gem
Cosmus Owira	Treatment of fever in livestock	Central Alego
Romanus Ochola Anyango	Poor man's Gabion (Pmg)	South Gem
Zedekia Adul	Banana change adaptation technology	West Uyoma
Peter Vicky Omondi	Striga weed control	Central Alego
Joseph Odera	Uniformity in height of cereal plants growth and Development	West Asembo
George Owino	Animal Feed Mixture Equipment	Central Alego

Maurice Owino Ogilo	Control Of Pests By Use Of Soot	Ugunja
Siaya Female		
Name of farmer	Name of Innovation	Ward
Angeline Musis Odera	Termite control	Central Alego Ward
Joyce Achieng Awandu	Herbal pesticide	West Asembo
Elizabeth A. Odundo	A basket-like vegetable garden	West Asembo
Monica Awino Owira	Eye treatment innovation	Central Alego Ward
Pamela Adhiambo Ochieng	Use of herbs as pesticide and liquid fertilizer	West Uyoma
Esnas Othwila	Goat droppings and lithonia for control of storage pests	North Ugenya
Rosemary Ndenga	Broad spectrum herb-for cattle	Central Alego Ward
Lilian Milaye	Traditional grain storage dust against larger grain borer	West Asembo
Patricia Akoth Oyugi	Grain pests control concoction	Central Alego Ward
Winne Auma Owuor	Cage fish farming	Yimbo West
Teresa Omondi	Using racks to end blossom-endrot in tomato fruits	West Asembo
M. Auma Olali Muga	Herbal promotion, animal treatment, when delivering	Yala Township

Siaya Youth

Name of farmer	Name of Innovation	Ward
Collins Omondi Awandu	Compost manure from water hyacinth	East Asembo Ward
Vincent Okoth Otieno	Multi-grain thresher	Central Alego

Male Kakamega

Name of farmer	Name of Innovation	Ward
Stanely M. Imbusi	Stingless bee	Kambiri
Yohana Imbusi	One chick dose	Chemuche
Wycliffe Mulwale	Health Booster for animals	Butsotso West
Kuoba Mango	Bee honey harvesting	Bunyala west
Reuben Angachi	ITK for ECF control	Butsotso West
Eliud Mayende	Edodo for livestock treating	Bunyala central
Yohaba Imbui Avombu	Smart chick care	Chemuche
Kirato	Imbetisa for crop promotion	Ikolomani
Kassim Akwande Maende	African ornaments (residues)	Mumias West
Cleophas Wanjala Mang'oli	Omutembe for livestock treatment	Bunyala central
Maurice Ndombi Mwangala	Own poultry management	Ingotse
Hudon Shikuri Chitosi Liambila	Chuff cutter (manual)	Lwandeti
Evans M. Mbayaki Muchanji	Amanjikani for inducing cow heat	Bunyala Central
Shaban Ukhevi Mdakwa	Dog's feaces powder for poultry treating	Bunyala West
Jetholo Sasaza Sasavi	Herbal for chick immunization	Malava
Cornel Wasike	Cow dung slurry for maize	Bunyala West
Yohana Imbusi Avomba	Maji chap	Chemuche
Jaggrey Joshua Wotsieli	Pesticide from sisal & pepper	Ingotse
Shadrack Akhura Ashitakaya	Akhura mole scare	Marama Central
Musa Etanda	Luguna plant for creamy & taste milk	Butsotso West
Patrick Lewis Lubao	Rocket stone for energy saving	Chevaywa
Mohammed Ali Odinga	Crop pest for birds prevention	Bunyala West
Jackson Analo	Stinging needle for human food	Kisa North
Peter Shapaya Shitanda	Murram super	Chemuche
Stanley Mukhaya Imbusi	Polythene paper solar sterilizer	Kambiri
Isaac Vitinyu Amukaka	Improved maize/beans storage	Isukha Central
Japheth Makana Techego	Cassava seed propagation	Malava
Wesamba Fish Farmers		

Ibokolo Sabatia Mulukalakala
Fanuel M. Wewa
John Jack Nechenje
Mwonja Chimoi Lucas
Maurice Wakhisi

Bangabo bambara farm
Calves immunization against mumbs
Dry cow dung for storing farm produce
Shading using banana leaves
Bulking of sweet potato seed

Marama Central
Malava
Ingotse
Malava
Bunyala West

Female Kakamega

Name of farmer

Gladys Igandwa
Margaret Okech
Felistus Namasaka
Berita A. Okila
Janet Mananda
Joyce Maloba
Gladys Igandwa
Naomi Oponyo
Beatrice Sisa
Jacklyne Ngoti
Josephine Magro
Isabella Mugasia
Tobista Amakobe
Beatrice Makaungu
Mary Atsiambo Muswa
Vionah A. Indimuli
Felistus Namasaka
Isabella Mugasia
Phena Nasimiyu Nandwa

Name of Innovation

Inducing cow to heat
Use for tithonia for nematodes
Ripening banana for cooking
ITK for Foot & Mouth Disease
Own maize seed for planting
Cow dung for heating chicks
Cassava planting
Natural plant manure for planting
Cultural method for controlling safari ants
Recovering maize infected with weevils
Cow dung dust for seed preservation
Combined traditional granary storage
Infestation reductions of nematodes.
Arrow roots production in trenches
Metal drum cereal storage
Soap making
Meat preservation
Banana ripening chamber
Maize cobs and banana spoils

Ward

Mautuma / Lugari
Murhanda
Ikolomani
Butsotso West
Ingotse/Matia
West Butsotso
Mautuma / Lugari
Bunyala
Bunyala
Mayoni
Bunyala
Ikolomani
Butsotso
Ikolomani
Moyoni
Chevaywa
Ikolomani
Ikolomani
Kisa North

Youth Kakamega

Name of farmer

Evans Awani
Benard Nyaramba
Janepher Nyanga

Name of Innovation

Use of mexican marigold for cereals
Using pig dung to feed chicken
Using mexican marigold to kill moles

Ward

Idakho Central
Ingotse/Matia
Ingotse/Matia

Photo gallery:

