

Developing a methodology for sustainable production of improved animal breeds

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Abstract

For the last 44 years, Uganda has been carrying out livestock improvement programmes involving cattle, buffaloes, goats, sheep, pigs, donkeys, rabbits, poultry and crocodiles. These improvement programmes mainly involved importations of animals of European temperate breeds for use in either pure breeding or crossbreeding programmes. These efforts were mainly undertaken by government, using government departmental farms, government vehicles, personnel and animals. The idea was that government produces good quality stocks for sale to farmers. Although some improvement was realised, especially in dairy cattle, because the major custodians of the animals, the farmers, were not fully participating in the improvement programmes, those programmes achieved very little impact on the ground. This is the very reason why exotic and crossbred animals in Uganda are less than 5% across the various species. This paper presents a new approach/method based on the three livestock improvement projects funded by COARD project where farmers were fully involved in all activities and played central roles in the improvement programmes. Doing things differently is highlighted, formation and consolidation of farmer breeder associations for sustainability is emphasized and networking between researchers and farmer breeder associations is given for both marketing and quality assurance purposes.

Key words: livestock improvement programme, quality assurance

Introduction

For the last 44 years, Uganda has been carrying out livestock improvement programmes involving cattle, buffaloes, goats, sheep, pigs, donkeys, rabbits, poultry and crocodiles. These improvement programmes were based on what had happened in temperate countries. Thus, they mainly involved importations of animals of European temperate breeds for use in either purebreeding or crossbreeding programmes. For example, in dairy cattle improvement programmes, the Friesian/Holstein, Guernsey, Jersey and Ayrshire breeds have been used. For beef improvement programmes, the Aberdeen Angus, Hereford and Charolais breeds have been used. For goats, the Angora, Anglo-nubian, Toggenburg, Saanen, Alpine and Boer breeds have been used. For sheep, the Merino, Suffolk, Karakul and Romney – Marsh breeds were tried. For poultry, breeds like the White Leghorn, Rhode Island Red, Australorp, Barnevelder, Hybro, *Arbor Acres* and Bovans Brown have been used. For crocodiles, the *Veranus niloticus* has been tried.

In all efforts to improve the livestock in Uganda, the government of Uganda (GOU), non-governmental organisations, churches and individuals have all been involved in one way or another, but the GOU remained the chief player. Government or departmental farms such as

Livestock Experimental Station (LES) in Entebbe, Nshaara and Ruhengere in Mbarara and Aswa in Kitgum, were established to handle the livestock improvement programmes using government resources (land, animals, houses, vehicles, personnel). Here the idea was that government produces good quality stocks for sale to farmers but without involving the farmers in the real activities leading to the production of good quality stocks i.e. the strategic management of the local animal genetic resources, local natural feed base, breeding plans, marketing and sustainability of the existence and production of the good stocks. Although the approach used then had immediate benefits to the farmers, it was not participatory in that the people and their local animal genetic resources were not fully integrated into a national approach which would utilise the products of the improvement programmes in a more sustainable manner with the farmers (custodians of majority of stocks) fully participating and taking central roles in the livestock improvement programmes.

Achievements of the livestock Improvement programmes in the last forty-four years

Looking across the major domestic livestock species, i.e. cattle, goats, sheep, pigs and poultry, most achievements have been registered in cattle, particularly the dairy cattle. Various

breeds of cattle have been imported into the country both as live animals and as semen and some progressive dairy cattle farmers have come up in various parts of the country, especially around the Lake Victoria crescent and south-western Uganda (MAAIF, 2000). However, considering that dairy cattle improvement programmes have been going on for the last 44 years, very little impact is seen on the ground in terms of the total national herd and sustainability. All exotic cattle and their crossbreds contribute only a dismal 5% of the total national population of 5.96 million head of cattle (MAAIF, 2003). The numbers of improved cattle (exotic and crossbreds) have not increased proportionately to the double or trebled efforts put in improvement programmes. Neither has the issue of sustaining crossbred populations at optimal production levels been addressed under practical field conditions with the majority stakeholders, i.e. the livestock farmers who own the base germplasms used in the crossbreeding programmes. Most cattle keepers involved in the use of artificial insemination (AI), for example, have gone into the belief or habit of crossbreeding up to almost pure exotic blood (99.7%) without realising that the overall performance of the cattle goes down in spite of their blood becoming more exotic. Others have gone into the habit of shifting from one breed to another for each parity, ending up with various crosses like Friesian x Zebu cross for the first parity, Guernsey x Zebu cross for the second parity and Jersey x Zebu cross for the third parity. This scenario means that the current approaches or methods being used need to be refocused if meaningful and sustainable achievements have to be realised.

New approach/method to livestock improvement

In livestock improvement programmes, many breeding tools are used. For our situation, we shall concentrate on crossbreeding and selection.

Crossbreeding

Crossbreeding has been widely and indiscriminately employed in Uganda to improve the productivity of indigenous livestock. This has been done so far for two reasons: (1) Purebreeding using the highly productive temperate breeds is expensive, not cost effective and therefore of limited use by the majority of Ugandans; (2) there is a lot of local animal genetic resources which form a good base for successful crossbreeding, utilising the wide variation between local and exotic bloods, leading to high exploitation of hybrid vigour (heterosis).

As pointed out above, livestock improvement programmes through crossbreeding have been going on in Uganda for the last 44 years but without a clear focus on how the farmers could fully participate and own the improvement programmes and how to maintain the crossbred populations at optimal production levels with 50-75% exotic blood in them. This is why we need to develop a new strategy whereby the farmers are fully involved in breeding activities, marketing of the improved stock and sustaining the various

livestock breeds developed as a result of the crossbreeding efforts.

Selection

Comparing the benefits/results from selection with those from crossbreeding, those from the latter are far faster and this is the reason why selection method has not been fully exploited in the last 44 years. However, in the last 5 years, the value and attributes of indigenous livestock are now viewed as irreplaceable assets which should be conserved and utilised profitably on a sustainable basis. For that reason, nucleus herds of Ankole, Nganda and Small East African Zebu (SEAZ) cattle have been assembled at Mshaara, Namulonge and Serere farms, respectively. Here selection among indigenous populations is taking place with a view of developing elite herds of Ankole, Nganda and SEAZ cattle, performing well above the average herd level. Another reason why these nucleus herds were established was that they would form the central units in open nucleus breeding schemes for the three breeds.

An elite flock of Mubende goats has also been established at Serere.

Along the same lines, the indigenous chickens have been characterised and soon different nucleus stocks will be established at Serere where selection will be done to produce elite flocks of various chicken breeds/strains.

A new approach/method for the development and sustainable production of Improved animal breeds - Examples from the COARD project

Under the Client-oriented Agricultural Research and Dissemination (COARD) project, three livestock improvement projects were funded; one on chickens (CORF 14), the other on goats (CORF 1025) and the third on pigs (CORF 2007). The projects involved the improvement of the productivity of indigenous chickens, goats and pigs, respectively, mainly through crossbreeding.

Location and creation of partnership

Unlike in the old way, all the 3 projects were based on-farm, at peoples' homes and not at government or departmental farms. The animal owners offered their indigenous stock and premises to be used. The projects had no budget lines for animal houses or labour. These were contributed by the farmers as a way of seriousness and commitment to the projects. So, the projects were fully participatory in nature.

In addition to the farmers, the local governments and NGOs in the respective districts where the projects were located also became collaborators or implementers of the project. So right from the start, a sense of ownership and a strong partnership was created.

Methods and results

The methodology in the three projects had five main areas: (i) Setting the bench marks, (ii) Trainings, (ii)

Implementation modalities, (iv) Sustainability and (v) Networking.

Setting the bench marks

Baseline surveys were carried out in Kumi and Apac districts for the chicken project, in Kumi and Lira for the goat project and in Katakwi and Lira districts for the pig project. The aim of the baseline surveys was to capture data on the socio-demography of the households, (land size, family size, level of education, marital status of household head), data on livestock (types, numbers, management, animal health, marketing and indigenous technical knowledge) and feed resource bases. The data collected helped to set the benchmarks (baselines) against which the impact of the technologies could be gauged.

Another benchmark which was set was the need for clear demonstration of willingness and commitment to the project by the participating farmers and project implementers..

Trainings

The trainings were modelled on the method of experiential learning where discussions, dialogues and sharing experiences were key features. Regarding the topics, besides the routine trainings in modern animal husbandry, areas like breeding, record keeping, formation of breeder associations and enterprenuership were specifically emphasized. The issues of ownership of the project and all its outputs, particularly the improved stocks, was put in the right perspective.

Implementation modalities

Unlike in the past where government personnel would virtually do everything from bush clearing to vaccinations, in this new method the farmers were fully involved in a participatory manner in the development of the improved anima breeds – from planning, designing, implementation, monitoring and evaluation. Unlike in the past, farmers at all times felt that they were part of the methodology or process of developing the improved animal breeds.

Sustainability

One area where the old approach failed was the issue of integrating sustainability in the whole process of developing improved breeds, and more so making the farmers aware that the improved breeds are theirs and therefore should be kept in perpetuity. This was an unfortunate oversight on the side of the government technocrats.

In this new method, the farmers have already perceived the issue of ownership, of working together and of associating or cooperating. To that effect, the new approach has emphasized the formation of Farmer Breeder Associations with elected executive committees, with written constitutions and registration certificates from the relevant government organs. In particular, to consolidate the

cooperation and sustainability, the chicken breeders associations were given egg incubators to hatch day-old chicks for sale to other farmers. This aspect made the farmers realize that the chicken farming had become a lucrative business.

Consolidation of the breeders associations formed would help to address the practical issues of breeding practices, management improvement, sustainable production, conservation, utilisation and marketing. Other important aspects to be achieved through the breeders associations are quality assurance and institution of a strong recording system among their members.

An on-farm recording system has been set up whereby farmers have weighing scales and can take various measurements on the animals themselves, e.g. birth weights, monthly live body weights. Through the use of these records, the farmers can now easily identify elite or high performing animals for use in genetic improvement programmes.

Networking

With a number of breeders associations formed around the same animal species, there is a need for networking between the various breeders associations, SAARI and the National Animal Genetic Resources Centre and Data Bank (NAGRC &DB). This can be established through open nucleus breeding schemes for the improvement of the various livestock. SAARI would continue doing the complicated selection of breeding stock up to the production of pedigrees. After performance testing, SAARI would recommend some of the elite sires for breeding within the associations and others for ex-situ conservation by NAGRC &DB. This type of arrangement will not only help in keeping the vitality of the breeding stocks on-farm but will also ensure that only the best individuals are selected as parents of the next generation.

The wider involvement of the communities through the establishment of systematic open nucleus breeding schemes for the various improved or developed breeds will also call for good networking.

Conclusion

The new method described above is more likely to sustain the improved stocks developed under the COARD project because it is owned and run by the farmers themselves. What needs to be done is further consolidation of the breeders associations in terms of more trainings and technical back-stopping from the SAARI group so that the whole process eventually becomes smooth.

References

Ministry of Agriculture, Animal Industry and Fisheries., 2000. *Annual report*.