



Bhutan's Livestock Breeding Policy 2009: Situational Analysis and Policy

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1. INTRODUCTION

Livestock has been an integral component of the farming systems in Bhutan since time immemorial. Currently, Bhutan is estimated to have an agrarian population of about 79 %, of this over 90 % of the household own livestock. Cattle are mainly reared for milk, draught and manure for agriculture purposes. Meat for consumption at the farm level usually comes in the form of a by-product due to social stigma and religious beliefs. The purpose of rearing cattle therefore remains very much the same since the first livestock breeding policy was framed in Bhutan. A major development is the gradual transition from a subsistence oriented livestock production system to a more market oriented production system.

In 1985, a detailed study on the livestock breeding policy of the Government was carried out. This was followed by deliberations in a meeting at Thimphu wherein officers of the erstwhile Department of Animal husbandry (Headquarters) and senior technical officers in the field were the participants. After a thorough discussion on all relevant aspects of the matter, the first livestock breeding policy of Bhutan was formulated during the beginning of the 7th plan period. The document was very comprehensive and farsighted and a lot of the policies framed during that period are still in vogue. Nonetheless, the need for drafting a new livestock breeding policy was inevitable to encompass the changes in livestock development and farmers perception that has occurred over one and half decades. In essence, this document makes a humble effort in redefining the livestock breeding policies that is suited to our current needs and that which can encompass the future trends.

The current revised livestock breeding policy is the result of numerous deliberations at various forums and group discussions with various professionals. The draft report was presented at the Livestock Sub-sector workshop on 17th March 2002 and was endorsed by over 90 participants working in the field of livestock in Bhutan.

2. SITUATIONAL ANALYSIS

2.1 CATTLE BREEDING

- 2.1.1 In order to increase the milk production capacity, crossbreeding with high production exotic breeds was started in the country in an organized manner about two decades ago.
- 2.1.2 Considering all the relevant factors such as the very low milk producing capacity of the native cattle and its high adaptability and disease resistance capabilities, the objectives in cattle development has been emphasized to the evolution and propagation of a dual-purpose type of animal combining milk production and draught power qualities.
- 2.1.3 From the experience of the past few years, there are evidences that crossbred cattle with Jersey and Brown Swiss exotic inheritance of 50 – 75 % is the dual-purpose breed that is most suited to the climatic conditions of the country and the needs of the farmers. Cattle with exotic inheritance of above 75 % tend to have higher mortality.
- 2.1.4 The lifting of geographical breed barrier and the farmers' choice of breed there has been haphazard/ rampant cross breeding resulting in tri-hybrids and even tetra-hybrids.
- 2.1.5 Existing breeding schemes have essentially been crossing system with almost no within breed selection in any population.
- 2.1.6 Not much progress has been made for the monitoring of the various species in terms of the breeds and crossbred, which exist within the country.

- 2.1.7 The performance recording has just been initiated under Contract Bull Breeders Programme. This is crucial to provide information on the relative performance of the cattle in the field so that a sustainable cattle-breeding policy can be developed.
- 2.1.8 Due to lack of adequate recording at the farmer's level it is not possible to evaluate objectively either the real or the potential contribution, which the breeds used, can actually make.

2.2 SHEEP BREEDING

- 2.2.1 The current sheep breeding policy emphasis on the production of wool type crossbred sheep that thrives and produces well in varied agro-climatic conditions. Initially Kashmiri Merino and later Australian Merino & Comeback a type of back cross Australian Merino were introduced in the country.
- 2.2.2 The National Sheep Breeding Centre, Bumthang has been mandated for rearing of such improved sheep flock, supply of rams to farmers, and for technical back stopping.
- 2.2.3 The sheep population in general is in a decreasing trend in most sheep rearing areas and not much impact has been seen from the improved rams supply. This is mainly attributed to labour shortage with herders, finer quality of wool derived from crossbred (unable to process with local wool processing tools & not very suitable for cottage industries), lesser remunerative in rearing of sheep and higher mortality of rams/crossbred in villages.
- 2.2.4 Over years, the ram demand has also gradually reduced from over 400 nos. during the in 6th & 7th plan period to 100 nos. in the 8th plan period. However in some villages of the alpine and sub-alpine areas, sheep rearing is still an important proposition for farmers and a source of income.

2.3 EQUINE BREEDING

- 2.3.1 Earlier, four Intensive Horse Breeding regions were identified wherein Pure Haflinger stallions were distributed for the production of Haflinger crossbred stallions and the breeding programme will identify new intensive horse breeding pockets. However availability of quality stallions from this region is limited and the few available are charged exorbitant price.
- 2.3.2 Good quality local horses can still be found in areas like Bumdelling, Lingshi and some parts of Samdrup Jongkhar, Bumthang and Phobjikha. Haphazard breeding practices, mule breeding and plant poisoning has severely affected the local horse population in the country.
- 2.3.3 Mule breeding has been widely practiced by the Bhutanese farmers due to its characteristics like surefootedness, sturdiness, longevity, low levels of management, care and better sale value. The past policy of using donkey stallion to cover sub-standard mares to eliminate further propagation of unwanted characteristics had never been successful. Discouraging Donkey breeding by supplying Jack Ass at full cost to farmers has not helped. Donkey breeding for mule production has become a lucrative business for some farmers.
- 2.3.4 In spite of development of roads in many areas of the country, the farmers residing in the remote hamlets still require horses especially for transportation of various commodities. Horses are also contributing substantially to these rural households for income generation.

2.4 PIG BREEDING

- 2.4.1 Numerous breeds of pigs were maintained in the government farms.

- 2.4.2 There was difficulty in ascertaining the genetic purity of different breeds because the Saddle back were procured as early as the 1960s and unplanned breeding took place with other breeds and vice versa in the later stage. Further, no proper pedigree records were maintained.
- 2.4.3 Haphazard / unplanned breeding took place in the farms because there were so many breeds in the farm and crossbreeding took place with whichever breed was available.
- 2.4.4 The farmer preferred coloured breeds of Pigs due to skin disease problem in white pigs. This resulted in the decision to gradually phase out the white pigs (Large White).
- 2.4.5 In line with farmer's choice, the production of coloured pig breeds was introduced.
- 2.4.6 Native breeds are also maintained in the farm for trial and study purpose.
- 2.4.7 Artificial Insemination of pigs is practiced on a small scale.

2.5 POULTRY BREEDING

- 2.5.1 The indigenous breed of poultry is a very poor egg layer averaging only about 50 - 60 eggs per year as compared to over 200 eggs per year by the improved exotic breeds.
- 2.5.2 Poultry farming with exotic birds is quite possible under all kinds of varying agro-climatic conditions because the poultry birds are capable of adopting themselves physiologically to widely different environments.
- 2.5.3 Over the past years the government poultry farms have been successfully engaged in rearing exotic breeds in poultry. These are white leghorn (WLH) and Rhode Island Red (RIR).
- 2.5.4 Farmer's preferences for the White leghorn are minimal and prefer the coloured birds with coloured eggs. In view of this the rearing of the White Leghorn has been phased out.
- 2.5.5 The farm continues to import brown egg parent, rear them at the farm, produce coloured commercial pullets and supply them to the farmers. Farmers rear the pullets for egg purpose, which are usually replaced annually.
- 2.5.6 Regional Poultry Breeding Centre, Paro imported over 900 nos. of Rhode Island Red Grandparent fertile eggs from the Netherlands on a trial basis. The consignment took too long to reach Paro (three days halt at Bangkok during August without any cooling facility). This caused very low hatchability and growth. Further, the adaptability of the birds was not good. After following proper research protocol, the trial was terminated.
- 2.5.7 The demand for broiler meat is increasing specially in urban areas. There are a number of recognized broiler strains in the market. A choice should be made, after carrying out some trials in the government poultry farms.

2.6 FISH BREEDING

- 2.6.1 Aquatic body fauna diversity management is rested with the National Environment Commission and the Forest Department regulates fishing in rivers. The Fishery programme has no specific role in it.
- 2.6.2 Cold-water fishery programme mainly supporting the production of Snow and Brown trout is closed.
- 2.6.3 Pond fish farming is implemented only after proper feasibility study.
- 2.6.4 Breeding & supply of fries of types of fish; Common Carp, Indian major carps; Rahu, Mrigal, and Katla, and Chinese carps, Grass carp, Silver carp, is being done for pond fishery development in the Southern belts.

2.6.5 Pond fishery is integrated with pig and poultry production where feasible.

3. BREEDING POLICIES

3.1. Large Ruminants: Cattle, Mithun, Yak and Buffalo.

3.1.1. Cattle and Mithun Breeding for Draught, manure and milk:

-National Nublang Breeding Farm: Pure line breeding with Nublang frozen semen / bulls.

-For the very remote areas where feed resources and access to service centres are limited, the Siri cattle and Mithun crosses shall be promoted.

-Nublang Breed improvement: The Breeding policy will build upon and strengthen the current two-part programme.

- The first part is identifying and working with the communities in the breeding tracts having good quality Nublang.
- The second and complimentary part is developing an effective open nucleus breeding scheme at the National Nublang Breeding Farm(NNBF) in Tashiyangphu with an aim to shift the emphasis from the breeding farm to the community based programme in the future.
- Improving husbandry practices so as to reduce reproductive wastage(mortalities, late first calving, extended calving intervals etc) and provide better nutrition so as to ensure that there is scope for effective selection amongst the potential sires and bull mothers of the next generation.
- Screening of village populations for outstanding bulls and cows to join the breeding farm and thereby integrating outstanding bulls and cows into the emerging community based breeding schemes.
- Identifying willing and committed village communities in the breeding tracts and the effective implementation of the programme by the institutional partners by putting in place clear protocols (well documented operational modalities and monitoring and evaluation process (M&E) developed with the community.
- Preferred traits that reflects the production objectives within the target area and meeting the criteria of Nublang keepers will be identified and will be included in the ranking of potential breeding stock, i.e participatory definition of selection criteria for Nublang. These findings will be incorporated into the protocols of the National Cattle information system.
- To complement the selection of superior bulls within the NNBF and the community based schemes will be the matings through the contract bull production programme(CBBP). The first choice bull progeny from these sources that satisfy the protocol requirements will enter the NNBF ,NLBP(for semen production)and the community based nucleus schemes. The second batch choice bulls will be supplied to Dzongkhags as breeding bulls for natural service and will be managed as community Bull management Programme including its insurance programme.
- Annual Nublang Expos/fairs should be conducted and steps put in place to form Nublang Breeding Society.
- Emphasis that Mithun should be bred as per the traditional breeding practices.
- Regional Mithun Breeding Farms, Wangdigang & Arong: Pure line breeding with Mithun frozen semen/ Bulls.

- Problem in securing a reliable supply of good Mithun Bulls, regional cooperative breeding programme needs to be explored and if not successful introduce MOET (Multiple ovulation and embryo Transfer) as a possible way of increasing supply.

3.2: Cattle breeding for Dairy:

It is recommended that:

- For peri-urban areas, and semi commercial and commercial dairy farms pure Jersey, Brown Swiss crossbred and Jersey crossbred with an exotic inheritance of above 50% will be encouraged.
- For areas beyond the peri-urban area but with adequate feed resources and access to service centres, Jersey and Brown Swiss crossbred of exotic inheritance of 50% or lower and Mithun crosses be used.
- Jersey and Brown Swiss should be the principal exotic breeds for crossbreeding in the country to produce a dual-purpose animal for milk production and draught power.
- The geographical barrier for breed promotion will be lifted and farmers will be given the choice for breed preference (Jersey/ Brown Swiss).
- The use of Jersey semen on Brown Swiss and vice versa will not be encouraged to avoid formation of tri-hybrids, which do not fit in any of the cattle breeding programmes.
- Breeding of Mithun with Jersey & Brown Swiss crossbred cattle will not be encouraged.
- Artificial Insemination will be adopted on a wider scale.
- Promotion of the formation of farmers based breeder societies will be given priorities.
- Proper selection of Bull keepers and place for bull placement as per Community bull Management Programme.
- Brown Swiss Farm, Bumthang: Use of pure Brown Swiss semen & Brown Swiss crossbred semen for crossbreeding / *Inter se mating* to arrive at the projected exotic inheritance of 50 to 75%.
- National Jersey Breeding Centre, Samtse and Contract Bull Production Programme (CBPP): Pure line breeding with progeny tested frozen semen.

- Evaluation of the on farm performances of high grade jersey's for fitness traits: mortality rates pre and post weaning and for young and adult stock, age to first calving, calving interval and infertility rate.
- Programs need to be put in place to support improvements to dairy cattle feeding, health and hygienic management so that the benefits from advantageous genotype x environment interactions resulting from rearing jerseys and other high yielding breeds can fully be realised.
- Promotion of the formation of farmers based breeder societies will be given priorities to undertake integrated production (herd registration, performance recording, breed improvement) processing and marketing activities on their own. Linkages with existing private milk processing units wherever possible for supply of milk.
- Research and training components particularly for identification of superior animals and multiplication of their germplasm (bulls, semen, embryo) in the areas of molecular genetics, performance recording and breeding data analysis, reproductive biotechnologies should be taken up.

- DOL will work towards the private sector delivery of livestock services(e.g. AI and curative veterinary treatments) in areas where commercial dairy production is now well established. Full cost-recovery will be introduced in a phased manner and service delivery privatized, releasing funds and staffs for areas with known potential for dairy development.
- National Cattle Identification and Recording Scheme will be implemented in CBP Programme, farmers group initially and will be expanded to cover the whole cattle population in future.
- With respect to the cattle sterilization policy, bulls of any breed not fitting into the national breeding policy and Nublang not used by farmers for breeding will be sterilized
- Embryo transfer will be initiated in government farms on a trial basis.

3.3: Yak Breeding for dairy, meat, draught and Fibre:

- Yak breeding strategy would essentially consist of pure line breeding and exploring pockets for bull procurement besides Haa. Import of Yak bulls from outside for genetic diversity, initiating the formation of Yak Breeder Association and also identifying a responsible institute for yak development in Bhutan will be a priority.
- Extent of inbreeding should be estimated and the possibility of regional exchanges of bulls within western and eastern Bhutan and neighbouring countries should be tried out as AI in yaks is impracticable.
- Establishment of Government yak farm with superior stocks purchased from western/central and eastern region. The farm would serve as the entry point for using imported frozen semen from proven bulls.

3.4: Buffalo Breeding for milk, draught and manure.

- Detailed assessment of the current Buffalo farming system and their needs will have to be carried out. Based on the findings, decisions would be made regarding breeding interventions in response to community 's request from the Government side.

The National Livestock Breeding Programme (NLBP) will be the focal agency for coordinating all the breeding programmes in the country. As a technical authority they will also be responsible for provision of monitoring and evaluation functions, technical backstopping to all Dzongkhags and conservation of the Siri cattle.

For proper monitoring and strategic planning for cattle, mithun and yak improvement and development programmes, database on population distribution and dynamics, performance and value added products, their marketing, services infrastructures etc, needs to be developed.

3.5: SHEEP & GOAT BREEDING

- Two basic stock of sheep; Black sheep & blended Comeback crossbred sheep (Comeback & Native) will be maintained in the National Sheep Breeding Centre, Bumthang with separate breeding plan for each type of sheep.
- The conservation of native black type of sheep will be initiated.
- Considering limitations imposed by holding capacity of the farm and the need to widen the genetic base of sheep types, efforts will be made in the development of an associate approach by involving contract herders/breeders. This will then involve an open nucleus-breeding scheme.

Gradually only limited sheep stock will be maintained in the farm, as most of the breeding stock will be kept with the contract breeders

- The efforts put in by National Sheep Breeding Centre, Bumthang to promote wool-type crossbred sheep by importing and distributing Merino and Comeback and attempts to develop contract breeding schemes have not been successful and will be discontinued.
- Bhutan has four local sheep types wherein inbreeding is a problem in these four populations. This should be addressed by encouraging Ram distributions.
- A proposal for the in-situ conservation through utilization of the discrete populations (based on the results of molecular characterization studies) should be prepared in a consultative process with the major sheep-keeping communities. (protocols needs to be developed).
- In pastoral communities the possibilities of linking the community based sheep improvement schemes to eco-tourism activities should be explored and if promising developed with the appropriate partners.
- Given the potential of the goat to contribute to poverty alleviation through income generation, the review of Forest and Nature Conservation rules of Bhutan (2006) restricting rearing of Goats and its amendment will be pursued with the aim of allowing households to keep larger goat flocks.
- Develop an environment friendly packages of practice for Goats.
- Screening local populations of Goats (Protocol to be developed)
- Cross breeding possibly leading to breed substitution for faster growth, reproduction and meat value.
- Assess Mutton and Chevon market in the south.
- While the focus will be the production of goat meat, the potential for dual-purpose goats i.e producing meat and milk needs to be evaluated through participatory assessments with traditional goat keeping communities having good links to urban market.

3.6: Pigs and Pork

For many years the RGoB through the DoL has maintained breeding herds of exotic pig breeds in order to supply breeding stock to improve the performance of the backyard systems and to serve the emerging intensive production sector. As yet, there are few pigs in intensive systems relative to the backyard herds in which, in 2007, there were more than twice as many local as improved (crossbred) pigs. Pig keepers prefer black and coloured breeds, hence the DoL breeding centres maintain:

National Pig Breeding Centre (NPBC), Serbithang/Yusipang - multiplier Large Black, Saddleback and Duroc

Regional Pig & Poultry Breeding Centre (RPPBC) Gelephu – nucleus Large Black, Saddleback and Duroc.

Regional Pig & Poultry Breeding Centre (RPPBC) Lingmethang - multiplier Large Black, Saddleback and Duroc

The RPPBC-Gelephu serves as a nucleus herd supplying breeding stock to the other two breeding centres for purebred and crossbred production of piglets for sale to private producers. RPPBC-Gelephu also supplies surplus piglets to private pig producers.

- Strengthen community based breeding schemes (in-situ conservation through utilization scheme initiated by NBC).
- An integrated approach to improve husbandry practices that reduce mortalities particularly of piglets and to provide better nutrition.
- Screening village population for outstanding indigenous boars and sows to join the selection herd will boost its superiority over the general population.
- To have successful in situ conservation through utilization scheme it will be imperative to identify willing and committed village communities and secondly the effective implementation of the programme by the institutional partners. This would require putting in place clear protocols (well documented operational modalities) and M&E process both developed with the community.
- A study needs to be carried out to evaluate the gene flows from the pig breeding herds into the national herds. The study will also analyse the breeding practices followed by the pig reares in the major pig producing areas and assess the relative popularity and performances of the various breeds and crosses on typical farms. Based on study findings, the current programme will be revised and options for other breeds considered.
- Pure replacement stock or frozen semen to be imported as and when required to avoid inbreeding.
- Contract pig production programme will be expanded through collaboration with Dzongkhags.
- The possibility of forming community-based breeding schemes for producing pure exotic and crossbred breeding stock will also be explored as a further step towards transferring the responsibility of producing piglets for breeding from the government farms to the pig producers themselves. The ground work of the RNR-RC on synthetic breed formation should contribute to this approach.
- The use of AI to be extended to the major pig producing areas in collaboration with the Dzongkhags.
- Protocols for farmers training and M&E to be developed.

3.7:Chicken eggs and Meat:

- For effective genetic improvement, there will be the need to:
 - Characterize the genotypes and comparative performances of the six or more phenotypes.
 - Initiate within-line selection and possibly crossbreeding.
 - Integrating breeding interventions and husbandry in a community based programme.
 - Screening village populations for outstanding cocks and hens to form the selection flocks.
 - Development of a stabilized cross between e.g RIR and the indigenous line, to produce the brown eggs preferred by the market and a larger chicken for meat under

- semi-intensive conditions. A stabilized cross will enable backyard chicken keepers to rear their own replacements.
- For intensive commercial sector, DoL's new breeding farm in Sarbhang will continue to rear imported brown egg parent stock to produce DoC's for distribution to whole salers and to commercial rearing units.
 - Implementation of Contract chick/pullet production programme in collaboration with Dzongkhags.
 - Protocols for farmers training and M&E to be developed.

3.8: Equines and Equine Breeding:

- The spiti horse breed will be maintained for pure line breeding.
- Local horses including boeta and Merak saktanpa will be maintained for pure line breeding for improvement of the local horse population and conservation of these breeds.
- Appropriate breeding strategies will be adopted depending on the local horse quality, which could be either pure local horse selective breeding or crossbreeding.
- The focus of the equine breeding policy is building upon the traditional knowledge of the keepers of the local horse to improve and sustain its population while facilitating the production of mules for which there is a strong market demand.

3.9: FISH BREEDING

- Rejuvenation of native fish populations through restocking in all major rivers. Particular attention has been given to the indigenous snow trout (yulNya/Druknya or Asla in Nepali) and to intensifying the monitoring of aquatic fauna development in the major rivers.
- To consolidate warm water fish farming and aquaculture in the southern districts of the country. Foundation stock of the common carp, Indian major carps(Rohu, Mirgal and katla) and Chinese carps(Grass carp, silver carp)to produce fingerlings for distribution to the establishment of fish farms.
- Integration with piggery and Duck/poultry farming is encouraged.
- In Northern cold water areas, Rainbow trout has been identified as the main species to be promoted for fish farming.
- The promotion of Brown trout for sports fishing through stocking specific water bodies(eco-tourism).

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