



The National Livestock Breeding Policy

Guidelines and Strategies for Sri Lanka

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This document covers the national breeding policy guidelines for cattle, buffaloes, goats, sheep and pigs both in the field and in the state farms. The document also includes new sections on conservation and utilization of indigenous animal genetic resources realizing the value of indigenous breeds and the necessity to conserve and develop them. The need to apply long term strategies in cross breeding programmes while conserving the indigenous animal genetic resources is highlighted.

The Document captioned “The National Breeding Policy for Dairy cattle in Sri Lanka” was first published in January 1989 focusing on Cattle Breeding activities in the field and subsequently in October 1994 “The National Breeding Policy Guidelines for Livestock in Sri Lanka” was published focusing on cattle, buffaloes, goats, sheep and pigs both in state farms and in the field.

Artificial insemination in cattle was first established in Sri Lanka in 1937 and seventy years of cross breeding and up grading programmes carried out in Sri Lanka have led to the existing animal population with varying degrees of genetic make up and production potential which can not be harnessed due to poor management systems adapted and the scarcity of proper records.

3.2 Animal Types

3.2.1 Dairy Type

Animal that has been selected and bred only for milk production.

3.2.2 Draught Type

Animal that has been selected and bred only for draught purpose.

3.2.3 Meat Type

Animal that has been selected and bred only for meat production.

3.2.4 Dual Type

Animal that has been selected and bred for two purposes dairy/draught/ meat

3.3 Genetic Groups of Livestock

3.3.1 Cattle

Lanka cattle are the indigenous cattle of Sri Lanka.

Zebu / *Bos indicus* cattle are those, which have a prominent hump, a dewlap and an umbilical fold. They are originated in the Indian subcontinent.

Temperate/ *Bos taurus* cattle are the cattle of European origin.

Crossbred cattle are those with gene combinations of two or more of the above categories of cattle.

3.3.2 Buffaloes

Lanka buffaloes are the indigenous buffaloes of Sri Lanka.

Reverine buffaloes are the dairy type buffaloes originated in the Indian subcontinent.

Crossbred buffaloes are those with various gene combinations of above categories of buffaloes

3.3.3 Goats

Indigenous goats are those with no admixture of exotic inheritance.

Exotic types of goats are the dairy and dual purpose goats imported from other countries.

Crossbred goats are the animals having the gene combination of any two or more of the above types.

3.3.4 Sheep

Jaffna local sheep is the indigenous sheep predominantly found in Jaffna peninsula.

Exotic types of sheep are the breeds imported from other countries.

Crossbred sheep are the animals having the gene combination of any two or more of the above types.

3.3.5 Swine

Indigenous pigs are those with no admixture of exotic inheritance.

Exotic types of pigs are the improved breeds of pigs imported to Sri Lanka.

Crossbred pigs are the animals having the gene combination of the above two categories or gene combination of two or more of any exotic types.

Artificial Insemination (AI) in cattle was started in Sri Lanka in 1937. The first AI calf named as “Simon” was born in 1938 in a farm at Meewathura, Peradeniya. Artificial insemination as a national program was started in 1950. The first semen supply center was established at Ambewela cattle farm in 1952. Semen collection from buffaloes (Murrah) was commenced in 1954. In 1960 the semen processing units were established at Kundasale and Tinnaveli. At present there are three Semen production centers at Kundasale, Polonnaruwa and Thinneveli. The deep frozen semen technology was introduced in 1966 and the private AI service was established in 1979.

Since then, there was a slow but steady improvement of the AI service and in 2009, the total numbers of AI performed in cattle, buffaloes, goats and swine were 165853, 3046, 4207 and 464 respectively. Goat breeding station at Kottukachchiya was started in 1961. In 1970 goat AI service was established at field level in Jaffna.

There had been several foreign and local funded projects to support livestock breeding activities in Sri Lanka as shown below.

Project	Donor Agency	Duration
FAO/SIDA Animal Breeding Project	Sweden	1972
Sri Lanka German Goat Development Project	FRG(GTZ)	1982-1990
Sri Lanka/Asian Development Bank (SL/ADB) Livestock Development Project	ADB	1983-1991
Livestock Planning Project	FRG(GTZ)	1983-1992
Sri Lanka/Swiss Livestock Development Project	Swiss Organization for Development and Cooperation (Intercooperation)	1984- 1988
Sri Lanka/ Netherlands Livestock Development Project	The Netherlands Government	1986-1991
Sri Lanka Agriculture Research Project	World Bank	1987-1996
Agriculture Rehabilitation Project	ADB/FRG	1989-1992
Minipe/Nagadeepa Irrigation Rehabilitation Project	OECD of Japan	1990-1995
Smallholder Integrated Livestock Extension Project (SILEP)	FRG (GTZ)	1992-1994
Artificial Insemination Incentive Scheme	Sri Lankan Government	1992-1994
Heifer Calf Rearing Scheme I	Sri Lankan Government	1992-1994
Livestock Breeding Project	Sri Lankan Government	1998-2003
Heifer Calf Rearing Scheme II	Sri Lankan Government	2008
Genetics and Feeding Management Improvement Project(GFMI)	Sri Lankan Government and Japan (JICA)	2009
Dairy Cattle & Buffalo Development project	Sri Lankan Government and FAO	2010

There had been several attempts by the local scientists in the past to establish novel breeding technologies such as embryo transfer and in-vitro fertilization in Sri Lanka. The first ET goat (Peradeniya Kumari) was born in 2007 at the experimental farm of the Faculty of Veterinary Medicine and Animal Science of the University of Peradeniya. Deep frozen cattle embryos were imported to Sri Lanka for the first time in 2006 and the first ET calf (Apeksha) was born in 2007 at Bopathalawa livestock farm that belongs to the NLDB.

6. Cattle Breeding

6.1 Cattle Breeding in the Field

6.1.1 UP Country Wet Zone

Breeding Objective	To produce a dairy type animal
Breeding Policy	Grading up using temperate breeds of cattle
Breeding Strategy	Breeding strategy is defined separately for different farming systems found in the area

Farming system/ Breeding Strategy	Recommended breeds for upgrading	Target Lactation	Remarks
<p>A) <u>Intensive system</u></p> <p>Continuous grading up of existing cattle using temperate breeds of cattle viz. Use a temperate breed to produce F1 generation, which will have 50% temperate blood level.</p> <p>F1 is backcrossed (same temperate breed) to produce B1, which will have 75% temperate blood level.</p> <p>B1 is again backcrossed (to same temperate breed) to produce B2, which will have 87.5% temperate blood level.</p> <p>This process will be continued to raise the temperate blood level (Annexure I).</p>	<p>Friesian Ayrshire Jersey</p>	<p>>4500 >4000 > 3500</p>	<p>Friesians and Ayrshires are known to give more milk whereas the Jerseys have a higher fat content</p>

B) Semi-Intensive system

Grading up of existing cattle using temperate breeds of cattle
(Annexure I)

Friesian
Ayrshire
Jersey

> 3500

> 3250

> 3000

Same as above

6.1.2 Up Country Intermediate Zone

Breeding Objective	To produce a dairy type animal
Breeding Policy	Grading up using temperate breeds of cattle
Breeding Strategy	Breeding strategy is defined separately for different farming systems found in the area. Prominent extensive system is not found in the Up Country Intermediate Zone

Farming system/ Breeding Strategy	Recommended breeds for upgrading	Target Lactation	Remarks
<p>A) <u>Intensive system</u></p> <p>Grading up of existing cattle using temperate breeds of cattle (Annexure I)</p>	<p>Friesian Ayrshire Jersey</p>	<p>> 3500 > 3250 > 3000</p>	<p>Friesians and Ayrshires are known to give more milk whereas the Jerseys have a higher fat content in milk.</p>
<p>B) <u>Semi-intensive system</u></p> <p>Grading up of existing cattle using temperate breeds of cattle (Annexure I)</p>	<p>Friesian Ayrshire Jersey</p>	<p>> 3250 > 3000 > 2750</p>	<p>Jersey breed can tolerate tropical conditions better than Friesians and Ayrshires</p>

6.1.3 Mid Country Wet Zone

Breeding Objective	To produce a dairy type animal
Breeding Policy	Grading up using temperate breeds of cattle
Breeding Strategy	Breeding strategy is defined separately for different farming systems found in the area. Prominent extensive system is not found in the Mid Country Wet Zone

Farming system/ Breeding Strategy	Recommended Breeds for upgrading	Target Lactation	Remarks
<p>A) <u>Intensive system</u></p> <p>Continuous grading up of existing cattle using temperate breeds of cattle. (Annexure I)</p>	Friesian Ayrshire Jersey	>3500 >3250 >3000	Best growth rate is obtained with the Friesians while Jerseys have a higher fat content in milk.
<p>B) <u>Semi-Intensive system</u></p> <p>Continuous grading up using Jersey breed (Annexure I)</p> <p>Grading up of using Friesians/Ayrshires to 75% blood level. The breeding bulls with 75% blood level will be produced in breeder farms.</p> <p>- Use Friesian and Ayrshire breed to produce F_1. F_1 is backcrossed to produce B_1 which will have 75% level of temperate blood. These bulls will be used for upgrading. (Annexure II).</p>	Jersey Friesian or Ayrshire	> 2500 > 2750	Jersey breed can tolerate tropical conditions better than Friesians and Ayrshires Ayrshire breed is preferred over Friesian due to lower cost of management.

6.1.4 Mid Country Intermediate Zone

Breeding Objective	To produce a dairy type animal
Breeding Policy	Grading up using temperate breeds of cattle
Breeding Strategy	Breeding strategy is defined separately for different farming systems found in the area

Farming system/ Breeding Strategy	Recommended Breeds for upgrading	Target Lactation	Remarks
<p>A) <u>Intensive system</u></p> <p>Continuous grading up of existing cattle using temperate breeds of cattle (Annexure I).</p>	<p>Friesian Ayrshire Jersey</p>	<p>> 3500 > 3000 > 3000</p>	<p>Higher milk production is obtained with the Friesians and Ayrshires while Jerseys have a higher fat content in milk.</p>
<p>B) <u>Semi-Intensive system</u></p> <p>Grading up using temperate breeds to 50% blood level. The breeding bulls with 50% blood level will be produced in breeder farms. Use temperate breeds to produce F₁, which will have 50% temperate blood level. These bulls will be used in upgrading the existing herds (Annexure III).</p>	<p>Friesian Jersey Ayrshire AFS</p>	<p>> 2000</p>	<p>Australian Friesian Sahiwal (AFS) has been bred for milk and it could be used straight away for upgrading purpose Friesian, Ayrshire and Jersey crosses have shown promising results under semi-intensive system</p>
<p>C) <u>Extensive system</u></p> <p>Grading up of existing cattle using temperate X zebu 50% crossbred bulls (Annexure III) or continuous grading up using a zebu breed (Annexure I).</p>	<p>Jersey Sahiwal</p>	<p>> 1500 > 1250</p>	<p>Jersey x Sahiwal crosses can produce higher milk yield under tropical weather conditions</p>

6.1.5 Low Country Wet Zone

Breeding Objective	To produce a dairy type animal
Breeding Policy	Grading up using exotic breeds of cattle
Breeding Strategy	Breeding strategy is defined separately for different Farming systems found in the area

Farming system/ Breeding Strategy	Recommended Breeds for upgrading	Target Lactation	Remarks
<p>A) <u>Intensive system</u></p> <p>Continuous grading up of existing cattle using temperate breeds of cattle (Annexure I).</p>	<p>Friesian Ayrshire Jersey</p>	<p>> 3000 > 2750 > 2500</p>	<p>This recommendation is for very high standard of management conditions. High milk production is obtained with the Friesian and Ayrshire breeds while Jersey breed has a higher fat content in milk.</p>
<p>B) <u>Semi-Intensive system</u></p> <p>Grading up of existing cattle using a temperate breed to 50% blood level (Annexure III).</p>	<p>Jersey Friesian Ayrshire</p>	<p>> 1500</p>	<p>Temperate crosses produce higher milk yield under this climatic and management condition.</p>
<p>C) <u>Extensive system</u></p> <p>Continuous grading up of existing cattle using zebu breeds of cattle (Annexure I).</p>	<p>Sahiwal</p>	<p>> 1250</p>	<p>Sahiwal is a tropical dairy breed thriving well under this climatic and management condition.</p>

6.1.5 Low Country Wet Zone

Breeding Objective	To produce a dairy type animal
Breeding Policy	Grading up using exotic breeds of cattle
Breeding Strategy	Breeding strategy is defined separately for different Farming systems found in the area

Farming system/ Breeding Strategy	Recommended Breeds for upgrading	Target Lactation	Remarks
<p>A) <u>Intensive system</u></p> <p>Continuous grading up of existing cattle using temperate breeds of cattle (Annexure I).</p>	<p>Friesian Ayrshire Jersey</p>	<p>> 3000 > 2750 > 2500</p>	<p>This recommendation is for very high standard of management conditions. High milk production is obtained with the Friesian and Ayrshire breeds while Jersey breed has a higher fat content in milk.</p>
<p>B) <u>Semi-Intensive system</u></p> <p>Grading up of existing cattle using a temperate breed to 50% blood level (Annexure III).</p>	<p>Jersey Friesian Ayrshire</p>	<p>> 1500</p>	<p>Temperate crosses produce higher milk yield under this climatic and management condition.</p>
<p>C) <u>Extensive system</u></p> <p>Continuous grading up of existing cattle using zebu breeds of cattle (Annexure I).</p>	<p>Sahiwal</p>	<p>> 1250</p>	<p>Sahiwal is a tropical dairy breed thriving well under this climatic and management condition.</p>

6.1.6 Low Country Intermediate Zone

Breeding Objective	To produce a dairy dominant dual type animal
Breeding Policy	Grading up using exotic breeds of cattle
Breeding Strategy	Breeding strategy is defined separately for different farming systems found in the area

Farming system/ Breeding Strategy	Recommended Breeds for upgrading	Target Lactation	Remarks
<p>A) <u>Intensive system</u></p> <p>Continuous grading up of existing cattle using temperate breeds of cattle (Annexure I).</p>	<p>Friesian Ayrshire Jersey AFS</p>	<p>> 3000 > 2750 > 2500 > 2500</p>	<p>This recommendation is for very high standard of management conditions. High milk production is obtained with the Friesian and Ayrshire breeds while Jersey breed has a higher fat content in milk.</p>
<p>B) <u>Semi-Intensive system</u></p> <p>Grading up using a temperate breed to 50% blood level. The breeding bulls with 50% blood level will be produced in breeder farms. Use a temperate breed to produce F₁ which will have 50% temperate blood level. These bulls will be used in upgrading the existing herds (Annexure III).</p>	<p>Ayrshire Jersey AFS Sahiwal</p>	<p>> 1500</p>	<p>Temperate crosses produce higher milk yield under this climatic and management condition.</p>
<p>C) <u>Extensive system</u></p> <p>Grading up of existing cattle using temperate X zebu 50% crossbred bulls (Annexure III) or continuous grading up using a zebu breed (Annexure I).</p>	<p>Sahiwal</p>	<p>> 1250</p>	<p>Sahiwal is a tropical dairy breed thriving well under this climatic and management condition.</p>

6.1.7 Low Country Dry Zone

Breeding Objective	To produce a dairy dominant dual type animal
Breeding Policy	Grading up using exotic breeds of cattle
Breeding Strategy	Breeding strategy is defined separately for different farming systems found in the area

Farming system/ Breeding Strategy	Recommended Breeds for upgrading	Target Lactation	Remarks
<p>A) <u>Intensive system</u></p> <p>Grading up of existing cattle using a temperate breed to 50% exotic blood level (Annexure III).</p>	Ayrshire Jersey	> 1750 > 1500	If the management conditions are really good the temperate blood level could be raised up to 100%.
<p>B) <u>Semi -Intensive system</u></p> <p>Continuous grading up of existing cattle using a Zebu Breed (Annexure I) or Grading up of existing cattle using a temperate breed to 50% blood level (Annexure III).</p>	AFS Jersey Sahiwal	> 1750 > 1500 > 1250	Sahiwal is a tropical dairy breed which could thrive well under intermediate, semi intensive management conditions. Jersey crosses produce a higher milk yield under tropical weather conditions. AFS could be used straight away until the recommended quality F ₁ sires are made available locally.
<p>C) <u>Extensive system</u></p> <p>Continuous grading up of existing cattle using a Zebu breeds of cattle (Annexure I.)</p>	Sahiwal	> 1200	Sahiwal is a tropical dairy breed which could thrive well under this climatic and management conditions.

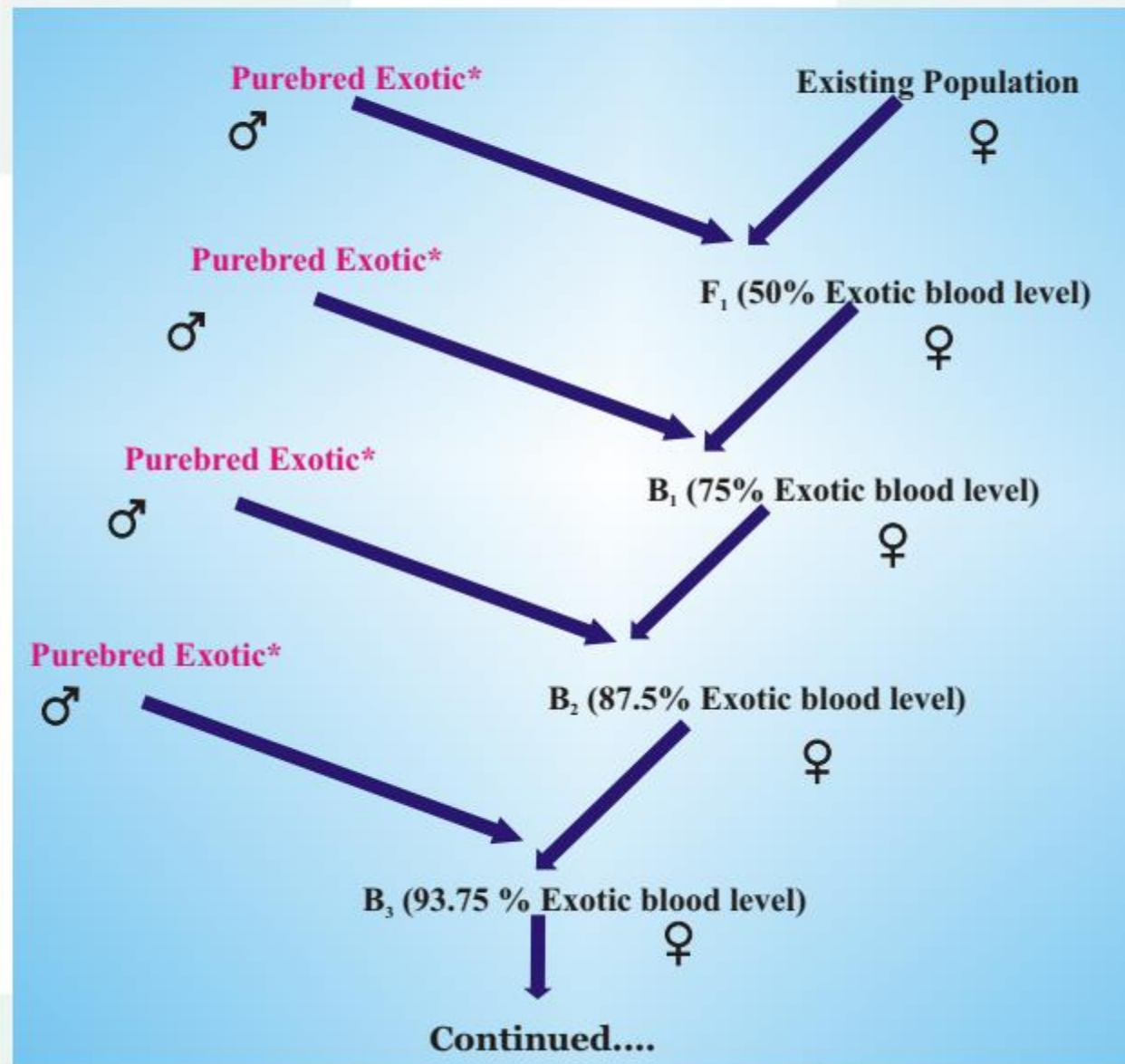
6.2 Cattle Breeding in the Nucleus Farms

There should be organizations and/or institutions to supply the recommended pure and crossbred breeding bulls of different genetic make up for different breeding schemes. At national level the supply of sires of different genetic composition is the responsibility of the NLDB. Breeding schedule for the nucleus farms is shown below.

Breeds	Recommendation	Farm	Organization	Zone
Friesian	To be maintained pure	Bopaththalawa	NLDB	Up Country Wet zone
		New Zealand Farm	Lanka Dairies*	
Ayrshire	To be maintained pure	Ambewela	Lanka Dairies*	
Jersey	To be maintained pure	Dayagama	NLDB	Low country Dry / Intermediate zones
		Andigama	NLDB	
Sahiwal	To be maintained pure	Nikaweratiya	NLDB	
		Galpokuna Polonnaruwa		
Temperate X Zebu Crosses	To be maintained at 50% or 75% temperate blood levels	All the farms with Temperate X Zebu crosses	NLDB	

Annexure I

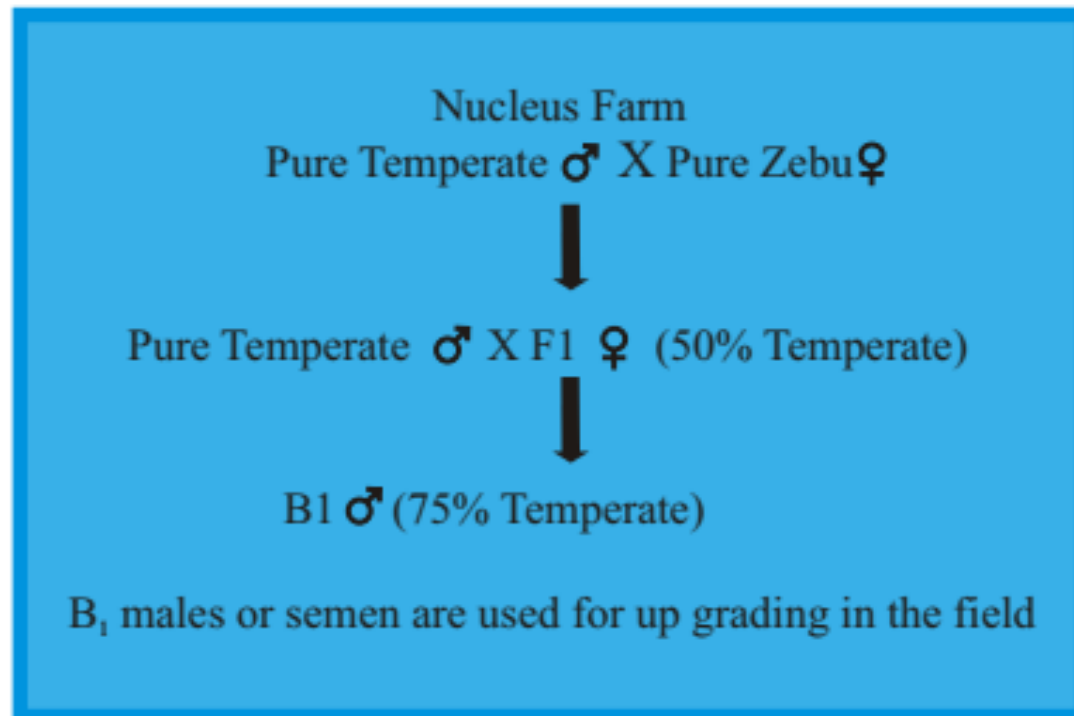
Continuous Grading up of Existing Population with Exotic Types



Annexure II

Grading up of Existing Population with Exotic Breed up to 75% Blood Level

Production of males of 75% exotic blood level



Commercial strains

- In early 1970's, Sri Lanka has imported some commercial strains for development of the industry.
- A Hybrid of Cornish and Plymouth Rock for broiler production has introduced by department of agriculture under the open economic policy
- Commercial layer and broiler industry totally depend on the imported Grandparent (GP) and parent (P) stocks for breeding.
- Commercial broiler strains - cobb-500, Arbor acres, Hy-line, Indian-River
- Commercial layer strains - shaver, Indian River, Hy-lines

- Few private companies hold the sole power of commercial broiler and layer breeding in Sri Lanka.
- Currently, there are three grandparents breeding farm producing the large-scale parent's birds of Hubbard Classic, Cobb 500 and Indian River Strain
- More than 91% of parent bird requirement is fulfilled by these three main GP farms.
- 33-parent farms buy parent birds from grandparent farms and produce day old broiler chicks for country use and for import to some extent.