MEGHALAYA BOVINE AND PIG BREEDING POLICY 2017






Prepared by the Technical Committee constituted by the Govt. of Meghalaya

(Department of Animal Husbandry and Veterinary)

Shillong, Meghalaya

Under the Chairmanship of

Prof. (Dr.) Dharmeswar Das

Ex- Director (Actg) and Jt. Director

Indian Veterinary Research Institute, Izatnagar-243122, U.P.

(Former Dean, Faculty of Veterinary Science

Assam Agricultural University)

Now Professor, AGB, College of Veterinary Science & AH, Agartala, Tripura

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Ex-Director, Department of Animal Resources, Government of Tripura

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Expert Committee constituted by Government of Meghalaya

1. Prof. Dr. Dharmeswar Das -Chairman
   Former Dean-cum-Joint Director (Academic)
   ICAR-Indian Veterinary Research Institute Deemed University,
   Dean, Assam Agricultural University, Khanapara,
   Director, Deptt.ofAnimal Resources Development, Tripura.
   Now NRP, NRLM, GoI, Chairman, ICAR-NRCM, Nagaland
   Member, Research Advisory Committee, ICAR-IVRI DU.

2. Director of A.H & Veterinary Department, -Member
   Meghalaya, Shillong

3. Joint Director (AHP) -Member
   A.H & Veterinary Department, Meghalaya, Shillong

4. Joint Director (Hq) -Member
   A.H & Veterinary Department, Meghalaya, Shillong

5. Deputy Director (Hq) -Member
   A.H & Veterinary Department, Meghalaya, Shillong

6. Deputy Director (Planning) - Member Convener
   A.H & Veterinary Department, Meghalaya, Shillong

CERTIFICATE

The Govt. of Meghalaya, Shillong constituted a Technical Committee (Annexure – I and II) under the Chairmanship of Dr. Dharmeswar Das, the then Dean-cum-Joint Director (Academic) IVRI-Izatnagar, Bareilly, U.P. and former Dean, Faculty of Veterinary Science, Assam Agricultural University with the following members to formulate the Livestock and Poultry breeding policy for the State of Meghalaya :

1. Dr. Dharmeswar Das Dean-cum-Joint Director (Academic) IVRI-Izatnagar, Bareilly, U.P.	-	Chairman
2. Director of A.H & Veterinary Department, Meghalaya, Shillong	-	Member
3. Joint Director (AHP) A.H & Veterinary Department, Meghalaya, Shillong	-	Member
4. Joint Director (Hq) A.H & Veterinary Department, Meghalaya, Shillong	-	Member
5. Deputy Director (Hq) A.H & Veterinary Department, Meghalaya, Shillong	-	Member
6. Deputy Director (Planning) A.H & Veterinary Department, Meghalaya, Shillong	-	Member Convener

The Expert Committee accordingly framed the Livestock and Poultry Breeding Policies for the state of Meghalaya and submitted the same to the Govt. of Meghalaya through the Director of the A.H. & Veterinary Department on 31st October, 2012 for implementation. The breeding policies being a dynamic and continuous process for improvement of productivity of livestock to make the state self-sufficient in food of animal origin the Govt. of Meghalaya desired to update the policies for Cattle and Pig breeding and formulate the same looking into the changing scenario and production demand of the state. The committee after thorough review, deliberation and consultation with all concerned framed the present Cattle and Pig breeding policies for the state of Meghalaya as enclosed.

Dr. B.Rijal
Director, A.H & Vety. Deptt., Member

Dr. K.Kharmihpen
Joint Director (AHP), Member

Dr. B.K.Mawthoh
Joint Director (Administration), Member

Dr. (Mrs)G.Kynwir
Deputy Director (Administration), Member

Dr. C.Shilla
Deputy Director (Planning),
Member-Convener

Dr. Dharmeswar Das
Chairman, Technical committee

PREFACE

Meghalaya, a north eastern state of India with its congenial topographical and geo-climatic characteristics and rich domesticated animal biodiversity and varied bioresources has immense economic potentials for animal husbandry activities and livestock farming along with dairy, poultry, meat and allied agro based industry. In Meghalaya, there is big demand for animal products as almost all the people are non-vegetarian and these products are the major source of proteins of higher biological value. The state has also the export potential for these products after meeting the domestic requirements. However, the gross output of animal products is disproportionate to the available population of livestock and poultry due to low genetic potential of the indigenous livestock and poultry so far productivity is concerned. Disorganized breeding, inadequate feed and fodder supply, incidence of diseases, lack of efficient and scientific management of the resources and lack of application of newer and advanced technologies for augmentation of productivity and production, inadequate adoption of processing technologies, and unorganized marketing are some of the important factors relating to lower production and supply of animal products. A Livestock and poultry breeding policy was formulated in 2012 to cover the 12th Five year plan period with the mission and target to increase productivity of livestock and poultry and conservation of indigenous animal genetic resources besides provision of sustainable livelihood to the rural mass and economic upliftment of farming families as a whole to derive maximum benefit out of the proposed policies.

The Government of Meghalaya, Department of Animal Husbandry and Veterinary constituted a Technical Committee under the Chairmanship of the undersigned vide Order No. VET(SCH)206/2000/222 Dated Shillong, the 15th April, 2008 and Notification No. VET(SCH)206/2000/277 Dated Shillong, the 6th November 2008 in order to formulate the Livestock Breeding policy encompassing all the important livestock species and poultry for the State of Meghalaya. The Committee accordingly framed the Livestock and Poultry Breeding Policies and submitted the same to the Govt. of Meghalaya through the Director of the A.H. & Veterinary Department on 31st October, 2012 for implementation.

The breeding policies being a dynamic and continuous process for improvement of productivity of livestock to make the state self-sufficient in food of animal origin the Govt. of

Meghalaya desired to update the policies for Cattle and Pig breeding and formulate the same looking into the changing scenario and production demand of the state. The committee after thorough review in its several meetings held on 5th January, 30th and 31st March, 2017 and deliberation and consultation with all concerned in different occasion framed the present Cattle and Pig breeding policies for the state of Meghalaya. The required updated information and data were also provided by the concerned officers of the Directorate, and field veterinary officers. The Director and all senior level officers of the Directorate and other establishments of the state contributed immensely in framing the policy and preparation of the document. Contributions and assistance received from all are duly acknowledged with thanks.

The final draft of the present policy document was prepared and discussed in the Technical committee meeting held on 31st March, 2017 at the office of the Director, A.H. and Veterinary Department, Meghalaya, Shillong. After incorporation of all aspects, the final document is now ready and submitted for consideration of the Government of Meghalaya for its acceptance and implementation.

It is expected that implementation of the new Cattle and Pig breeding policy would lead the state of Meghalaya to become not only self sufficient in production of food of animal origin, and other animal byproducts for domestic consumption but also for export of these products to boost the economy of the farming community and livestock and poultry industry. The policy would also contribute towards increase in growth in GDP and development of the State.

Dr. Dharmeswar Das

Dated, April, 2017. **Chairman, Technical Committee**

ACKNOWLEDGEMENT

The Technical Committee profusely thank and extend its gratefulness to the Government of Meghalaya in general and the Commissioner and Secretary, Animal Husbandry and Veterinary Department in particular for assigning the responsibility to frame the Bovine and Pig Breeding Policy, 2017 for the state of Meghalaya. I on behalf of the committee and my personal behalf thank Mr P.Sampath Kumar,IAS Commissioner & Secretary for his constant support and cooperation in this endeavor to bring out the policy. The keen interest taken by the former Principal Secretary Mr. P. Naik,IAS and his support in initiating formulation of a Livestock Breeding policy for Meghalaya which was shaped in 2012 is also duly acknowledged.

I sincerely thank Dr. B.Rijal, Director, Department of Animal Husbandry and Veterinary, Govt. of Meghalaya and also a member of the committee for his valuable inputs, support and cooperation without which it would not have been possible to carry out this huge task for the state and finally producing this policy document.

I place it on record my sincere thanks to all other members of the Committee namely Dr. K. Kharmihpen Joint Director (AHP), Dr. B. K. Mawthoh, Joint Director (Administration), Dr. (Mrs) G. Kynwir, Deputy Director (Administration), and Dr. C. Shilla, Deputy Director (Planning) and Member- Convener for their untiring help who had deliberated on the drafts prepared from time to time in various meetings/discussions. The contributions made by Dr. K.B.Sahkhar, Assistant Director of the Department and his association with the committee all the time in providing the inputs and completing the job are thankfully acknowledged. The help and assistance of all other field functionaries and officers of the Department of Animal Husbandry and Veterinary of the state Government including Shri S.Kurbah, Joint Director (Stat) was immense to prepare the policy based on the present status and future need of the state.

The committee wishes to thank Dr. D. Khonglah and Dr. L. Lyngwa, former Directors of the Department for their contributions and support since initiation of the process of developing and framing of the policy. The cooperation and assistance received from Dr. E. Bareh, Ex-Joint Director (Planning) was immensely helpful in the endeavor which is thankfully acknowledged.

The committee acknowledges with thanks all the officers and staff of the Department of Animal Husbandry and Veterinary, Meghalaya and special invitees for the their help received in compilation of data and information to a great extent in preparing the policy document.

Dr. Dharmeswar Das

Dated, April, 2017 Chairman, Technical Committee

MEGHALAYABOVINEAND PIG BREEDING POLICY

(Govt. of Meghalaya Notification No……..)

EXECUTIVE SUMMARY

In Meghalaya, out of the total livestock population of 19.95lakhs, bovine population is 9.32 lakhs comprising of 9.06 lakhs cattle and 0.25 lakhs buffaloes (Livestock census Report, 2012). The milk production in 2015-16 was 83,924 tonnes out of which 59.07 percent have been produced by crossbred cattle.The per capita availability of milk in Meghalaya is 77.50g per person per day only which is far below the national average and the recommended requirement of 300g per day per person (ICMR). It is expected that the demand for milk and milk product will be higher on account of changing food habits and increased purchasing power of the people. The gross output of milk production is disproportionate to the available population of bovines (Cattle and Buffalo) due to their low genetic potentiality, disorganized breeding, inadequate feed and fodder supply, incidence of diseases, lack of efficient and scientific management of the resources, lack of application of newer advanced technologies for augmentation of production, processing technologies, marketing etc.

The annual meat production in Meghalaya is 29.13 thousand tonnes with per capita availability of 9.51kg of meat per person per year whereas the demand is to the tune of 41.14 thousand tonnes considering more than 90 percent of the population as non-vegetarian. Hence, there is a short fall of 12.00 thousand tonnes of meat annually. The annual meat production from pigs is 10.38 thousand tonnes(2015-16). The total pig population in the state is 5.69 lakhs (Livestock census Report, 2012). The demand of pork could not be met by the small population of pig in the state and has to depend on outside source. The main reasons for shortfall in pig and pork production are low meat production ability of the indigenous animals, high cost of feed and scarcity of fodders for cost effective rearing of meat animals, absence of adequate number of slaughter houses with modern operational equipment and machineries etc.

In order to produce the required quantities of milk and meat, proportionate increase in the number of milch cattle and buffaloes and meat animals are to be made besides enhancement of their genetic potentialityfor increased productivity in terms of quantity and quality. Various studies conducted on livestock breed improvement in Meghalaya and in neighboring states reported that the cattle and pigs currently available inthe state are the result of haphazard breeding

within and between various breeds within the species. Although cattle breeds such as Jersey, Holstein Friesian, Brown Swiss etc. and pig breeds like Hampshire, Large black, Saddle black, Large White Yorkshire,Duroc,Ghungroo etc. are introduced in the state their breeding programmes are devoid of any sound strategies and targeted direction. In order to address the issue of development of suitable and improved cattle, buffalo and pig breeds and various cross breeds adaptable to the production systems of the state, framing of appropriate Bovine and Pig Breeding policies are required for implementation aiming at augmenting genetic merit of the existing livestock population to provide economic sustainability of cattle, buffalo and pig husbandry thereby increasing contribution to GDP growth of the state.

Bovine Breeding Policy:

The native cattle population of Meghalaya consists of indigenous non-descript and productivity of these cattle arenegligible when compared to the exotic and Indian cattle breeds. The average per day milk yield of indigenous cattle of the State in a lactation length of about 180 - 260 days is found to be 0.327 litres only. Therefore the productivity enhancement of cattle for milk is envisaged by improving the genetic potential of the animals, improving the overall management system of the animals, identifying the field problems in the sector and taking corrective measures and by expanding the processing and marketing facilities for milk and milk products throughout the State.

Cross breeding of indigenous/nondescript cattle using bulls of improved Indian/exotic breed(s) is recommended as a major strategy to increase in productivity of milk in cattle herds of elite, large commercial and Government farms and in field where resources to maintain the crossbreds are gradually being made available. Policy is also formulated for adoption of zone/location specific strategies like selective breeding/grading up/crossbreeding of indigenous cattle using exotic breeds viz, Jersey and Holstein Friesian, and Indian breeds like Red Sindhi, Sahiwal, Tharparkar or Gir based on climatic conditions, feed and fodder availability, livestock management practices, marketing facilities for livestock produce etc. Level of exotic breed inheritance in crossbreds has been recommended as 50 percent although it may go up in systematic manner in elite and field herds based on the production system followed with required inputs of feed, fodder and management practices. Grading up of nondescript cattle using semen from Indian breeds of cattle has also been recommended in the policy. Nucleus herds and lines of exotic and crossbreds of Jersey, HF, Frieswal etc. and Indian cattle breeds of choice viz, Red

Sindhi, Sahiwal, Gir or Tharparkar will be maintained in Government cattle breeding farms and in progressive private farms.

Selective breeding for conservation and improvement of indigenous cattle of Meghalaya for their good qualitytype, milk quality characteristics, draught power and disease resistance recommended. Adoption of large scale Artificial insemination all over the state recommended using frozen semen from proven bulls of different exotic and Indian breeds by developing semen stations in the state. Frozen semen of the exotic and Indian breeds may be procured from outstanding proven bulls form Grade A semen stations for breeding from within and outside the country. MOET (Multiple ovulation and Embryo Transfer) technology will be area of special focus along with Open Nucleus Breeding (ONBS) in the state to modernize the cattle development programmes for maximum output. Emphasis has been given for data and information recording systems using modern technologies in farms and field for selection of good quality animals for future breeding, monitoring and evaluation of the progress of the programmes besides traceability of the animals.

Grading up of the indigenous/nondescript buffaloes of Meghalaya recommended using Murrah bulls using Artificial insemination technique besides developing pure herds of Murrah breed in the state. Feasibility of introduction of Mithun in the higher altitude of the state may be explored following stall feeding husbandry methods practiced by National Research Centre on Mithun, ICAR to give a boost to the livestock development programme and to add further impetus to bovine breeding for multipurpose use of this species.

Pig breeding policy:

In Meghalaya, the main reasons for shortfall in pig and pork production are low productivity of native indigenous/nondescript pigs available in the state which are of small body size and weight with slow growth rate. High feed cost and scarcity of feed and fodders, lack of adequate scientific approach to augment productivity of meat animals and lack of economic feeding and rearing practices in improved production systems are some other factors. In order to produce the required quantity of meat proportionate increase in population of meat producing animals is essential with high genetic potential to yield more in terms of quantity and quality of meat. The pig populations currently available in the state are the result of haphazard breeding within and between various breeds of exotic and Indian origin with indigenous non-descript pigs as a result of which the pig breeding and piggery sector has been devoid of a targeted direction.

In order to address the issues, Pig Breeding policyfor the State have been recommended with the objectives of genetic improvement and productivity enhancement of the indigenous/nondescript pigs of the statethrough scientific breeding strategies using improved exotic breeds and advanced technology. Improvement and conservation of indigenous pig breedviz, NiangMegha and crossbred Lumsniang, establishment and maintain pure gene pool of exotic breeds and crossbreds suitable to the state in farms and field, expansion of infrastructure and support mechanism to propagate elite germ plasm through Artificial Insemination (AI), ensuring adaptation of propagated pig populations to local environmental conditions and emerging climatic challenge, and strengthening support mechanismsfor value addition and marketing of the produce with value chain development are other important recommendations.

The pig breeds of choice recommended for the state are exotic Hampshire, Large black, Saddle black, Large White Yorkshire breeds, Indian Ghungroo and some crossbreds like T&D and local NiangMegha breed and Lumsniang crossbreds for adoption of pure breeding/crossbreeding. The breeding policy recommended that the exotic inheritance level in the crossbreds may vary from 50 percent to 87.5 percent according to the farmers' choice, adaptability in a region and suitability in a particular production system followed and resources available for scientific management and resistance to diseases. In the Government Pig Breeding farms pure exotic pig breeds will also be bred as per need for maintaining pure lines besides the crossbreds generated using the exotic and indigenous breed of Meghalaya. Government pig breeding farms will establishNucleus herds for the breeds and crossbreds where selective breeding will be practiced to produce improved piglets for supply to the multiplier farms and field.

In order to generate the required number of pigs for slaughter to meet the requirement of pork in the state, a multi-pronged development strategy is advocated. Each district of the State should set up "Seed Stock Farms" to provide superior germplasm to the fieldfarms/field units/ Self Help Groups / Societies etc.All districts and subdivision should have the "Multiplier Farms" of sizable numbers to multiply good quality animals and to supply piglets to take up pig-rearing venture by the interested and trained farmers in field for scientific rearing, breeding and production of piglets for maintenance by small holders for fattening and production of pork.

Artificial insemination (AI) technology will be practiced using fresh and frozen semen in all the Government Pig breeding farms as well as in village herds initially by adopting nearby villages from the Pig breeding farms and multiplier farms. Besides collection of semen from

outstanding locally available boars of selected breeds, efforts will also be made to import live animals/frozen semen from other countries to develop elite herds and improvement of much needed local pig germ plasm.

Conclusion:

The Bovine (Cattle and Buffalo) and Pig breeding policy will be mandatory for the state and once implemented will raise production and contribute towards sustainable animal husbandry practice of the farmers and provide income generation and assured livelihood to the people including farmers, youths and women of the state. Besides recommending strategies for bovine and pig genetic improvement, some important recommendations have also been made for development of work plans as per need for fruitful implementation of the policies. The implementation of the policy would improve the livestock production system with better adaptability of the genetically improved animals under changing climatic condition and management needs. It is also expected that once implemented the breeding policy will gradually minimize the gap between production and demand of the milk, meat and other animal products in the state and ultimately lead the state towards self-sufficiency. The progammes developed as per the policy recommendations will be supported by appropriate production system ensuring optimum and economic feeding and management of the animals, adequate animal health care and disease control, assured organized market for animal products, adequate post-harvest processing and value addition of animal products for sustainability of livestock farming and economic upliftment of farming families as a whole. The policy once implemented will raise production and contribute towards sustainable animal husbandry practices,enhance rural livelihood, industrialize the dairy and piggery sectors thereby enhancing Gross Domestic Product (GDP) growth of the state of Meghalaya.

MEGHALAYA BOVINE AND PIG BREEDING POLICY

Chapter – 1

INTRODUCTION

Increase in productivity of the livestock and production as a whole are the primary concern for sustainable animal husbandry development in the state of Meghalaya. Depending upon the capabilityand resources available with the farmers they practice livestock farming using different production systems. Farmers' economic returns largely depend upon the quality of livestock they raise under any given production system. The tribal population of the State is traditionally dependent on livestock for livelihood where there is no taboo in consumption of animal products and food habits of the people is mostly non-vegetarian in nature. Although Meghalaya is rich in domesticated animal biodiversity indicating immense potentiality of livestock development but due to lack of suitable and dynamic breeding policy as per need of the time the growth is slow particularly in dairy and piggery sectors. Hence, appropriate breeding strategies need to be followed for production of genetically superior offspring with higher productivity.

In Meghalaya, out of the total livestock population of 19.95lakhs, bovine population is 9.32 lakhs comprising of 9.06 lakhs cattle and 0.25 lakhs buffaloes (Livestock census Report, 2012). The milk production in 2015-16 was83,924 tonnes out of which 59.07 percent has been produced by crossbred cattle.The per capita availability of milk in Meghalaya is 77.50g per person per day only. The gross output of milk production is disproportionate to the available population of livestock and poultry due to low genetic potential and productivity of the indigenous cattle and buffaloes, disorganized breeding programmes, inadequate feed and fodder supply, incidence of diseases, lack of efficient and scientific management of the resources, lack of application of newer advanced technologies for augmentation of productivity and production, processing technologies, marketing etc.

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1.1: Jurisdiction: The policy formulated shall be called the "Meghalaya Bovine and Pig Breeding Policy" which shall become effectivefrom the date of its notification by the Govt. of Meghalaya and the Policy shall be effective all over the state of Meghalaya.

1.2: Definitions:

- A **breed** is a specific group of domestic animals having homogeneous appearance (phenotype), homogeneous behavior, and/or other characteristics that distinguish it from other organisms of the same species. Breeds are formed through genetic isolation and either natural adaptation to the environment or selective breeding, or a combination of both.
- **Breeding** is the mating and production of offspring.
- **Animal breeding** addresses the evaluation of the genetic value (estimated breeding value, EBV) of livestock, selection of breeding animals with superior EBV in growth rate, egg, meat, milk, or wool production, or with other desirable traits and planned mating of the selected animals for improved livestock production and adaptability.
- **Extensive Production system:** Farming systemwhich is, considered as low input-low output system. This is a traditional system where mostly the indigenous animals are reared

without providing any significant inputs in the form of feed or improved management requirements thereby depending only on naturally available resources like grazing in forest areas, grazing reserve etc.

- **Intensive Production system:** Farming systemwhich is also considered as the high input high out production system where modern and improved technologies are adopted. With the result the out-put i.e. production and productivity is also high.
- **Semi-intensive Production system:** Farming system which is considered as a medium input medium output system depending upon the adoption of improved technologies for feeding, management, breeding etc.

1.3: PROFILE OF MEGHALAYA STATE

Meghalaya literally means "*Abode of Clouds*". It describes the phenomenon of bringing torrents of rain to this Hill State of North Eastern Region of India. The State is located in the North-Eastern part of India lying between the latitude of 25˚ 47″ and 26˚ 10″North, 89˚ 45″ East and 92˚ 47″ East longitude. The State is bounded on the North and East by Assam and on the South and West by Bangladesh. Physio-geographically, the State is divided into three hills sections, namely (a) Western Meghalaya or Garo Hills, (b) Central Meghalaya or Khasi Hills and (c) Eastern Meghalaya or Jaintia Hills. The total area of the State covers about 22,429 sq. km. The topographical and geo-climatic characteristics endow the State with immense economic potentials particularly hydro-power generation, tourism, horticulture, forest based industry and vast animal resources.

There are seven districts in Meghalaya. The number of villages in each district are East Khasi Hills – 998, West Khasi Hills – 1093, Ri-Bhoi District – 579, Jaintia Hills – 498, East Garo Hills – 1058, West Garo Hills – 1577 and South Garo Hills – 731.

1.3.1: Human Population:

The total human population of the State is about 29.67 lakhs as per 2011 census report, out of which 23.71 lakhs live in rural areas of the State with agrarian and animal husbandry activities to earn their livelihood. Meghalaya is inhabited by mainly three tribes: the Khasis, the Jaintias and the Garos. The overall literacy rate in Meghalaya is 74.43 percent.

The human population distributions in seven different districts of the State are depicted in Table – 1.

TABLE – 1: HUMAN POPULATION CENSUS, 2011

Sl No	District	Male	Female	TOTAL	Urban Population	Rural Population
1	East Khasi Hills	410749	415173	825922	366481	459441
2	RiBhoi	132531	126309	258840	25253	233587
3	West Khasi Hills	193715	189746	383461	43105	340356
4	Jaintia Hills	196285	198839	395124	28430	366694
5	East Garo Hills	161223	156694	317917	44192	273725
6	West Garo Hills	324159	319132	643291	74858	568433
7	South Garo Hills	73170	69164	142334	13131	129203
	STATE (overall)	**1491832**	**1475057**	**2966889**	**595450**	**2371439**

Source: *Directorate of Economics and Statistics*, Meghalaya 2014

The Estimated population Density in the State of Meghalaya has gradually increased from 132 per sq.km in 2011 with the annual increase as 136 per sq.km in 2012, 139 in 2013, 142 in 2014, 146 in 2015, 149 in 2016 and 153 in 2017.

TABLE – 2: PROFILE OF THE STATE OF MEGHALAYA

Item	East Khasi Hills	West Khasi Hills	Ri-Bhoi	Jaintia Hills	East Garo Hills	West Garo Hills	South Garo Hills
Area (Sq. km)	2,748	5,247	2448	3,819	2603	3,677	1,887
Nos. of Sub-Divisions	1	2	Nil	2	1	2	Nil
Number of Blocks	8	6	3	5	5	8	4
Number of villages (inhabited 2011)	923	1093	579	498	1058	1,577	731
Towns	13	2	2	1	2	1	1
Police Station 2009-10	12	4	3	5	4	7	3
Police Outpost 2009-10	9	6	10	3	5	6	1
Total population (2011 census)	825922	383461	258840	395124	317917	643291	142334

Source: *Statistical Handbook of Meghalaya, 2014, Directorate of Economics & Statistics, Govt. of Meghalaya.*

1.3.2: AGROCLIMATIC ZONES:

As per the prevailing climatic conditions, the State of Meghalaya has been divided in to five agro-climatic zones as shown in Table – 3.

TABLE – 3: AGROCLIMATIC ZONES OF MEGHALAYA

Zones	Agro-climatic features	Dominant Geographical Units
I	Humid and warm with an average rainfall between 1270-2032 mm.	Hills and rolling and undulating pediment.
II	Humid and hypothermic moderately cold in winter and warm in summer rainfall varying between 2800-4000 mm.	Upper and middle plateau.
III	Humid and moderately warm summer and severe winter rainfall between 2800-6000 mm.	Upper and middle plateau.
IV	Humid and warm high rainfall ranging from 4000-10,000 mm.	Severely dissected and undulating low hills gentle to steep slope and rolling pediment.
V	Humid and hot, rainfall varying from 2800-4000 mm.	Rolling and undulating pediment and valley land having depression.

1.3.3: CULTIVABLE LAND.

The total cultivable land including net area sown in the state is shown in Table – 4.

TABLE – 4: LAND USE STATISTICS IN MEGHALAYA (inHectares)

Particular	2008-09	2009-10	2010-11	2011-12
Reporting area for land utilization statistics	2227100	2228914	2234283	2240837
1. Forest	948133	946318	946116	946089
2. Not available for cultivation	225921	230525	236447	239194
3. Other uncultivated land excluding Fallow Land	553444	555840	554532	555104
4. Fallow Land	215453	213292	213309	215273
5. Net Area Sown	284149	282939	283879	285177
6. Area Sown more than once	53245	53477	53974	54040
Total cropped area	337394	336416	337853	339217

Source:*Directorate of Economics &Statistics, Govt. of Meghalaya.*

1.3.4: METROLOGICAL DATA OF THE STATE:

The average annual rainfall in the State is 12,000 mm and relative humidity varies from 42 to 93 percent. The temperature varies from 4^0 to 29^0 Celsius in different seasons of the year. Some records, however, in different altitudes of the State are shown in the Table–5 and Table–6.

TABLE – 5: MAXIMUM & MINIMUM TEMPERATURE IN SOME CENTRES, 2011.

(In Decree Celsius)

Month	2011 records									
	Nongstoin		Jowai		Tura		Nongpoh		Baghmara	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
January	12.8	7.8	14.81	11.49	26.0	8.0	12.60	16.56	33.0	14.0
February	16.3	10.9	16.65	13.77	33.0	15.0	15.34	20.06	29.0	20.0
March	20.1	15.1	21.65	16.56	33.0	18.0	18.19	23.30	32.0	24.0
April	23.4	17.6	18.49	18.06	34.0	16.0	20.66	24.53	36.0	25.0
May	24.3	17.6	22.0	19.77	34.0	18.0	22.75	25.29	35.0	24.0
June	25.9	19.1	23.17	21.10	32.0	20.0	24.43	26.38	34.0	21.0
July	25.7	18.5	22.14	20.61	34.0	16.0	24.59	26.37	34.0	25.0
August	25.8	18.7	23.51	21.12	34.0	19.0	24.24	26.10	36.0	25.0
September	25.1	17.7	23.77	21.41	34.0	19.0	23.88	25.71	37.0	26.0
October	23.4	16.1	23.63	19.77	34.0	17.0	22.17	24.60	36.0	28.0
November	17.8	12.7	20.32	17.37	32.0	15.0	16.77	19.83	32.0	22.0
December	15.0	9.0	18.11	14.99	29.0	8.0	14.22	17.43	30.0	16.0

Source: *Directorate of Economics and Statistics*, Meghalaya 2014

TABLE – 6: RAINFALL RECORDS IN SELECTED VILLAGES

District/Centres	2004	2005	2006	2007	2008	2009	2010	2011	2012
East Khasi Hills (a) Mawsynram	14026	10072	8082	13302	10722	8952	11069	8927	12327
(b) Cherapunjee	NA	NA	NA	12647	11415	9000	13472	8732	13350
West Khasi Hills Nongstoin	4036	3097	2366	4778	NA	3507	3316	2982	NA
Jaintia Hills Jowai	5374	3042	2898	5379	3094	3025	3404	2964	4254
East Garo Hills Williamnagar	3837	3612	2098	3899	3317	3252	3183	NA	3109
West Garo Hills Tura	4107	4652	2528	4265	3632	3355	3278	4003	3580
South Garo Hills Baghmara	1811	2347	1405	2589	2392	1532	1161	2147	1841

Source: *Directorate of Economics and Statistics*, Meghalaya 2014

1.3.5: FOREST AREA

The area under forest in Meghalaya as reported during the year 2009-10 was 963.03 ('000) hectares. Forest area has been classified into Reserved, Protected, National Park and Un-classed Forests covering an area of 71.54, 1.24, 39.95 and 850.30 thousand hectares respectively. (Source: *Principal Chief Conservator of Forest, Meghalaya* and published in Statistical Handbook Meghalaya, 2014). Area under forest cover from 1994-95 to 2009-10 is shown in Table – 7.

TABLE – 7: AREA UNDER FOREST COVER('000 hectares)

YEAR	Reserved forest	Protected forest	National Park	Un-classed	Total
1994-95	71.31	1.24	26.75	850.30	949.60
1995-96	71.31	1.24	26.75	850.30	949.60
1996-97	71.31	1.24	26.75	850.30	949.60
1997-98	71.27	1.24	26.75	850.30	949.56
1998-99	71.27	1.24	26.75	850.30	949.56
1999-00	71.27	1.24	26.75	850.30	949.56
2000-01	71.27	1.24	26.75	850.30	949.56
2001-02	71.27	1.24	26.75	850.30	949.56
2002-03	71.27	1.24	26.75	850.30	949.56
2003-04	71.27	1.24	26.75	850.30	963.03
2004-05	71.54	1.24	39.95	850.30	963.03
2005-06	71.54	1.24	39.95	850.30	963.03
2006-07	71.54	1.24	39.95	850.30	963.03
2007-08	71.54	1.24	39.95	850.30	963.03
2008-09	71.54	1.24	39.95	850.30	963.03
2009-10	71.54	1.24	39.95	850.30	963.03

Source: *Principal Chief Conservator of Forest*, Meghalaya

1.3.6: ROAD CONNECTIVITY:

The availability of roads maintained by the PWD in Meghalaya in 2009-10 is as follows: Surfaced 5,581 km and Subsurface 2,986 km. The Road Density is 38.20/100 sq. km.

1.3.7: POWER SUPPLY POSITION:

Power supply is one of the basic requirements of any developing state besides the communication system. Generation and distribution of electricity in urban as well as rural areas greatly influence the implementation of animal husbandry developmental projects. The position of annual power generation in Meghalaya over the last two plan periods are shown in the Table–8.

TABLE – 8: GENERATION OF ELECTRICITY

Year	Generation (MKWH)
1995 – 96	542.55
1996 – 97	486.01
1997 – 98	595.61
1998 – 99	555.79
1999 – 00	633.54
2000 – 01	657.86
2001 – 02	675.59
2002 – 03	526.97
2003 – 04	526.97
2004 – 05	637.65
2005 – 06	514.44
2006 – 07	389.09
2007 – 08	633.06
2008 - 09	554.13
2009 – 10	536.15
2010 – 11	509.17
2011 - 12	518.50
2012 - 13	705.93
2013-14	868.56

(Net) Source: *Meghalaya State Electricity Board*.

Consumption of electric power by different sectors in the State is shown below in Table–9.

TABLE – 9: CONSUMPTION OF ELECTRICITY (MKWH) BY DIFFERENT CLASS OF CONSUMERS IN MEGHALAYA

Sl.no.	Projects	2009-2010	2010-2011	2011-2012	2012-2013
1	2	3	4	5	6
1	Domestic	227.37	270.81	316.77	333.64
2	Commercial	52.24	62.42	75.55	74.78
3	Industrial	468.63	484.01	519.93	483.04
4	Public lighting	1.49	1.33	1.10	1.32
5	Irrigation and Agriculture	0.63	0.35	0.41	0.34
6	Public water works and Sewage Pumping	31.58	33.87	37.98	35.67
7	Bulk supply (including licenses)	60.91	64.32	70.29	67.57
8	General purposes	18.76	13.61	14.90	13.87
9	Crematorium	0.00	0.20	0.18	0.20
10	Board's office and Employees Consumption	36.79	37.27	37.76	30.00
11	Total sale in the State	898.41	968.19	1074.88	1040.42
12	Total sale outside the State (Consumer)	80.44	136.35	106.76	163.94
13	Grand Total (inside and outside)	978.85	1104.54	1181.64	1204.36
14	Per Capita Consumption (KWH)	387.44	326.65	362.64	351.02

Source: Additional Chief Engineer (Commercial)Meghalaya Energy Corporation Ltd, Shillong.

Chapter – 2

LIVESTOCK POPULATION AND PRODUCTION SYSTEM IN MEGHALYA

Livestock production system in Meghalaya is primarily based on mixed farming with agricultural and horticulturalactivities using the crop residues and forests grazing. Although almost all the livestock species are available in the state, priority animals are poultry, pigs, cattle and goats for farming because of higher demand for meat than milk. The type of animals raised by the farmers are local indigenous/crossbred/exotic cattle like Holstein Friesian (HF), Jersey, HF Cross, Jersey Cross, HF x Local, Jersey x Local/indigenous; pigs like Hampshire, Hampshire Cross, T&D Cross, Hampshire x Local/indigenous; goats of Assam Hill, Black Bengal and indigenous; poultry suitable for back yard farming like *BV380, Key Stone Brown* and Indigenous. Presently various other commercial breeds/strains of chicken like *Key Stone Brown, Vanaraja, Kuroiler* are also reared. In almost all cases back yard farming is the most prevalent farming system. However, some elite farmers adapted to small units of commercial herds using semi intensive and intensive methods of rearing of livestock.

Both Stall Feeding and Free Range Systems are followed by the farmers depending upon the production system and category of farmers. Rural and hill farmers follows grazing of their animals with provision of some amount of concentrate feed i.e., grains, agricultural crop residues and agro-by-products depending on the ability and the capability of the individual. In Government and commercial farms, concentrated feed and improved fodders are used for feeding of the animals.

In Meghalaya, farmers practice a mixed farming system and on an average every household has at least one pig and few chickens. Source of water is mostly ground water reserve in the hills. The percentage of household keeping different categories of livestock are Bovine – 32.32 percent, Poultry – 53.47 percent, Sheep – 1.03 percent, Goat – 14.44 percent and Pig – 38.68 percent.However, the priorities and preference varies according to districts/zones depending upon the resources available in a particular region. In regard to crossbred pigs for breeding and meat production, preference is for black colour, lean fat and adaptability to local conditions. The different farming systems followed by majority of the farmer are extensive farming system and semi-intensive farming system.

2.1: LIVESTOCK SCENARIO OF MEGHALAYA:

The Livestock Census reports of 2003, 2007 and 2012 and livestock population growth rate in the State are shown in Tables – 10(a), (b) & (c) and growth rates in Tables-10 (d) and (e).

TABLE – 10(a): POPULATION OF LIVESTOCK IN MEGHALAYA (CENSUS 2003)

(Species-wise)

Sl. No	District	Cattle	Buffalo	Horse & ponies	Sheep	Goats	Pig	Poultry
1	East Khasi Hills	54434	226	216	5776	53041	105786	446577
2	RiBhoi	57471	3604	96	166	13407	37688	352940
3	West Khasi Hills	105119	2884	1050	5132	54781	62638	371932
4	Jaintia Hills	131905	2048	415	732	24642	54169	333922
5	East Garo Hills	156186	977	21	41	38587	57833	438517
6	West Garo Hills	220562	8223	18	6228	120311	81140	707927
7	South Garo Hills	39988	41	17	128	22563	19676	169385
	State Total	**7,67,015**	**18,003**	**1,833**	**18,203**	**3,27,332**	**4,18,980**	**28,21,200**

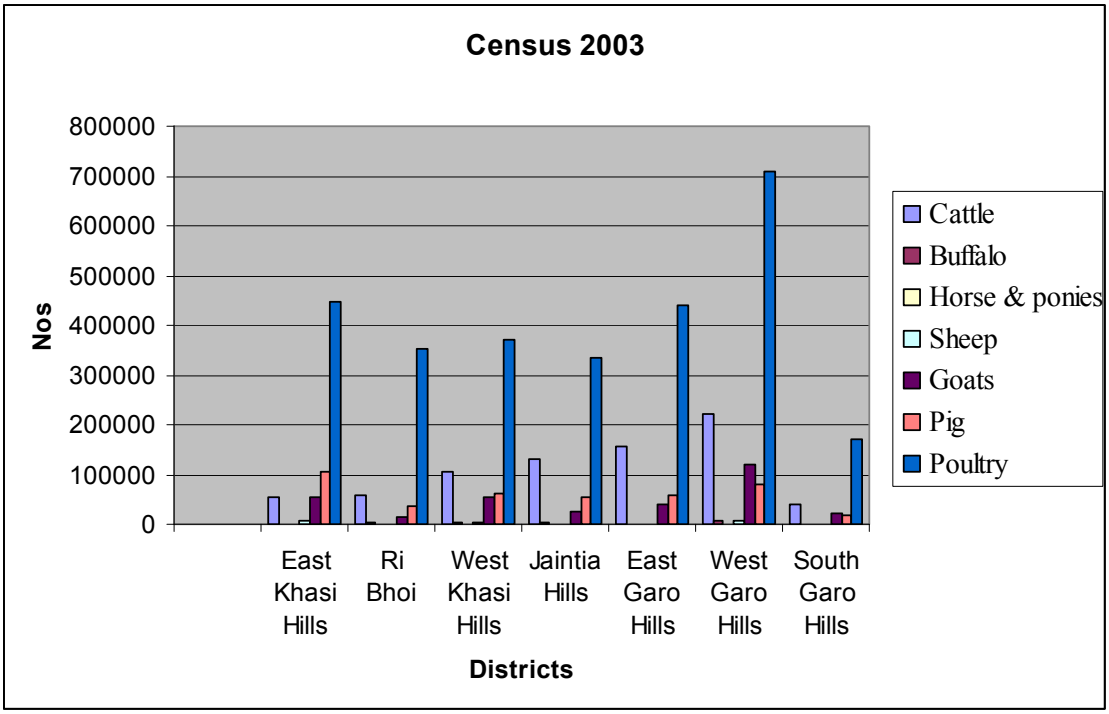


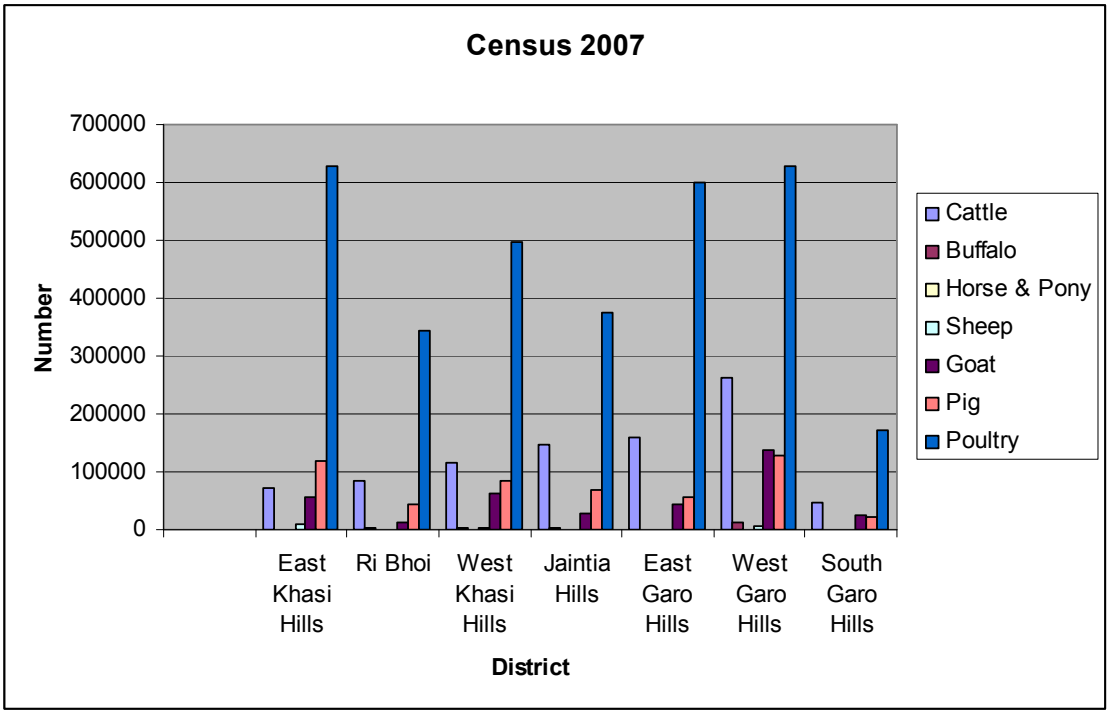
TABLE – 10(b): POPULATION OF LIVESTOCK IN MEGHALAYA

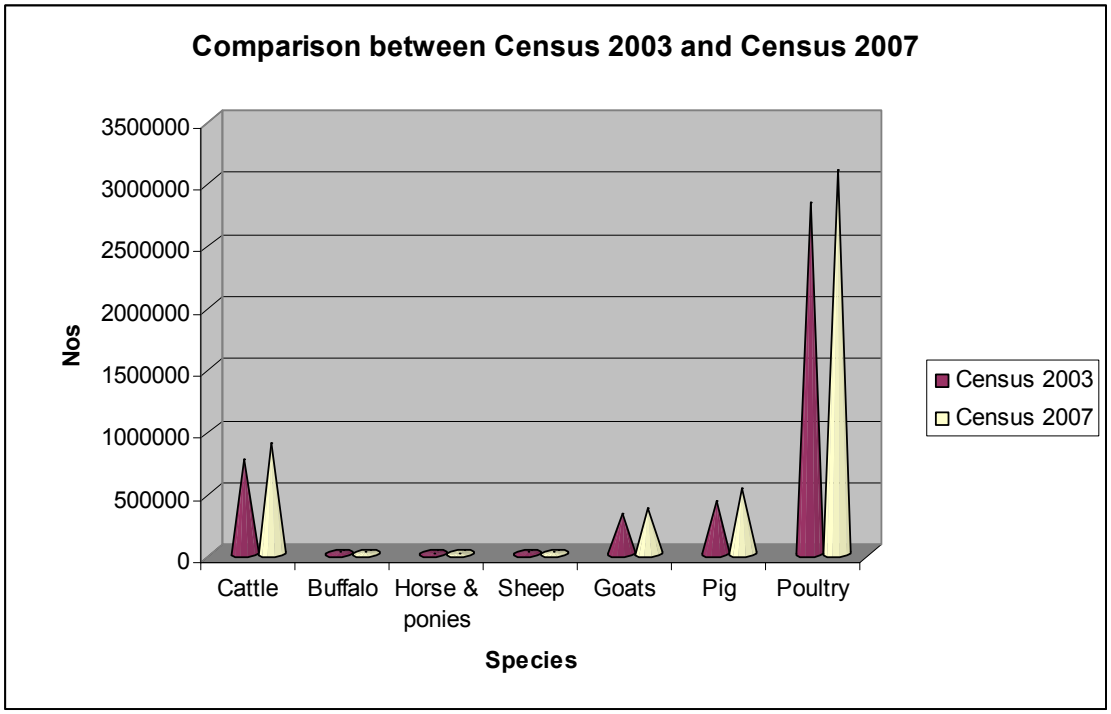
(LIVESTOCK CENSUS 2007)

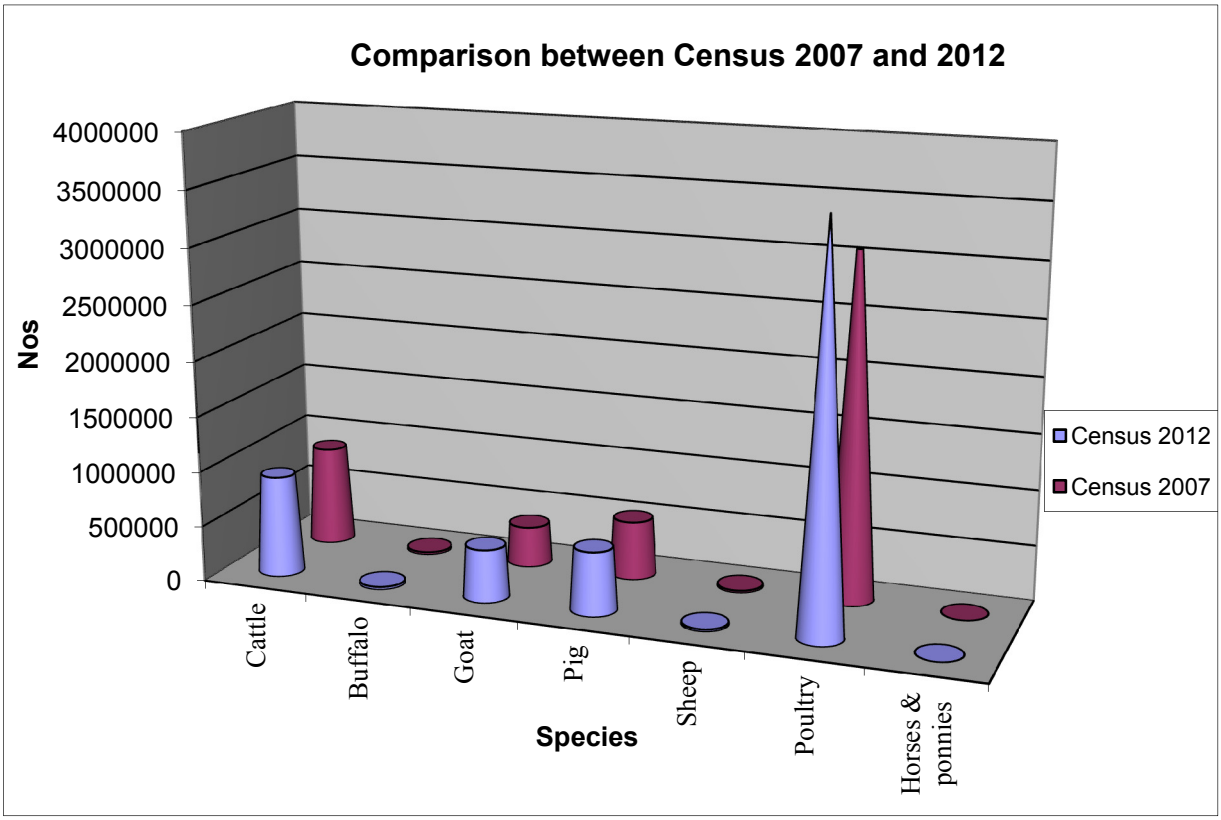
(Species-wise)

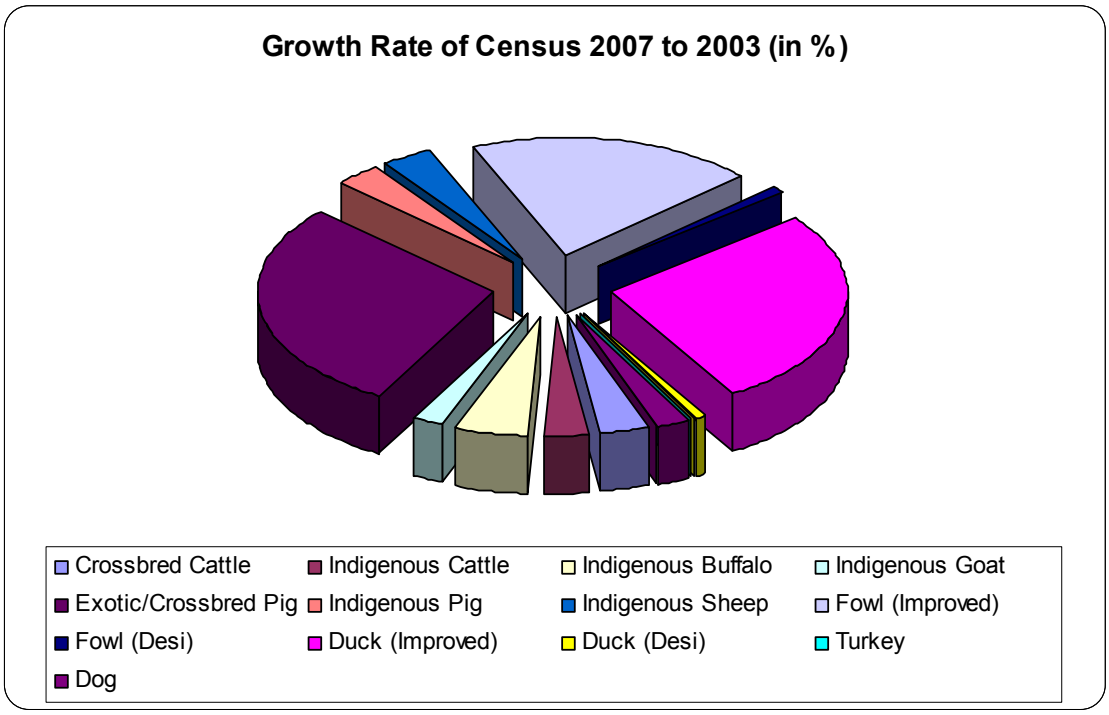
Sl No	District	Cattle	Buffalo	Horse & Pony	Sheep	Goat	Pig	Poultry
1	East Khasi Hills	73274	413	48	8957	56632	119357	**629036**
2	RiBhoi	83121	3289	24	116	13835	42470	**344451**
3	West Khasi Hills	115709	2787	889	3516	61786	85710	**498237**
4	Jaintia Hills	147497	2224	33	42	27005	70208	**374839**
5	East Garo Hills	158034	1415	-	1260	43652	55537	**599743**
6	West Garo Hills	263343	11133	864	7149	138468	128346	**629036**
7	South Garo Hills	46265	1366	-	1	24105	22729	**171316**
	State Total	**887243**	**22627**	1858	21041	365483	**524357**	**3092875**

Source: *Directorate of Animal Husbandry & Veterinary, Govt. of Meghalaya*




Comparison between Census 2003 and Census 2007
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
Nos
Cattle
Buffalo
Horse & ponies
Sheep
Goats
Pig
Poultry
Species
Census 2003
Census 2007


Comparison between Census 2007 and 2012
4000000
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
Nos
Cattle
Buffalo
Goat
Pig
Sheep
Poultry
Horses & ponnies
Species
Census 2012
Census 2007


Growth Rate of Census 2007 to 2003 (in %)
Crossbred Cattle
Indigenous Cattle
Indigenous Buffalo
Indigenous Goat
Exotic/Crossbred Pig
Indigenous Pig
Indigenous Sheep
Fowl (Improved)
Fowl (Desi)
Duck (Improved)
Duck (Desi)
Turkey
Dog

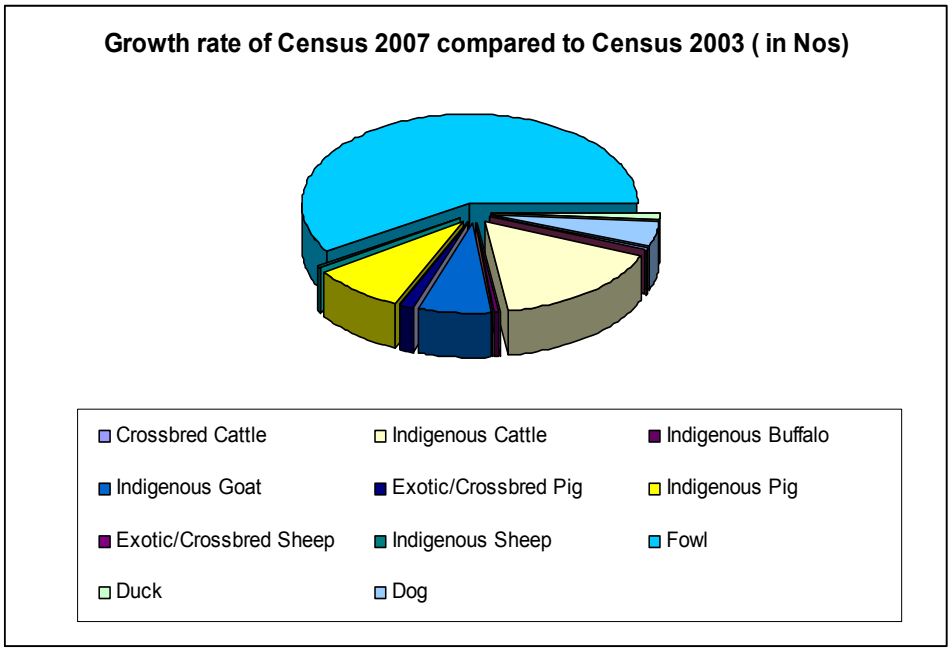

Growth rate of Census 2007 compared to Census 2003 (in Nos)
Crossbred Cattle
Indigenous Cattle
Indigenous Buffalo
Indigenous Goat
Exotic/Crossbred Pig
Indigenous Pig
Exotic/Crossbred Sheep
Indigenous Sheep
Fowl
Duck
Dog

TABLE – 10(c): POPULATION OF LIVESTOCK IN MEGHALAYA

(LIVESTOCK CENSUS 2012)

Livestock Population (a) Cattle & Buffaloes

Sl. No.	Name of District	Cattle		Total Cattle	Buffalo	Total Bovine
		Cross bred	Indigenous			
1.	East Khasi Hills	12807	69410	82217	1756	83973
2.	RiBhoi	9295	27614	36909	5043	41952
3	West Khasi Hills	498	95150	95648	5849	101497
4	South West Khasi Hills	331	25652	25983	202	26185
5	East Jaintia Hills	622	62981	63603	927	64530
6	West Jaintia Hills	663	33610	34273	1692	35965
7	North Garo Hills	196	66400	66596	8	66604
8	East Garo Hills	241	76379	76620	18	76638
9	West Garo Hills	1631	239283	240914	4233	245147
10.	South West Garo Hills	134	113390	113524	5164	118688
11	South Garo Hills	40	69426	69466	2	69468
	Meghalaya	26458	879295	905753	24894	930647

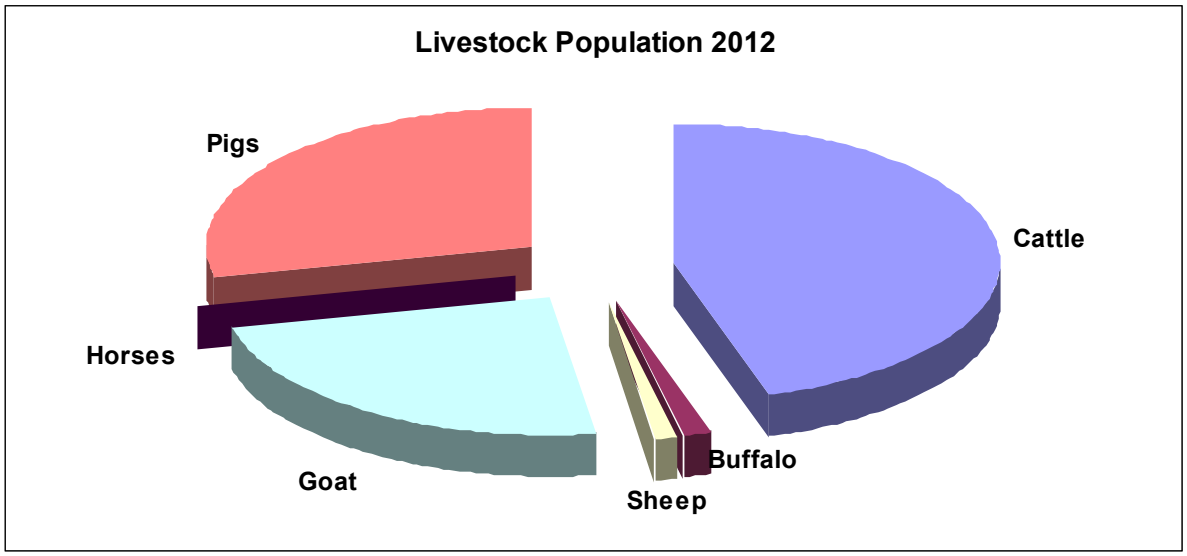
Livestock Population (b) Sheep, Goat, Horses & Ponies.

Sl. No.	Name of District	Sheep		Total Sheep	Total Goats	Total Horses & Ponies
		Cross bred	Indigenous			
1.	East Khasi Hills	364	7030	7394	78334	23
2.	RiBhoi	0	10	10	24033	7
3	West Khasi Hills	441	2820	3261	43097	1142
4	South West Khasi Hills	0	185	185	35892	67
5	East Jaintia Hills	0	0	0	23770	6
6	West Jaintia Hills	0	8	8	13317	25
7	North Garo Hills	0	16	16	30172	15

8	East Garo Hills	0	8	8	5787	0
9	West Garo Hills	0	9284	9284	106516	16
10.	South West Garo Hills	0	819	819	62135	0
11	South Garo Hills	0	6	6	49272	0
	Meghalaya	805	20186	20991	472325	1301

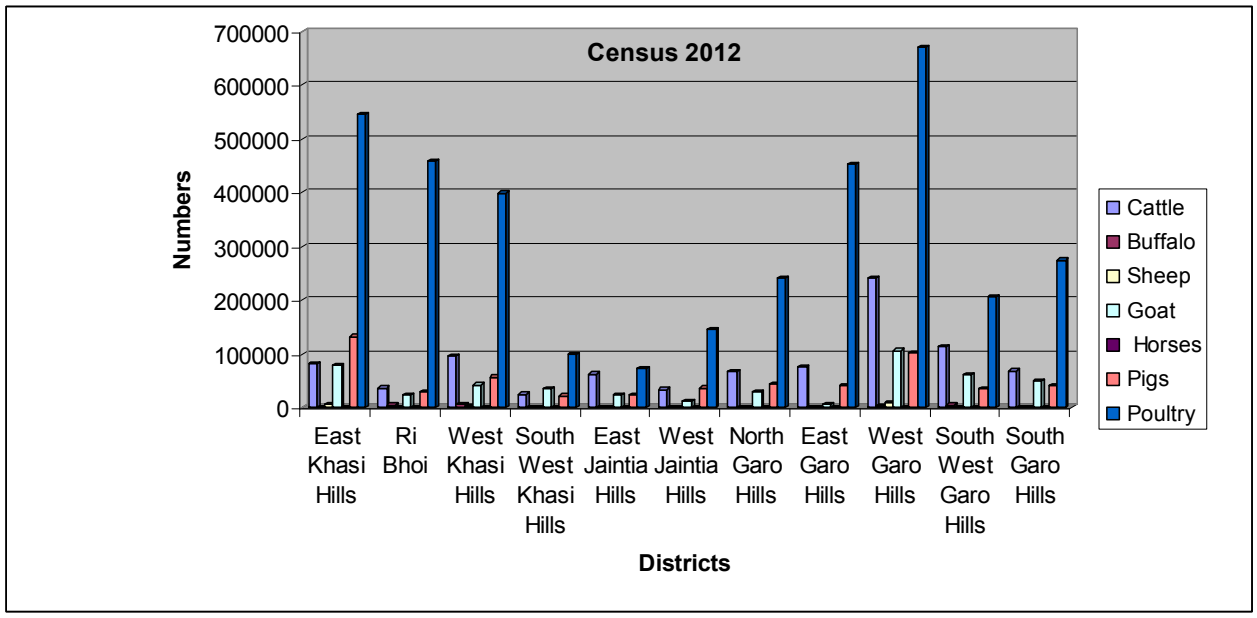
(c) Pig Population & Livestock Population and Rabbit.

Sl. No.	Name of District	Pigs		Total Pigs	Total Livestock	Total Rabbits
		Cross bred	Indigenous			
1.	East Khasi Hills	53818	79011	132829	302553	231
2.	RiBhoi	12596	17082	29678	95680	177
3	West Khasi Hills	14123	43296	57419	206416	22
4	South West Khasi Hills	7333	14764	22097	84426	0
5	East Jaintia Hills	7262	17572	24834	113140	0
6	West Jaintia Hills	14368	22744	37112	86427	13
7	North Garo Hills	5547	38808	44355	141162	0
8	East Garo Hills	6215	34331	40546	122979	0
9	West Garo Hills	6055	96283	102338	463301	780
10.	South West Garo Hills	921	35333	36254	217896	10
11	South Garo Hills	9746	32093	41839	160585	60
	Meghalaya	137984	431317	569301	1994565	1293



(d) Poultry Population

SL No.	Name of Districts	Fowls			Ducks			Turkey	Other Poultry Birds like Guineas, Fowls etc.	Grand Total
		Desi	Impro-ved	Total	Desi	Impro-ved	Total			
1.	East Khasi Hills	477111	64502	541613	1840	106	1946	359	1541	545459
2.	RiBhoi	327182	129772	456954	960	21	981	76	167	458178
3	West Khasi Hills	371054	27881	398935	102	16	118	0	0	399053
4	South West Khasi Hills	98886	882	99768	268	0	268	19	0	100055
5	East Jaintia Hills	65273	7953	73226	91	0	91	0	0	73317
6	West Jaintia Hills	124838	19697	144535	862	226	1088	40	25	145688
7	North Garo Hills	197113	44385	241498	423	58	481	0	167	242146
8	East Garo Hills	440733	11744	452477	134	0	134	0	30	452641
9	West Garo Hills	629866	27045	656911	12692	79	12771	2	96	669780
10	South West Garo Hills	195467	6660	202127	3643	2	3645	0	133	205905
11	South Garo Hills	270036	3636	273672	1316	6	1322	2	26	275022
	Meghalaya	3197559	344157	3541716	22331	514	22845	498	2185	3567244



Thepopulation growth rateof cattle and buffalo in the State is presented in Table -11(a and b). Although the cattle population growth is positive over the years from 1982 till 2003, the buffalo population shows a dwindling growth rate.

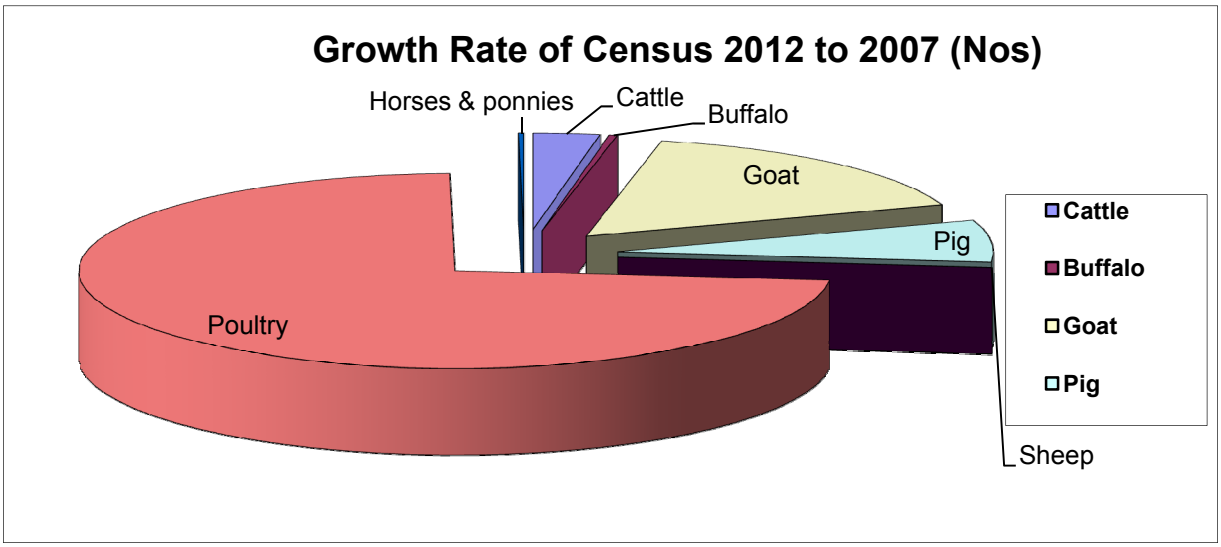
TABLE – 11(a) POPULATION GROWTH PATTERN (%) OF CATTLE AND BUFFALO FROM 1982 TO 2012.

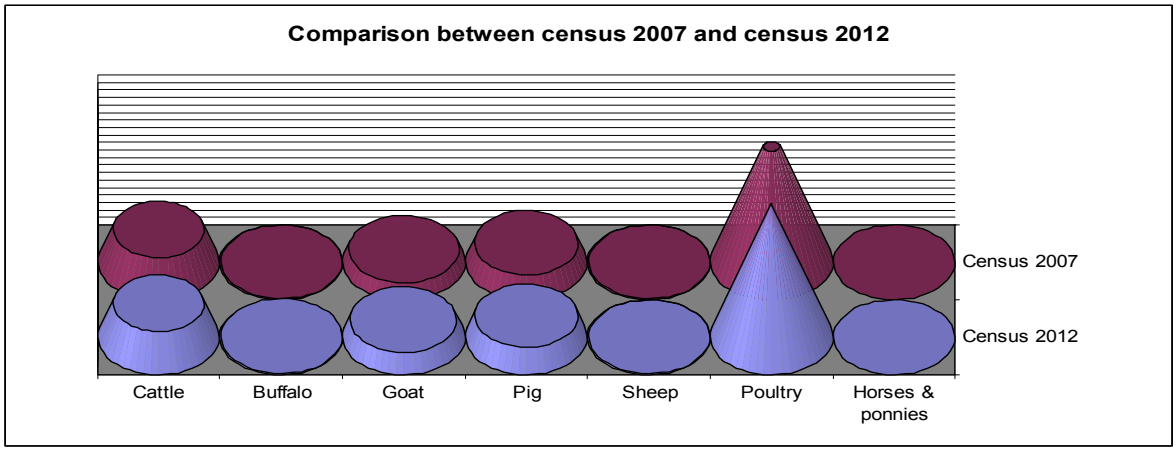
(Population in '000)

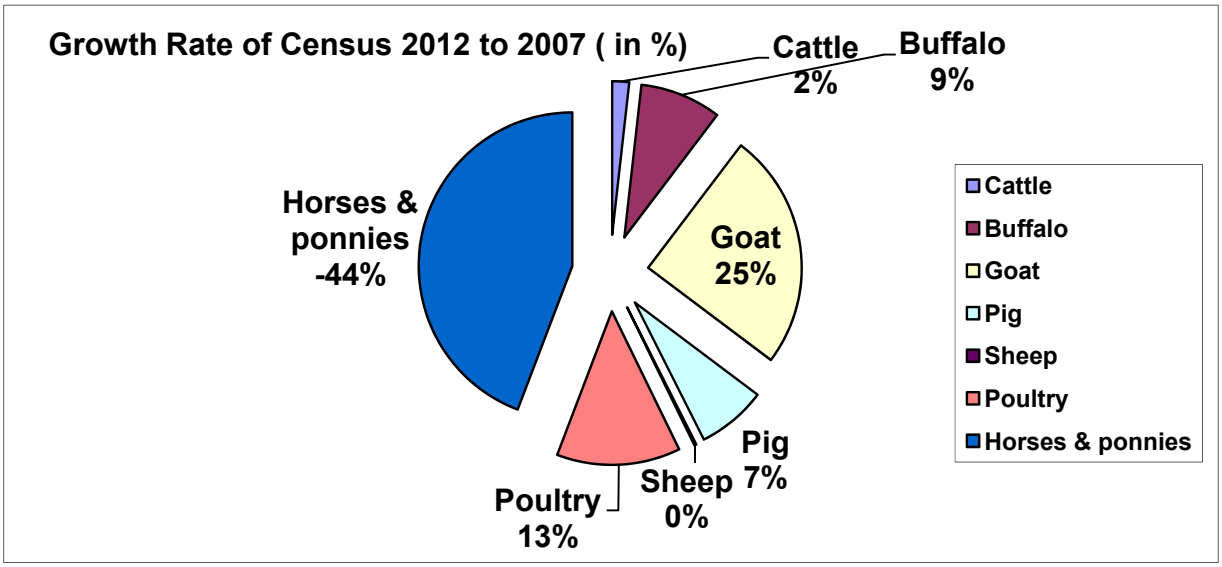
Category	1982	1988	1992	1997	2003	2007	2012
Cattle	549.8	586.2	637.4	755.52	767.02	887.24	905.75
Buffalo	28.9	27.8	33.7	17.4	18.00	22.63	24.89
Growth Pattern		(+) 6.62 % in Cattle and (-) 3.81% in Buffalo	(+) 8.73 % in Cattle and (+) 0.21% in Buffalo	(+) 18.53 % in Cattle and (-) 48.37% in Buffalo	(+) 1.52 % in Cattle and (+) 3.45% in Buffalo	(+)15.67 % in cattle and (+) 25.70 % in buffalo	(+) 2.09% in Cattle and (+) 9.99% in buffalo

TABLE – 11(b): LIVESTOCK POPULATION (2012 CENSUS) AND GROWTH RATE AS COMPARED TO 2007 CENSUS

Sl No	Species	Population (Numbers)			Total	Growth Rate (%)
1	Cattle	Crossbred	Male	5602	26458	-1.45
			Female	20856		
		Indigenous	Male	355705	879295	2.2
			Female	523590		
2	Buffalo	Indigenous	Male	16363	24894	10.02
			Female	8531		
3	Goat	Indigenous	Male	179502	472325	29.23
			Female	292823		
4	Pig	Exotic/ Crossbred	Male	72834	137984	96.68
			Female	65150		
		Indigenous	Male	224672	431317	-5.04
			Female	206645		
5	Sheep	Exotic/ Crossbred	Male	299	805	232.64
			Female	506		
		Indigenous	Male	7434	20186	-2.95
			Female	12752		
6	Poultry	Fowl	Improved	344157	3541716	25.84
			Desi	3197559		16.15
		Duck	Improved	514	22845	-93.56
			Desi	22331		-61.76
		Others	Turkey	498	498	2271.43
7	Dog			256972	256972	14.66


Growth Rate of Census 2012 to 2007 (Nos)
Horses & ponnies
Cattle
Buffalo
Goat
Pig
Poultry
Sheep
Cattle
Buffalo
Goat
Pig


Comparison between census 2007 and census 2012
Census 2007
Census 2012
Cattle
Buffalo
Goat
Pig
Sheep
Poultry
Horses & ponnies


Growth Rate of Census 2012 to 2007 (in %)
Cattle 2%
Buffalo 9%
Goat 25%
Pig 7%
Sheep 0%
Poultry 13%
Horses & ponnies -44%
Cattle
Buffalo
Goat
Pig
Sheep
Poultry
Horses & ponnies

2.2: TYPE OF CATTLE REARED:

2.2.1: Indigenous cattle of Meghalaya: The native cattle population in Meghalaya is mostly indigenous and non-descript which are of small body size and their production potentiality is very low in comparison to the Indian improved breeds and exotic breeds of cattle. But these local cattle are hardy and adapted to local harsh conditions of feeding and management and are found to be resistant to many tropical diseases. Because of indiscriminate breeding in past some crossbreds of indigenous cattle with exotic Jersey, Holstein Friesian, Brown Swiss and some Indian breeds like Sahiwal, Red Sindhi, Hariana etc. are also available. The population of buffaloes is very meagre, but is showing an upward trend in recent years in some selected districts due to its utilization as draught animal and acceptability as a meat and milch animal.

Local indigenous/nondescript cattle available in Meghalaya

Jersey cow

Holstein Friesian

2.2.2: Indian/Exotic cattle and crosses with indigenous:

Red Sindhi(Indian breed): Red Sindhi is a milch breed of cattle and the native tract spreads in North India. Coat colour is red with shades varying from dark red to light, strips of white, the Umbilicus is large and hanging. The head is smaller with backward and downward facing horn. Milk yield ranges from 1250 to 1800 kgper lactation.Bullocks despite lethargic and slow can be used for road and field work.

Sahiwal (Indian breed): Sahiwal is a milch breed of cattle and the native tract this breed in Punjab, Haryana, UP and Delhi. The animals of this breed possesses loose skin, stunt horns, pale red or reddish Dun. Lactation milk yield of the breed ranges from 1400-2500 Kg with butter fat of 4.0 to 4.5 percent.

Tharparkar(Indian breed): Tharparkar is a milch breed of cattle and the native tract spreads in Western Rajasthan and Gujarat. The body color is white and grey. They are medium sized, compact and have lyre-shaped horn and possesses semi pendulous and forward facing ear. The dewlap is large. Lactation yield: 1200-2400 Kg.The bullocks are quite suitable for ploughing and casting.

Jersey (Exotic breed): The native tract of this milch breed is in Europe and America. The animals are reddish-brown in colour and without any hump. The lactation milk yield ranges from 5000-8000 Kg in a lactation of about 300 days.

Holstein Friesian (Exotic breed):HF is a milch breed and its native tract is in Netherland.The animals do not possess hump. Body coat colour is white with black patches. The lactation milk yield ranges from 8000 to 14000 litres.

Jersey X Local (Crossbred): These are the crosses of Jersey breed (Sire) and Local, i.e. indigenous/nondescript cows of Meghalaya. These crosses may of different categories with different levels of exotic Jersey inheritance. Milk yield of these crossbred cows ranges from 1500 to 3000 litres in a lactation.

Holstein Friesian X Local (Crossbred): These are the crosses of Holstein Friesian breed (Sire) and Local, i.e. indigenous/nondescript cows of Meghalaya. These crosses may of different categories with different levels of exotic Holstein Friesian inheritance. Milk yield of these crossbred cows ranges from 2,000 to 3,500 litres in lactation depending upon the management system.

2.3: TYPE OF PIGS REARED:

Indigenous pigs: The pig population in Meghalaya is mainly consistsof nondescript, indigenous"NiangMegha" and crossbreds of indigenous and various exotic breeds. The indigenous pigs are small in body size and weight, slow in growth rate and produces crops of small litter size. But these pigs are resistant to some tropical diseases and thrive well in local conditions (scavenging). Rearing of local pig with an average unit size of four is mostly found in remote and rural areas fed with kitchen garden and wastes. The indigenous "Niang-Megha" pigs of Meghalaya are a good source of foundation stock for conservation as well as crossing with exotic breeds for productivity improvement.

Indigenous pig

"NiangMegha" pig of Meghalaya

(Photo Courtesy: NBAGR)

The crossbreds of different exotic and indigenous stocks are well adapted and performed much better than the pure breeds. Rearing of crossbreds is being taken up by rural farmers and mostly those farmers (beneficiaries) under Government Subsidy schemes. The Hampshirebreed of pigs are preferred by the farmers because of black colour and body characteristic similarity with the local even though it is bigger in body structure. Other black varieties are also in demand in the state for rearing. There are two types of preference, (a) on Meat taste and (b) body coat colour. Those who prefer the animals for taste of meat invariably go for local and the rest of the farmers prefer crosses of Hampshire because of economic reasons of body size, growth rate, litter size and adaptability.

Large Black (Exoticpurebred): ABritish pig breed and is entirely black in colour which protectthe pig from sunburn in sunny climates. Large Black is extremely docile, and very hardy. These characteristics, coupled with its black skin,make the Large Black ideal for a wide range of climatic conditions. They have largeand long ears hanging down on each sideof the face. Periodsof fertility of this breed is long and has strong maternal instincts. The litter size at birth is

of 8–10 piglets, but some sows produce litters of up to 13piglets. The average body weight of boars ranges from 320 to 360 kg and sows from 270 to 320 kg. Large Black pigs arevery efficientconverter of poor quality feed into lean meatwithout an excess of back fat.

Hampshire (Exotic purebred): Hampshire Breed developed in the United Statesof America and one of the world's most important pig breed. Hampshire pigs are black in colourwith a white band around the body at the shoulder including the front legs andfeet. The head, tail, and back legs are black. The ears are erect and the face is longer andstraighter compared to other breeds.Hampshire sows are very prolific, have extra longevityand have good mothering ability. They have been used extensively in crossbreeding because oftheir good carcass quality and lean meat. The breed is known for high prolificacy, hardiness, vigour and foraging ability. Sows give birth to large litter of 10 piglets with 1 kgbirth weight each. Some sows are known to produce litters of up to 16 piglets. A boarweighs 230 kg to 340 kg and sows around 200 kg to 290 kg.

Duroc(Exotic purebred): Duroc pig is an original breed of United States of America. The coat colour is orange-brown. They have drooping ears. Duroc pig is good for both cold and warm climate. The breed is of very good behavior and has relatively calm temperament. Sows are known for producing large litter size and with good motherhood quality. The average live weight of mature sows is 204-295 Kg, and matured boar is 227-340 Kg.

Large White Yorkshire(Exotic purebred): The Large White Yorkshire is a breed of domestic pig originating in Yorkshire. LWY is one of the most numerous of all pig breeds widely used in crossbreeding for intensive pig farming around the world. The pig is big in size with solid white colour with occasional black pigmented spots called freckles.Other distinguishing characteristics are erect ears, snout of medium length and slightly dished face. Neck is long and full to the shoulder. Back is slightly arched. Matured body weight of boar ranges from 300 to 400 Kg and sow from 230 Kg to 320 Kg.

Tamworth & Desi(T&D cross): T&D crossbred pig developed in India by crossing and continuous selection of Tamworth(British pig) with a local indigenous(desi)over a period of four generations on the basis of black colour, faster growth and better reproductive performance. T&D pigs is about 6 to 7 times more remunerative than desi pigs at village levels. Matured Boar weighs 200-300 Kg and Sows 150-250 Kg. The average litter size at birth is 8-12.

Ghungroo (Indian breed): They are an indigenous strain of pig first reported from North Bengal. The pig has a high prolificacy and ability to sustain in low input system. Ghungroo pig

are mostly black in colour with typical bulldog face appearance, with a litter size of 6-12 piglets. Both sexes are docile and easy to handle.

Large Black X Local (Crossbred): These are crosses of Large Black with local/indigenous pigs. They are blackincolour with long body and short snout. Ears are large that drop down to cover the eyes.Locally crossbred Largeblack sows exhibit strong maternal instinct with highly desirable nursingability. The litter size at birth ranges from 7 to 12. The litter size can be as high as 14 for some sows. Adult liveweight of locally available Hampshire crossis 170 kg for breeding boars and 140 kg forsows.

Hampshire X Local (Crossbred): TheHampshire and local/indigenous crossbred pigs are similar toHampshire pure breed by appearance with the exception of possessing comparativelylonger and pointed snout. They are black in colour with the typical white belt coveringthe shoulder portion including the forelimbs extending to the pastern. Ears are erect the animals have strong hooves. Sows exhibit strong maternal instinct with exceptional mothering ability. The average litter size at birth ranges from 7 to 10 but some sows known to have given birth to 16 piglets. The averageweight at weaning (45 days) is 10 kg. The adult live weight of local Hampshire crossbredis 140 kg for breeding boars and 120 kg for sows. These animals attain puberty at 8months of age.

Lumsniang (Crossbred): This is a crossbred of Hampshire and NiangMegha, the Khasi indigenous pig. Body weight at birth of a piglet is 0.85 kg. Has a faster growth rate and attains about 78kg to 90 kg body weight at 12 months of age.The sows have good mothering ability resulting in higher litter size at weaning. They are better adapted to hill ecosystem.

Chapter – 3

STATE DEPARTMENT OF ANIMAL HUSBANDRY AND VETERINARY OF MEGHALAYA

3.1: Mandate of the Department:

Basically the broad mandate of the Department is to provide nutritional security of the human population through augmentation of animal production. Livestock sector provide milk, meat, egg etc. to meet the animal protein requirements of large population of the state. Present availability/production of animal products are far below the national average and needs to be increased with emphasis on maintaining nutritional levels of growing children and nursing mothers. Maintenance of bio-diversity, environment and energy conservation is another emerging area and livestock sector requires a balance between animal and man to maintain the ecological biosphere and to enable economic exploitation of the resources without causing irreversible damage to the environment. Upliftment of women, employment generation, rural transformation and poverty alleviation through animal husbandry activities are the priority areas. Rural women in this tribal state play an important role in livestock management and participate actively in areas of feeding, breeding, maintaining and health care of animals. Livestock production is an integral part of integrated farming system with crop farming and horticulture and contributes substantially to poverty alleviation and creates employment opportunities. Livestock sector has great potential to bring about socio economic change and improving the living standards of the people in the state.

3.2: Objectives of the Department:

Towards fulfilling the mandates, the main focuses of activities are:

- Developing suitable and appropriate infrastructure for increasing animal productivity and production.
- Preservation and protection of livestock through preventive and curative health care.
- Carry out appropriate breeding programme for preservation and propagation of indigenous breeds and development of superior germplasm.

3.3: Approach and Thrust areas of the Department:

In consonance with the overall strategy, the major thrust of activities are concentrated on scientific management and up gradation of genetic resources, control of animal diseases, increasing the availability of nutritious feeds and fodder upon which most of the

livestock thrives, development of processing and marketing facilities and enhancement of production and profitability of livestock enterprises.

The Department of Animal Husbandry and Veterinary came into existence as an independent department in the year 1971-72. Since then the Department is serving the people in various production oriented, poverty alleviation and employment generation programmes through livestock and poultry development. The Department played a very crucial role in ameliorating the plight of the poor farming communities and provided livelihood security to men, women and youths in the state.

Livestock rearing in the state involved in each of the individual livestock rearing enterprises like Dairy, Goatery, Piggery etc. taken up at family level. Capacity building of the farmers and entrepreneurs through training and extension is an important activity of the Department besides assisting and guiding the farming community in their day to day needs to generate more returns. The department plays a pivotal role in transfer of technology from laboratory to field making the farmers aware of the same so that their household economy is boosted.

Considering the above,the state plan documents are prepared for some of the major programmes namely (1) Livestock development, (2) Animal Health coverage, (3) Education and Training, (4) Dairy development, and (5) Poultry development. Livestock and Poultry development broadly covers cattle, buffalo, sheep, goat, pig and poultry including feeds and fodder resources. The basic aim of the development process is to produce or evolve type of highly productive animals adapted to the conditions and environment of the state which can be maintained economically under prevailing and upgraded systems of management with suitable inputs. Livestock and poultry rearing in the State of Meghalaya is an age-old practice and is extremely popular. Almost every family maintains these animals for fulfilling the protein requirements of their own family through consumption of the products like milk, meat and eggs andalso for economic gain by marketing of the products. The state of Meghalaya represents a mixed terrain of hills and valleys with a congenial climate for livestock farming which has tremendous scope to contribute towards higher GDP growth of the state through this sector.

3.4: Labour component – Average number of labourers/workers engaged mostly in commercial and Govt. farms are one per 4 cattle head, one per 8 Pigs and one per 1,000 poultry. However, the household farm labour is shared by every member of the family and primarily by the women folk.

3.5: Establishment set up of the Department of Animal Husbandry & Veterinary:

The following are the positions of technical man power in the Dept. of AH &Veterinary.

TABLE – 12(i): Number of Veterinary Officers with Pay Scale

Scale Range	Standard Pay Scale	Over All Total
VETERINARY DOCTORS		
Director A.H. & Veterinary	31300-46760/-	1
Registrar State Vety Council	26700-42100/-	1
Joint Director A.H. & Veterinary	26700-42100/-	3
Deputy Director A.H. & Veterinary	23300-39270/-	5
Principal VFA Training Institute	23300-39270/-	1
District A,H. & Veterinary Officer	23300-39270/-	11
Assistant Director (Disease Investigation)	20700-36650/-	1
Assistant Director (Disease Surveillance)	20700-36650/-	1
Assistant Director (Livestock Census)	20700-36650/-	1
Assistant Director (Rinderpest Eradication)	20700-36650/-	1
Assistant Director (Veterinary Information)	20700-36650/-	1
Assistant Director (Fodder Development)	20700-36650/-	2
Assistant Director (Piggery Development)	20700-36650/-	1
Assistant Director (Poultry Development)	20700-36650/-	1
Assistant Director (Project ICDP)	20700-36650/-	2
Assistant Director (Veterinary)	20700-36650/-	1
Assistant Director (Agronomist)	20700-36650/-	1
Assistant Director (Feed Analytical)	20700-36650/-	1
Sub-Divisional A.H. & Veterinary Officer	20700-36650/-	4
Assistant Director (Sr. Instructor)	20700-36650/-	2
Senior Manager	20700-36650/-	3
Senior A.H. &Vety Officer	18300-35100/-	42
Fodder Supervisor	17000-33690/-	1
A.H. & Veterinary Officer	17000-33690/-	164
Posted in Other Service (BATC)	18300-35100/-	1
Posted in Other Service	17000-33690/-	3
Total :		**255**

TABLE – 12(ii): Number of other Officers according to Designation & Pay Scale

Designation/Posts	Standard Pay Scale	Over All
DAIRY		
Joint Director (Dairy)	26700-42100/-	1
Deputy Director (Dairy)	23300-39270/-	1
Dairy Development Officer	20700-36650/-	1
Assistant Dairy Development Officer	18300-35100/-	3
Procurement & Distribution Officer	18300-35100/-	1
Plant Manager	17000-33690/-	6
Rural Dairy Extension Officer	17000-33690/-	2
Dairy Extension Officer	17000-33690/-	1
Milk Tester	17000-33690/-	3
Total : DAIRY		**19**
ENGINEERING	-	
Executive Engineer (CEW)	23300-39270/-	3
Assistant Engineer	17000-33690/-	2
Total : ENGINEERING		**5**
STATISTICS	-	
Joint Director (Statistics)	26700-42100/-	1
Deputy Director (Statistics)	23300-39270/-	1
Research Officer	18300-35100/-	1
Statistical Officer	17000-33690/-	3
Total : STATISTICS		**6**
OTHERS	-	
Financial Accounts Officer	17000-33690/-	1
Audit Officer	16300-31860/-	1
Registrar	16300-31860/-	1
Total : OTHERS		**3**
Grand Total :		**33**

TABLE – 12(iii): Number of Field Staff /Ministerial according to Designation & Pay Scale

Designation	Standard Pay Scale	Over All
ENGINEERING	-	
Junior Engineer I	14100-27510/-	4
Junior Engineer II	10600-20720/-	3
Sectional Assistant.	8300-16270/-	6
Tracer	8300-16270/-	3
Total : Engineering		**16**

Designation	Standard Pay Scale	Over All
STATISTICS	-	
Inspector Statistics	14700-28760/-	2
Statistical Assistant	14100-27510/-	7
Data Entry Operator	9900-19370/-	2
Enumerators	9200-18020/-	10
Total : Statistics		**21**

ASSTT. MANAGER /LAB. ASSTT./SVFA / VFA	-	
Assistant Manager	9900-19370/-	5
Asstt. Farm Manager	9900-19370/-	4
Demonstrator	8300-16270/-	5
Hatchery Man	8300-16270/-	2
Laboratory Assistant	8300-16270/-	4
Livestock Demonstrator	8300-16270/-	1
Lab. Technician	14100-27510/-	1
Manager	14100-27510/-	1
Poultry Assistant	8300-16270/-	7
Supervisor VFA	13100-25570/-	4
S.V.F.A.	9900-19370/-	41
Semen Courier	7700-15020/-	2
Senior Sexer	13100-25570/-	1
Sexer	9900-19370/-	1
Stockman	8300-16270/-	56

Technical Assistant	11300-22000/-	3
Veterinary Fields Assistant	8300-16270/-	329
Total : Asstt. Mngr/Lab. Asstt./SVFA / VFA		**467**

TABLE – 12(iii): (contd): **Number of Field Staff/Ministerial staff & Pay Scale**

MINISTERIAL STAFF (GRADE - III):		
Designation	**Standard Pay Scale**	**Over All**
Superintendent	14700-28760/-	3
Assistant Auditor	14100-27510/-	1
Junior Divisional Accountant	14100-27510/-	1
UDA	13100-25570/-	61
UDA Cum Accountant	13100-25570/-	4
Translator	11300-22000/-	2
Stenographer	10600-20720/-	2
Photographer	9900-19370/-	1
LDA Directorate	9900-19370/-	101
District:	9200-18020/-	
Computor Clerk	9200-18020/-	9
Statistical Primary Investigator	9200-18020/-	2
Clerk Cum Data Entry Operator	9200-18020/-	2
Typist	8300-16270/-	9
Steno Cum Typist	8300-16270/-	2
Store Keeper	8300-16270/-	7
Cinema Operator	8300-16270/-	1
Electrician	8300-16270/-	6
Milk Collector	8300-16270/-	19
Milk Recorder	8300-16270/-	4
Tracer	8300-16270/-	4
Tractor Operator	8300-16270/-	2

Fieldman	8300-16270/-	1
Fireman	7100-13840/-	1
Pump Operator	8300-16270/-	4
Mechnic cum Operator	8300-16270/-	5
Record Keeper	7700-15020/-	1
Lab Assistant	7700-15020/-	4
Driver	7700-15020/-	84
Duftry	7100-13840/-	2
Carpenter	7100-13840/-	2
TOTAL Ministerial Staff (Gr-III)		347

TABLE – 12(iii): (contd) **Number of Grade - IV staff & Pay Scale**

GRADE - IV :		
Designation	**Standard Pay Scale**	**Over All**
Peon	6500-12700/-	176
Chowkidar	6500-12700/-	190
Cleaner, Cook	6500-12700/-	3+4
Goala, Milk Delivery Boy	6500-12700/-	3+1
Handyman, Helper	6500-12700/-	12+2
Attendant	6500-12700/-	229
Messenger, Mali	6500-12700/-	2+4
Security Guard, Sweeper	6500-12700/-	4+11
Total Grade IV :		**641**

TABLE – 12(iv): Overall Strength of A.H. & Veterinary during 2015-16

Total Nos. of Non-Gazette Employee	1,492
Total Nos. of Gazette Employee (posts in the Department)	284
Total Nos. of Gazette Employee (posts in other Services)	4
Grand Total	**1,780**

3.6: INFRASTRUCTURE FACILITIES OF A.H. AND VETERINARY IN THE STATE

The number of Veterinary hospitals, Dispensaries, Veterinary Aid Centres, Mobile dispensaries, Vigilance units and Stockman centres in Meghalaya are depicted in Table – 13.

TABLE –13: NUMBER OF VETERINARY INSTITUTIONS (DISTRICT WISE)

Sl No	Name of District.	Particulars				
		Vety. Hospi Tals	Vety. Dispen saries	Vety. Aid Centres	Mobile Vety. Dispensaries	Vigilance Unit
1	**2**	**3**	**4**	**5**	**6**	**7**
1	East Khasi Hills	1	22	11	2	1
2	Ri-Bhoi	-	15	2	1	-
3	West Khasi Hills	1	10	8	2	-
4	South West Khasi Hills		5	-	1	1
5	West Jaintia Hills	1	15	8	2	1
6	East Jaintia Hills	-	5	4	1	1
7	East Garo Hills	-	8	1	1	-
8	North Garo Hills	-	4	7	1	1
9	West Garo Hills	1	17	2	3	1
10	South West Garo Hills	-	6	1	-	1
11	South Garo Hills	-	7	5	1	-
	State	**4**	**114**	**49**	**15**	**7**

TABLE – 14: DISTRICTWISE INFRASTRUCTURE, FARM AND OTHER FACILITIESOF A. H & VETERINARY AS ON MARCH 2016,

Sl No.	Items	East Khasi Hills	RiBhoi	West Khasi Hills	South West K.H	West Jaintia Hills	East Jaintia Hills	East Garo Hills	West Garo Hills	South Garo Hills	North Garo Hills	South West G.H.	State
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1	Intensive Cattle Development Project	1	-	-		-	-	-	1	-	-	-	**2***
2	Stockman Centre (with AI facilities)	7	11	1	-	1	-	6	8	-	-	-	**34***
	(without AI facilities)	1	8	2	-	-		-	11	2			**24**
3	KeyVillage Centres (with AI facilities)	-	-	-	-	-	-	3	3	-	-	-	**6***
	(without AI facilities)	-	-	-	-	8	-	-	2	-	-	-	**10**

4	Veterinary Institutions equipped with A.I. facilities	5	2	2	-	4	-	1	8	1	-	-	**23***
5	Check Post	-	1	1	-	1	-	1	-	-	-	-	**4**
6	Cattle Breeding Farm.	1	2	-	-	1	-	-	1	-	-	-	**6**
7	Buffalo Farm.	-	-	-	-	-	-	1	-	-	-	-	**1**
8	Poultry Farm.	2	3	2	-	1	-	1	3	1	-	-	**13**
9	Pig Farm.	4	2	3	-	1	-	1	3	1	-	-	**15**
10	Sheep & Goat Farm.	-	-	1	-	1	-	-	-	-			**2**
11	Fodder Demonstration Farm.	1	-	-	-	1	-	-	1	-	-	-	**3**
12	Fodder & Seed production Farm.	-	1	-	-	-	-	-	1	-	-	-	**2**
13	Feed Mill.	-	1	-	-	-	-	-	1	-	-	-	**2**
14	Rabbit Farm.	1	-	-	-	-	-	-	-	-	-	-	**1**
15	Vocational Training Centres.	-	1	1	-	-	-	-	1	-	-	-	**3**
16	Hatcheries	1	2	1	-	1	-	1	1	-	-	-	**7**
17	State Disease Dignostic Laboratories	1	-	-	-	-	-	-	-	-	-	-	**1**
18	District Disease Dignostic Laboratories	-	1	1	-	1	-	1	1	1	-	-	**6**
	Dairy.												
18	Dairy Plant.	1	-	-	-	1	-	-	1	-	-	-	**3**
19	Chilling Centre.	-	-	1	-	1	-	-	-	-	1	-	**3**
20	Creamery & Ghee Making Centre.	-	-	-	-	-	-	-	1	-	-	-	**1**

3.7: COOPERATIVES AND UNIONS:

As per Statistical Hand Book (2014), there are 103 Dairy Co-operative Societies, 42 Piggery/Poultry Co-operative Societies and 4843 Self Help Groups (SHG)in theState. (Source: http://megselfhelp.gov.in/table-2.htm).

3.8: MARKETING OF ANIMAL PRODUCTS

The state Government fixes the prices of various animal products from time to time the latest being notified vide Government notification letter No.MVD/Acctt/G-12/2013-14/ 37, Dated Shillong, the 27th Nov' 2014.

Chapter- 4

PROGRAMMES AND PROJECTS/SCHEMES OF THE DEPARTMENT OF A. H & VETERINARY

4.1:Programmes/schemes under implementation by the Department

There are different schemes and projects funded by the state as well as central government and North Eastern Council are in operation in the state in order to fulfil the mandate and objectives of the Department which are presented below:

4.1.1: Animal Health Services:

Aims and objectives: *To render healthcare to all livestock and poultry in the State besides vaccination and castration of the animals. To set up dispensaries in rural areas, equipped with modern facilities for treatment of animals, etc. and to conduct regular testing and analysis of samples by setting up Disease Diagnostic Laboratory / Clinical laboratories at District headquarters.*

At present the Department has 4(four) Veterinary Hospitals, 114 (hundred fourteen) Veterinary Dispensaries, 15 (fifteen) Mobile Dispensaries, 7(seven) Vigilance Units and 49 (forty nine) Veterinary Aid Centres. There is 1 (one) State Disease Diagnostic Laboratory at Shillong, East Khasi Hills District and 6 (six) District Disease Diagnostic Laboratories in other Districts (West Khasi Hills, Jaintia Hills, RiBhoi, West Garo Hills, East Garo Hills and South Garo Hills) to cater to the need of the State.

The State requires about 170 numbers of Dispensaries, of which 114 numbers have been established. During 2010-11, 7 numbers of new dispensaries have been approved and sanctioned under NABARD loan scheme. Already 51 veterinary dispensaries have been equipped with A.I facilities for cattle breeding.

4.1.2: Animal Disease Scenario in Meghalaya:

The State of Meghalaya has also been declared as "**Total freedom from Rinderpest infection status"** along with other States of the country. However, the State Department is still continuing the programme in conducting 'Village Searches' and Sero-surveillance by adopting Annual Work Plan as directed by NPRE, Govt. of India.

Although viral diseases are most common in the state in different species of livestock and poultry, the following tables (Table – 15) shows the outbreaks of various animal diseases in Meghalaya in different districts of the State from time to time.

TABLE –15: Annual Report on the Incidence of Specific Diseases in effected districts of Meghalaya during the period from April 2015 to March 2016.

Sl No.	DISEASE/SPECIES/DISTRICT	Out-Break	Attack	Death	Mortality Rate
A	**VIRAL DISEASES**				
1	**Foot & mouth Diseases (FMD)**				
	(a) Bovine				
	East Jaintia Hills District		39		
	West Jaintia Hills District		81		
	Ri-Bhoi District		13		
	East Khasi Hills District	1	161		
	West Khasi Hills District	1	44		
	West Garo Hills District		2		
	North Garo Hills District		13		
	South West Garo Hills District		139		
	Total	**2**	**492**	**0**	**0**
	(b) Swine				
	East Jaintia Hills District		6		
	West Jaintia Hills District		6		
	East Khasi Hills District		2		
	Total	**0**	**14**	**0**	**0**
	(c) Caprine				
	West Jaintia Hills District		9		
	East Khasi Hills District		4		
	Total	**0**	**13**	**0**	**0**
2	**Haemorrhagic Septicaemia**				
	East Jaintia Hills District		39		
	South West Garo Hills District		138		
	Total	**0**	**177**	**0**	**0**
3	**Black Quarter**				
	East Jaintia Hills District		7		
	East Khasi Hills District		1		
	West Khasi Hills District		7		

	South Garo Hills District				
	South West Garo Hills District		141		
	Total	**0**	**156**	**0**	**0**
4	**Swine Fever**				
	Ri-Bhoi District		4		
	East Khasi Hills District		12		
	West Khasi Hills District		29		
	South West Garo Hills District		642		
	Total	**0**	**687**	**0**	**0**
5	**Canine Distemper**				
	West Garo Hills District		65		
	South West Garo Hills District		74		
	Total	**0**	**139**	**0**	**0**
6	**Rabies (Canine)**				
	Total	**0**	**0**	**0**	**0**
7	**Rabies (B/Sw/Cp)**				
	East Khasi Hills District		4		
	Total	**0**	**4**	**0**	**0**
8	**Canine Distemper**				
	West Garo Hills District		65		
	South West Garo Hills District		74		
	Total	**0**	**139**	**0**	**0**
9	**Ranikhet Disease**				
	West Jaintia Hills District		11		
	East Khasi Hills District		607		
	South West Garo Hills District		982		
	Total	**0**	**1600**	**0**	**0**
10	**Fowl Pox**				
	West Jaintia Hills District		1502		
	Ri-Bhoi District		493		
	East Khasi Hills District		2662		
	West Khasi Hills District		852		
	South Garo Hills District				

	South West Garo Hills District		8		
	Total	**0**	**5517**	**0**	**0**
11	**Infectious Bursal Disease**				
	East Khasi Hills District		100		
	Total	**0**	**100**	**0**	**0**
12	**Chronic Respiratory Disease**				
	West Garo Hills District		760		
	South West Garo Hills District		6		
	Total	**0**	**766**	**0**	**0**
13	**Fowl Cholera**				
	East Khasi Hills District		100		
	South West Garo Hills District		3		
	Total	**0**	**103**	**0**	**0**

4.2: Cattle Development Programme:

Aims and objectives:*To enhance milk production by upgrading local stock through cross breeding, adopting improved breeding practices by means of artificial insemination.*

The animal stock positions of the cattle and buffalo farms are presented in Table –16.

TABLE – 16: STOCK POSITION OF CATTLE AND BUFFALO FARMS(2015-16)

Sl. No.	Name of the Farm	PARTICULARS OF STOCK MAINTAINED (Nos.)									
			Milch Cows			Young Bull	Heifers	Calves Reared		Calves produced during the year	Milk Production in '000' Litres
		Total Stock Reared	In Milk	Dry	Total Milch Cows			Male	Female		
1	2	3	4	5	6	7	8	9	10	11	12
1	Indo Danish Project, Upper Shillong.	79	32	13	45		2	3	24	40	49.60
	Indo Danish Project, Upper Shillong. (RKVY)	70	33	17	50		-	8	12	16	44.90
2	Regional Cross Bred Cattle Breeding Farm, Kyrdemkulai.	25	5	6	11		6	1	7	11	19.04
	-do- Under RKVY	42	11	8	19		16	2	5	14	31.92
3	Livestock Farm, Rongkhon.	40	11	7	18		20	-	2	2	14.82
4	Cattle Farm, Saitsama	29	9	8	17		4	4	4	7	5.16
	Total Cattle: -	**285**	**92**	**59**	**151**		**48**	**18**	**54**	**90**	**165.44**
5	Buffalo Farm, Songsak	25	5	2	7	-	3	6	6	1	3.70

N.B. Stock position as on February 2017

There are 2(two) ICDP centres (Shillong and Tura) and 76(seventy six) Stockman Centres in the State. During the year 2010-11, 28,480 numbers of AI were performed. Frozen Semen for A.I is being used for the purpose. There are 2(two) numbers of Liquid Nitrogen (LN_2) Plants located at Shillong and Tura. The Department is extending support to Dairy Farmers who maintain crossbred heifers/cows in the State by providing 25% feed subsidy and also encouraging dairy farmers and Educated Un-employed Youth with 50% subsidy for distribution of crossbred cows. Under CSS – NPCBB scheme, strengthening of Frozen Semen Bank at ICDP, Upper-Shillong, establishment of Bull Mother Farm at Saitsama (Jaintia Hills) and Rongkhon (West Garo Hills), distribution of Breeding bulls for NS to areas where AI could not be covered, Training of existing AI workers and Private AI workers are being carried out.

There is no recognized breed of buffalo in Meghalaya. The indigenous buffaloes of the State are either nondescript or swamp type as in the case of neighbouring State of Assam. These are hardy and suitable for agricultural works in wetlands, paddy fields etc. They are also a source of milk. No much scientific study has so far been made on the performance and milk quality traits and characterization of these animals in terms of body conformation and other traits have been made in the State. However, performance of swamp buffaloes of neighbouring State of Assam is as follows (Table – 17).

TABLE – 17: PERFORMANCE OF INDIGENOUS/SWAMP BUFFALOES

Traits	Average value
Age at 1st calving (m)	59.03 ± 0.42
First lactation milk yield (kg)	509.63 ± 4.20
First lactation length (d)	282.87 ± 78
1st lactation peak yield (kg)	4.09 ± 0.04
Days to attain 1st peak yield (d)	58.28 ± 0.93
Persistency of 1st lactation	0.88 ± 0.01
Lactation milk yield (kg)	505.95 ± 3.14
Lactation length (d)	283.43 ± 1.44
Peak yield (kg)	4.08 ± 0.03
Days to attain peak yield (d)	57.89 ± 0.68
Dry period (d)	224.58 ± 2.17
Service period (d)	181.75 ± 2.39
Gestation period (d)	325.85 ± 0.42
Inter-calving period (d)	507.80 ± 2.39
Birth weight (kg)	32.06 ± 0.10
Specific gravity of milk	1.0296 ± 0.0002
Fat % in milk	8.478 ± 0.069
S.N.F. % in milk	9.910 ± 0.039
Total solids % in milk	17.675 ± 0.088

4.3: Dairy Development Programme :

There are 3(three) Dairy Plants and 3(three) Chilling Plants in the State, namely, (a) Central Dairy at Mawiong, Shillong with 10,000 liters capacity per day. This Dairy is intended to be strengthened to 20,000 litres capacity during the current year. (b) Dairy Plant, Jowai with 8000 litres capacity, (c) Dairy Plant, Ganol (Tura) with 8000 litres capacity, (d) Chilling Plant, (2000 liters) Gangdubi (East Garo Hills), and Chilling Plant (2000 liters), Nongstoin (West Khasi Hills).

Procurement and distribution of milk are now taken over by Govt. agencies in the three districts as follows:

(a). District Milk Procurement and Marketing Agency (DMPMA), Shillong

(b). District Implementing Agency (DIA), Jowai

(c). District Society for Integrated Dairy Development (DSIDD), Tura.

4.4: Intensive Cattle Development Project:

The available breedable cattle and buffalo populations in the State are as shown in the Table–18 and are to be covered by the project for their improvement and production enhancement.

TABLE–18: AVAILABLE BREEDABLE CATTLE -BUFFALO COW POPULATION

Districts	Exotic Cattle	Crossbred Cattle	Indigenous Cattle	Buffaloes
East Khasi Hills	Nil	5320	7182	24
West Khasi Hills	Nil	168	26,526	255
Ri-Bhoi District	Nil	6902	14,621	457
Jaintia Hills	Nil	617	16,737	208
East Garo Hills	Nil	35	35,556	148
West Garo Hills	Nil	534	74,982	1,260
South Garo Hills	Nil	0	8,786	8
TOTAL	**Nil**	**13,576**	**1,84,390**	**2,360**

The role of ICDPs of the state is to cover these breedable cattle and buffaloes to reproduce for increasing the number of productive animals with higher genetic merit. As per updated data on31stDecember 2016, various animal breeding activities are as follows:

(i). The Semen production scenario in the State is shown in Table–19 below.

TABLE– 19: SEMEN PRODUCTION (Doses)

Breed	2014-15	2015-16
HF	22387	28826
Jersey	19550	20886
Purchased	-	-
TOTAL	**41937**	**49712**

(ii) A.I. Coverage (2015-16): 26,146 Nos. (Crossbred =24,138 Nos.; Local =8 Nos); Calf born through A.I. – 11,554 Nos.(44 percent).

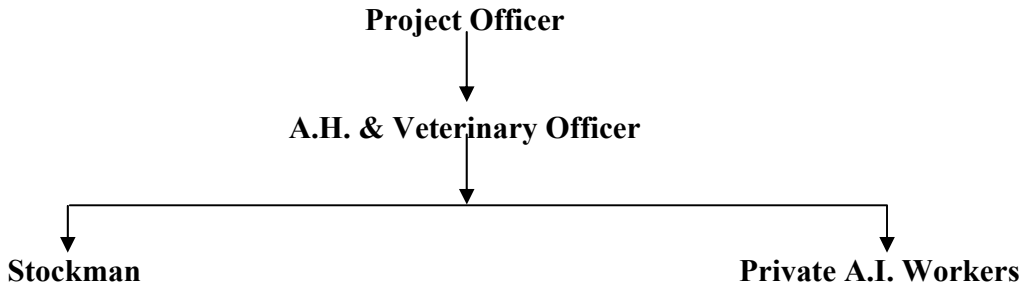
(iii). Mortality of calves were 9 percent. The major causes are lack of proper management and Calf diarrhoea.

(iv). The production of liquid nitrogen in the State was 15,514 Litres in 2015-16 and no procurement from outside the State was made.

(v) The bulls of HF and Jersey pure/crossbred used for Natural Service (NS) where AI facilities are not available have been procured from Govt. farms and private farmers. In this process, a population of about 16,500 numbers of cows (ratio of 1 bull per 100 cows) were covered. All the eleven Districts of the State having 4, 86,061 numbers of basic/ foundation stocks of indigenous cows have been taken care of.

(vi) The number of breeding bulls for Natural Service (NS) distributed in the State is 264.

Present network of Artificial Insemination (A.I) service – by flowchart.



The estimated number of tested breeding bulls required for production of required semen-doses in the state is 20 at present.

Distribution of Bull/Calves/Cows Grant-in-Aid: The objective of the Scheme is for rearing of cross bred Heifers /Calves for Dairy farming with 50 percent subsidy to provide incentive to farmers to take up Dairy farming to generate self-employment to the people and increase in production of Milk.

Scheme for Educated Un-employed Youth: Scheme for educated un-employed youth is to generate employment through Dairy farming with 50 percent subsidy.

Performance of Jersey and Holstein Friesian (HF): As far as performance of Jersey and Holstein Friesian (HF) is concerned, both the breeds/crosses performed very well in the State of Meghalaya. However, in the Districts of West Khasi Hills, Ri-Bhoi and Garo Hills farmers prefer Jersey crossbreds. In other areas, cattle owners prefer HF over Jersey because of its larger size, higher milk yield and better feed conversion efficiency. Some cattle breeders maintain Jersey cattle in their stock just to elevate the fat percentage by mixing the milk produced from both HF and Jersey cows.

4.5: Piggery development:

Aims and objectives: *To upgrade local stock of pigs by introducing breeds of superior germplasm for better growth rate and production.*

Pig is one of the most important species among the small animals in the state. Pig rearing is the most common occupation with the tribal people of the state both in the plain areas of Garo hills and in the hill region of Khasi and Jaintia hills. The suitability of the climate, fondness to pork among the major section of the State population and availability of good market for pork promise wide possibilities of development of the pig industry in the state. But the main drawback in this sphere is that most of the farmers rear inferior quality of stock of non-descript breeds. About 88 percent of the total villages reared non-descript desi pigs and only 12 percent reared cross bred pig.

With a view to upgrade local stock, the Department of Animal Husbandry and Veterinary has taken up schemes to introduce improved breeds of pigs such as Saddle back, Hampshire, etc. These improved breeds of pigs are kept at Government pig farms located in every district for the purpose of demonstration as well as for producing better stock for supply to the interested farmers. A Regional Pig Breeding Farm was established at Kyrdemkulai during the 7^{th} Plan period in the year 1986-87 with financial assistance from N.E.C. The farm, which is now under the State plan, is maintaining Hampshire and Saddle-Back breeds of pigs for scientific breeding

purpose. The farm produced piglets and supply to all the district farms for raising and multiplication and for supply of these piglets to farmers.

4.5.1: Pig Farms:

One Regional Pig Breeding Farm, Kyrdemkulai, One Pig Breeding Farm at Nongkasen (West Khasi Hills district) has been newly set up with the capacity of 100 sows unit and 10 numbers of Pig Farms (small). The Regional Pig Breeding farm, Kyrdemkulai has the capacity of 100 sows (presently maintained 61 sows unit). There has been a proposal to strengthen it to 150 sows unit. Under RKVY:2008-09 & 2009-10, two new Pig Breeding Farms with 100 sows unit each at Nongpiur (East Khasi Hills) and Gindo (West Garo Hills) have been established and the existing Pig Breeding farm at Jowai is also strengthened to 100 sows unit. Under NMPS-RKVY, the Regional Pig Breeding Farm,Kyrdemkulai will be converted to Nucleus Pig Farm with Pure exotic pig. All small farms are envisaged to maintain only piglet/grower for Departmental schemes and sale to farmers.Fifty percent subsidy for distribution of pigs (breeding/fattening) is still continuing for general farmers and educated unemployed youth.

TABLE – 20: STOCK POSITION OF PIGS IN DIFFERENT FARMS (2015-16)

Sl. No.	Name of the Farm / Location.	Stock Maintained				Piglet Produced
		Total Stock Reared	Breeding Stock		Total Young Stock / Growing Stock / Piglets Stocks	
			Boar	Sows		
1	2	3	4	5	6	7
1	Pig Farm, Mawryngkneng	27	2	10	17	60
2	Pig Farm, Khliehtyrshi	129	4	23	102	316
3	Pig Farm, Nongstoin	78	3	14	61	100
4	Pig Farm, Rongjeng	57	2	10	45	88
5	Pig Farm, Mairang	18	2	8	8	78
6	Pig Farm, Baghmara	22	2	6	14	28
7	Pig Farm, Dalu	123	3	14	106	89
8	Pig Farm, Pynursla	34	1	8	25	73
9	Regional Pig Breeding Farm, Kyrdemkulai(Plan sch)	138	5	7	126	58
	Regional Pig Breeding Farm, Kyrdemkulai (RKVY)	93	2	12	79	83
10	Pig Farm, Laitryngew	31	3	14	14	78
11	Pig Breeding Farm, Nongkasen	58	2	13	43	155
12	Pig Farm Nongpyiur(RKVY)	31	3	-	28	-
13	Pig Farm, Gindo (Plan Sch)	56	2	13	41	114
	Pig Farm, Gindo (RKVY)	51	3	11	37	87
	Total: -	**946**	**38**	**163**	**745**	**1407**

Data as on 31st January 2017

4.5.2: Regional Pig Breeding Farm (RPBF), Kyrdemkulai:

RPBFwas established in the year 1986-87 with the assistance from the North Eastern Council to maintain a 100 sow unit which is the back bone of piggery development in the State. The farm is located at Kyrdemkulai, RiBhoi District around 40 Km away from Shillong. Initially, stocks of Hampshire pigs were brought from Assam Agricultural University, Khanapara and subsequently till the year 2006, pigs were brought from different sources as follows:

Dates	From	Breeds	Pigs		Total
			Male	Female	
25-01-1989	AAU, Khanapara	Hampshire	10 Nos.	10 Nos.	20 Nos.
20-03-1989	AAU, Khanapara	Hampshire	4 Nos.	18 Nos.	22 Nos.
25-05-1989	AAU, Khanapara	Hampshire	3 Nos.	23 Nos.	26 Nos.
09-01-1990	AAU, Khanapara	Hampshire	-	14 Nos.	14 Nos.
06-09-1990	AAU, Khanapara	Hampshire	-.	10 Nos.	10 Nos.
15-06-1990	AAU, Khanapara	Large Black	4 Nos.	11 Nos.	15 Nos.
Dec.-1990	Central Pig Breeding, Ranchi	Hampshire	10 Nos.	18 Nos.	28 Nos.
16-03-1991	United Kingdom	Saddleback	5 Nos.	-.	5 Nos.
20-01-1992	AAU, Khanapara	Hampshire	_	12 Nos.	12 Nos.
20-02-1992	AAU, Khanapara	Hampshire	-	02 Nos.	02 Nos.
28-04-1993	AAU, Khanapara	Hampshire	5 Nos.	15 Nos.	20 Nos.
05-07-1993	Haringghata Farm,W.B.	Large White Yorkshire	4 Nos.	19 Nos.	23 Nos.
19-11-1993	Reg. Pig Br. Farm, Tripura	Hampshire	1 No.	4 Nos.	5 Nos.
29-03-2000	United States of America	Hampshire (Pure)	29 Nos.	45 Nos.	74 Nos.
20-01-2006	Ranchi Vety. College,	T & D	9 Nos.	21 N0s	30 Nos.
2015-16	NRC-Pig,Rani	Hampshire	10	30	40
		Duroc	1	1	2
2015-16	Ranchi Vety.College	T & D	1	10	11
		Hampshire(75%)	0	2	2
2015-16	AAU,Khanapara	Hampshire(75%)	2	32	34
2016-17	Livestock Centre,Nalbari	Hampshire(75%)	8	12	20

The objectives of the farm are to maintain a 100 sows unit breeding stock of Hampshire breed of pigs and subsequently to be strengthened to 150 sows to produce pure-bred and crossbred Hampshire pigs for supplying to the Government Farms and Private Pig Breeders, supply pure-bred Hampshire pigs to other States of the North Eastern Region, supply pure-bred Hampshire pigs for improvement of local pig stock under various piggery development programmes and to impart training to technical staff, farmers and to educated unemployed youths. Natural mating for breeding has been followed after scrutiny of the pedigree of the sires and dams for 3 to 5 generations. Now in the farm besides Hampshire pure and crosses, T & D strain of pigs are also maintained.

The performance records of the animals are as shown below:

Growth Traits:

Breeds	Live Weight at Birth	Live Weight at Weaning	At 7 Months	At 1 Year	10 Months fattening
Hampshire (pure)	1.5 Kg	13.5 Kg	70-75 Kg	130-140 Kg	120 Kg
T & D	900 g	8 Kg	60-65 Kg	85-90 Kg	80 Kg
Duroc	1.200Kg	10Kg	65-70 Kg	90-100 Kg	85 Kg
Ghungroo	800gm	8Kg	55-60 Kg	80-85 Kg	75 Kg

Production and Reproduction performance – Normally 5 (five) crops in 2 (two) years with conception rate of 90 percent has been observed in the stock.

Production performances of the pigs maintained are as below:

	Hampshire	T & D	Duroc	Ghungroo
Average litter size at birth	8.5 Nos.	6.8 Nos.	7.7 Nos	8.2 Nos
Average litter size at weaning	8 Nos.	6.2 Nos.	7.12 Nos	7.65 Nos
Percentage of mortality	8.2 %	5.5 %	7.9 %	6.7 %
Feed conversion	1: 3.52	1:4.53	1:4.97	1:4.84

Number of pigs supplied to other States from the RPBF, Kyrdemkulai are 445 (Assam- 212, Nagaland- 126, Manipur-41, Sikkim-30, Bihar-6 and ArunachalPradesh- 30).

4.5.3: Special Development Programmes on Piggery:-

(a) To establish Pig Breeding Farms with at least 100 sows unit in each district through State/Central assistance/RKVY/NABARD loan.

(b) To maintain breed of pigs suitable to the choice of the people in the area having superior germ-plasm for better growth rate, large litter-size, resistant to disease and adaptable.

(c) To encourage SHG/Society/NGO to set up Pig Production Farm in commercial way.

(d) One new Pig Breeding Farm at Nongkasen, West Khasi Hills District with 100 sows unit capacity was inaugurated on 23.09.2010. Initially, 15 growers (7mth) and 3 boars have been kept and farm will increase its capacity in phase manner.

(e) Another two new Pig Breeding Farms located at Nongpyiur, Upper-Shillong and Gindo, West Garo Hills with 100 sows unit have been set up.

(f) The existing Pig Breeding Farm at Thadlaskein, Jaintia Hills is being strengthened to 100 sows unit.

(g) Community Pig Farm with 20 sows unit has been set up in 7Districts.

(h) Pig development through a mission mode will be launched in the State to augment production and create livelihood.

(g) To streamline implementation of piggery scheme, the Meghalaya Pig Development Society will be set up.

To further improve Pig development in the State the Government is contemplating to establish Meghalaya Pig Development Society.

4.6: Fodder Development scenario:

One of the most important constraints in increasing animal production is non availability of required quantity of nutritious green fodder. The milk production by animals with high genetic potential depends greatly on feeding of quality green fodder. The farmers are unable to divert their lands for cultivation of fodder. As a result of which the dairy cows having the capacity of producing more milk also could not be exploited to augment production. The green fodder comprises of leguminous and non-leguminous plants, trees, shrubs, roots, leaf etc. The state has 950 hectares of land covered by natural forest, which is a reservoir of all natural trees and grasses. Fodder cultivation in the state in scientific footings is negligible. Most of the farmers are unaware of quality fodder cultivation and depend on natural or low quality fodder. The vast and typical forest areas of the state comprise of hilly terrain and lands holding of the individuals are fragmented. Due to small land holding the cultivation of fodder is done in a very low scale, the

dry fodder production is not sufficient and the cost of collection of dry fodder is also very high. The cultivation of Paddy, Maize, Teosinte etc. are done and harvested at early stage and fed directly to the animals. If the cultivations are done in an extensive manner with scientific technique there is hope of production of green as well as dry fodder in a large scale in these areas.

4.6.1: Fodder Farms: There are five fodder farms/reserves maintained by the State Department, located one each in Jaintia Hills District, East Khasi Hills and Ri-Bhoi Districts and two in West Garo Hills District.

4.6.2: Type of indigenous and improved fodders:

Some of the indigenous fodders available in the state are bamboo leaves, jackfruit leaves, local grass, jungle leaves etc. The improved fodder cultivated are Hybrid oat, maize, Napier, Cowpea, soybeans, para grass, *guinea* grass, sorghum, *stylosanthesehamata, Cenchrus*grass etc. Different types of fodders produced by the state are depicted in Table 21.

TABLE – 21: FODDER PRODUCTION IN THE STATE

Year	**Variety of crops**	**Quantity produced** (in Quintal)
2005-06	Oat kent	9535.12
2006-07	Surghum (syndexchari) Maize	4112.3 5,354.6
2007-08	Surghum (syndexchari) Conchrus Gaur Oat kent Stylosanthes	3,541 250.08 289.73 2,328.82 752.5
2008-09	Surghum (syndexchari) Surghum (red chari)	1,478.4 211
2009-10	Maize Oat kent	10,524 8,524

4.7: Feed scenario:

4.7.1: Production, supply & distribution of mixed feed:

As per Census 2007, annual requirement of feed for livestock was supposed to be 16, 54,598 tonnes and requirement of maize alone for livestock consumption was calculated as 6,

61,839 tonnes, whereas production within the State during 2009-10 was 25,566 tonnes (for human consumption only). Hence, there is a big gap in between availability and the requirement.

The State has produced the following agricultural products for human consumption; the residues only are being utilized for feeding of animals:

TABLE – 22: AGRICULTURAL PRODUCTS (IN TONNES)

Sl.no.	Crops	2008-2009	2009-2010	2010-2011	2011-2012
1	2	3	4	5	6
1	Rice				
a	Autumn	41908	41798	42492	43401
b	Winter	115354	115388	117116	125124
c	Spring	46600	46943	47413	54206
	Total Rice	**203862**	**204129**	**207021**	**222731**
2	Wheat	739	718	704	710
3	Maize	25716	26167	26500	27029
4	Other Cereal	2051	1889	1695	1755
	Total Cereals	**232368**	**232903**	**235920**	**252225**
5	Total Pulses	3233	3229	3278	3699
	Total Foodgrain	**235601**	**236132**	**239198**	**255924**
6	Sesamum	891	853	852	867
7	Castor	17	15	12	16
8	Rapeseed and Mustard	4906	4872	4859	4902
9	Linseed	43	36	39	41
	Total Oilseed	**5857**	**5776**	**5762**	**5826**
10	Jute**	34588	34792	34354	34563
	Mesta**	19046	18391	18231	18433
	Cotton*	5617	5491	5571	6389
	Sugarcane	250	206	180	199

	Chillies	1423	1394	1415	1474
	Tobacco	436	427	420	434
	Turmeric	10046	9895	10058	10512
	Arecanut	17400	19396	20501	21751
	Potato	161138	162445	164647	165670
	Sweet Potato	15909	14053	13241	13701
	Tapioca	21773	21152	21792	22046
	Soyabean	1163	1179	1186	1231
	Ginger	50286	54009	56622	58132
	Pineapple	102506	103432	104130	106168
	Citrus Fruits	37702	39070	38817	39315
	Banana	74314	78822	79954	82125
	Papaya	4564	4541	4729	4951

*** : In bales of 170 Kgs each**

**** : In bales of 180 Kgs each**

Source: Directorate of Economics and Statistics, Meghalaya.

YIELD RATE OF SOME IMPORTANT CROPS

(Kgs/Hectares)

Sl.no.	Crops	2008-2009	2009-2010	2010-2011	2011-2012
1	2	3	4	5	6
1	Rice				
a	Autumn	1287	1284	1304	1331
b	Winter	1839	1837	1862	1973
c	Spring	3654	3674	3705	4223
	Total Rice	**1887**	**1887**	**1912**	**2046**
2	Maize	1502	1521	1534	1561
3	Rapeseed and Mustard	682	680	679	681
4	Jute	1576	1594	1593	1600
	Potato	9109	9171	9310	9351

Source: Directorate of Economics and Statistics, Meghalaya.

There is no organized and scientific approach made so far for production of compounded feed or balanced concentrate ration in the state except in few government and privately owned feed mills. These feed ingredients are collected from neighbouring states where the cost is very high in comparison to other states, which ultimately lead to high production cost.

The state has no commercial production of any feed ingredient required for livestock and hence depends solely on the supply from outside the state with high cost and that too without any guarantee of regular supply.

4.7.2: Feed Mill:

There are 2 Government Feed Mills and 4 Feed Mills at private sector in the State. Various types of compounded feed made available by the existing feed mills are (i) Pig feed – Starter feed, Grower feed and Finisher feed, (ii) Cattle Feed – Calf feed, Milch Cattle feed, (iii) Poultry : (a). Broiler-Starter and Finisher feed, (b) Layers-Chick, Grower and Layer, (iv) Sheep and goat feed, and (v) Rabbit feed. The average feed production by the feed mills are as below: **Govt. Feed Mill**: Pig Feed - 30 Tonnes, Cattle Feed - 20 Tonnes, Poultry : Layers - 5.7 Tonnes, Broiler- 4 Tonnes and Rabbitfeed - 0.3 Tonnes.**Private Feed Mill:**Poultry - 315 Tonnes, Pig Feed -114.7 Tonnes, Cattle Feed - 11.1 Tonnes and Goat Feed - 0.5 Tonnes.

Table 23 below shows the quantum of feed supplied to Government livestock farms and feed subsidy distributed by the Department to the selected beneficiaries.

TABLE – 23: SUPPLY/DISTRIBUTION OF FEED [in quintal]

Animal	2006 – 07	2007 – 08	2008-09	2009-10
1. Cattle	4881.77	3161.10	2936.69	3064.33
2. Poultry	1798.31	1738.05	4002.36	3669.75
3. Rabbit	120.10	52.60	48.38	38.87
4. Pig	3420.62	3342.92	4215.90	4305.52
5. Feed subsidy	310.40	3342.92	1610.87	N.A
Grand Total	**10531.20**	**11637.59**	**12814.20**	**11078.47**

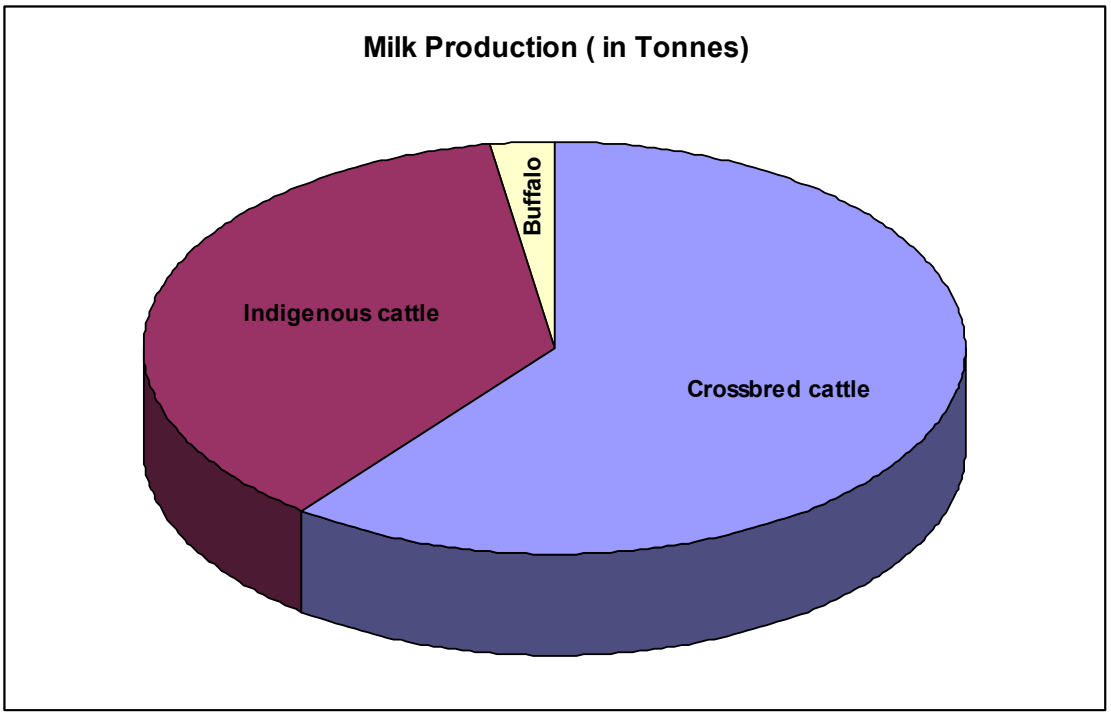
Chapter-5

LIVESOCK PRODUCTION SCENARIO IN THE STATE

5.1: Milk Production scenario:

As per the Estimation Report of Sample Survey for the State of Meghalaya during the year 2015–2016, the milk production is as follows:

Contribution from	Milk Production (Tonnes)	% Contribution
(a). Cross-bred cattle	49,574	59.07
(b). Indigenous cattle	32,668	38.93
(c). Buffalo	1,682	2.00
Total	**83,924**	**100 %**



The per capita availability of milk in the state is 77.5g per day per person which is far below the national average and the minimum recommended body requirement (300g per day per person) of ICMR. A big gap in milk production exists in the state which needs to be minimized as soon as possible by adopting strategic planning for maximizing production in the state. In order to meet the growing demand for milk and milk products in the state, it is necessary

to increase the productivity of the livestock. Productivity enhancement of the animals enables higher production and also higher returns to the farmers engaged in livestock production activities. The projected production of milk in the state of Meghalaya by the end of the Thirteenth Five Year Plan is approximately 90 thousand tonnes.It is expected that the demand for milk and milk product will be higher on account of changing food habits and increased purchasing power of the people.

5.2: CATTLE DEVELOPMENT SCENARIO OF THE STATE:

5.2.1: Indian and exotic breeds of cattle introduced in the state and its impact:

The base cattle population of the State of Meghalaya is comprised of nondescript indigenous animals. The average per day milk yield of indigenous cattle of the State in a lactation length of about 180 - 260 days is found to be 0.327 litres. Genetic up gradation of indigenous cattle was the priority for augmenting productivity. Therefore several exotic breeds of cattle were introduced since pre independence period in the state from time to time such as Holstein Friesian, Ayrshire, Jersey etc. As the artificial insemination service was not readily available, bulls were maintained and scattered around the state and were used for breeding. Although the contribution of some Indian cattle breeds had also great impact in enhancing milk production but people became fascinated by the exotic breeds mainly Jersey and Holstein Friesian which became very popular amongst the farmers. The impact of introducing these breeds led to the concept of initiating Integrated Cattle Development Project. However, in spite of introduction of the exotic cattle breeds, the indigenous cattle which are poor yielder but hardy are still very popular in low input production system.This is due to many good quality traits of indigenous cattle such as disease resistance, draught power and sustainability under the existing agro climatic conditions.

5.2.2: Cattle Improvement programme, Artificial Insemination, Natural Service:

In Meghalaya at present there are 18,162 numbers of breedable female crossbred cattle, 1,44,130 breedable female indigenous cattle and 4,710 numbers of breedable female buffaloes which needs to be provided with appropriate breeding support. This entire breedable bovine population cannot be covered with artificial insemination services due to remote location, inadequate infrastructure and free-range management system as commonly practiced in the State. It is anticipated to cover about 60 percent of total breedable cattle and buffalo population through AI and remaining 40 percent through natural service only. Under the National Project for Cattle and Buffalo Breeding (NPCBB) an attempt has been made to provide the AI centres with frozen

semen straws equipping these with required cryo-cans for better service. In spite of some constraint a sizable number of animals in 2015-16 could be artificially inseminated.Efforts have been made to increase the number of artificial insemination coveringboth crossbred and local cattle of the State.

Right from 1st five year plan, Natural service centres known as 'cattle upgrading centres' were established to upgrade the local indigenous breeds through natural service with graded bulls for augmenting production and productivity. Each of these centres was provided with a breeding bull and the centre was also functioning as a first aid centre including castration, vaccination works that is carried out periodically by the stockman/Veterinary Assistant under the supervision of the Veterinary officer from the nearby dispensary. Under NPCBB programme, it was proposed to equip 118 numbers of dispensaries with AI facilities and trained 118 numbers of private AI workers. The Remaining interior areas were considered for strengthening to extend facility for natural service for which provision of 415 numbers of breeding bulls needs to be provided.

5.2.3: Requirements for augmenting productivity and maximizing production:

The important requirementsto augment productivity and production in cattle and buffaloes are good breeds (Genotypes) of animals, provision of optimum environment to exploit the improved genotypes through optimum feeding and nutrition, proper management/housing, intensive health care and disease control.Post-harvest processing, value addition, marketing and organized trading are required for sustainability of the venture.To achieve these, Government and industrial support is required for formulation of the breeding policies, production of quality/proven breedable stock and their management, production and supply of good quality feeds feed ingredients and fodder in sufficient quantity, application of newer and advanced tools and technologies, organized Marketing networks, value addition of animal products, infrastructure facilities which includes farm facilities for station breeding of animalsfor seed stock production, Hospital, dispensaries, Polyclinics, Diagnostic laboratories and others to provide health care support, A.I. centres, information technology and communication systems, extension works for transfer of technology and feedback, Human Resource Development, issue identification and policies for planning and development, implementation of plans and programmes, monitoring and evaluation and measurements of progress and target achievements.

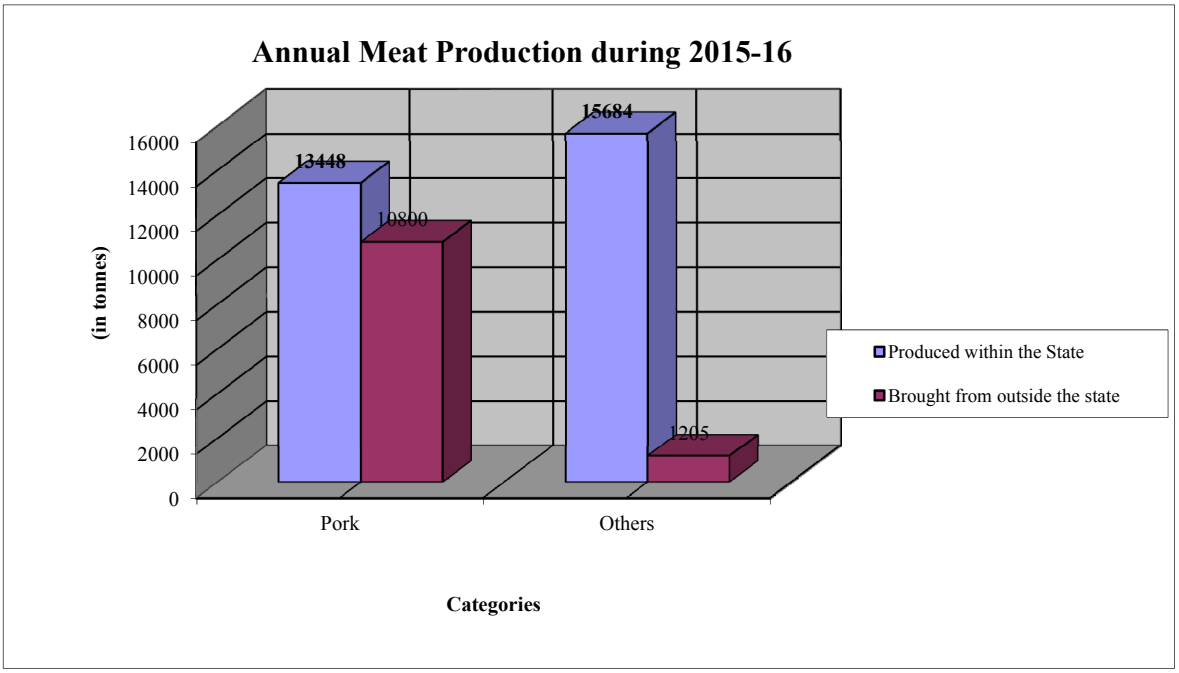
The mission and targets of the proposed cattle breeding policy are to increase productivity, and conservation of indigenous animal genetic resourcesbesides thestrategies to provide superior semenfor AI as per the breeding policy and expansion of infrastructure likeICDP centres, AI

networking along with bull testing/selection facilities and extension of advanced technologies for cost effective production, processing of milk and manufacture of milk products.

5.3: PRODUCTION SCENARIO OF MEAT IN THE STATE:

5.3.1: Meat and pork production: Meat and pork production scenario (2015-16) of the state and quantum of outside source imported to the state are as follows:

Meat Production (Tonnes)		
	State's own	**Out of State's source**
(a). Pork	13,448	10,800
(b). Others	15,684	1,205
Total	**29,132**	**12,005**



The per capita availability of meat is 9.81 kg per person per year and there is a big gap in requirement in the state of Meghalaya as compared to ICMR(Indian Council of Medical Research) dietary guidelines.

5.3.2: PIG DEVELOPMENT SCENARIO OF THE STATE

Although per capita availability of meat in the state (9.82 kg/person/year) is higher than national average and slightly lower than the body requirement as per ICMR recommendation (10.95 kg/person/per year) but 12,005 tonnes of meat is imported to the state through the animals

brought from outside to make available a total of 29,132 tonnes of meat in the state (2015-16 Report). Hence there exists a big gap in production of meat by the state of its own which needs to be taken care of to stop unnecessary drainage of state fund.

The reasons for shortfall in meat production and meat products in Meghalayamainly are rearing of animals exclusively for meat production is lacking and the indigenous species of livestock usually yields less quantity of edible meat. Besides that the gross output of the available type of stock of animals is low because of inferior genetic potential of the indigenous/local pigs, disorganized breeding programmes, inadequate production system and supply of balanced feed,incidence of diseases, lack of efficient and scientific management of the resources and lack of application of newer advances of technologies for augmentation of productivity and production, processing technologies, marketing etc. In order to improve the position and to achieve the targets formulation of breeding policies for pigs in the state to produce improve genetic potential of the livestock including pig and production of quality/proven breedable stock are of utmost necessity. However, other factors such as provision of optimum environment to exploit the improved genotypes through optimum feeding and nutrition, production and supply of good quality feeds, feed ingredients and supplements in sufficient quantity, improvement in production system with supply of required inputs, proper management/housing, intensive health care/disease control, post-harvest processing, value addition, marketing and organized trading are also required. Establishment of modern slaughter houses in the state for processing and value addition of pig products and organized marketing networks are needed. Extension networks for transfer of technology and feedback are required for continuous progress of the industry and rural farming.

The outcome of various research programmes including All India Coordinated Research Project of Indian Council of Agricultural Research and other institutions on genetic improvement of indigenous pigthrough pure breed selection and crossbreeding using exotic germ plasm revealed that the litter size at birth and weaning improved over the years in crossbred pigs with better growth rate and feed conversion efficiency. Exotic breeds like Large White Yorkshire, Large Black, Hampshire when used for crossbreeding of indigenous/nondescript pigs had higher value of litter traits in crossbred (75 percent exotic) than their respective 50 percent exotic crossbreds. The crossbreds had lower back fat thickness and higher lean cuts in their carcasses than the indigenous pigs suggesting crossbreeding as a better proposition for piggery development. However, some of the constraints in the state are lack of concrete strategy,

hereditary lines are not properly maintained, number of produced piglets from organized farms is negligible to meet the requirement. Besides that the farmers are not made aware about the characteristics of breeds and advantage and disadvantages of different breeds, selection criteria of breeds, male-female ratio, preference, market demand, selection criteria of piglets (male and female) for breeding purpose, care and management of breeding sows and boars, nutritional requirement for different stages of pigs and preventive health care and hygiene etc. No organized replacement system is in place of breeding boar at regular interval- resulting chances of inbreeding depression and Artificial Insemination is not yet practiced. Lack of support to the pig breeders in terms of special assistance like feed subsidy, low interest loan, priority healthcare services and lack of incentive mechanism for farmers are there for conservation of indigenous pigs. Poor availability good breeding stock with adequate infrastructure, underdeveloped technology for frozen semen, distance, road connectivity, communication in NE states are problems. Import ban onexoticpig breeds, frozen semen etc. is also a hurdle in faster gain in genetic merit of the animals. In order to give a real push for improvement of germplasmformulation of the pig breeding policy for the state is essential.

Chapter –6

6.1: BOVINE (CATTLE AND BUFFALO) BREEDING POLICY

The productivity enhancement of cattle/bovine populations of Meghalaya for milk is envisaged by improving the genetic potential of the animals and improving the overall management system. Although the state is following cattle development strategies through crossbreeding, there is persistent shortage of crossbred cows in the state with a decreasing rate of (-) 1.45 percent from 2007 to 2012. But the demand for crossbreds has gone up substantially, because of various beneficiary oriented programmes initiated by the Department of Animal Husbandry & Veterinary as well as the Dept. of Rural Development in Block levels.The Department of Animal Husbandry and Veterinary is responsible for all the activities relating to livestock production, breeding, health, feeds and fodder production, planning, administration and policy implementation. Besides procuring frozen from best quality proven bulls, the cattle breeding farms of the state are also expected to produce and supply breeding bulls for AI as well as natural service.

6.1.1: Objectives of the Cattle/Bovine Breeding Policy:

Cattlebreeding policyfor the State of Meghalaya has been recommended with the following objectives:

(A) Genetic improvement for productivity enhancement of the Meghalaya indigenous/nondescript cattle by crossbreeding with exotic breed(s) and grading up by Indian cattle breed to a desired inheritance level.

(B) Improvement and Conservation of Indigenous cattle of the state through selective breeding.

(C) Establish and maintain pure germ-plasm pool of exotic and Indian breeds suitable for the state to meet the present and future requirements.

(D) Maintenance of crossbred/graded animals produced by Artificial Insemination at farmers' field ensuring that the crossbreds produced and propagated are adapted to local environmental conditions and emerging climatic challenge.

(E) Expansion of infrastructure and support mechanisms to propagate the improved and elite germ-plasm.

(F) Strengthen support mechanism and development of the sector in respect of reproduction technology, Artificial Insemination (AI), feeding, housing and health care besides processing and marketing of the produce with value addition.

Accordingly the recommended policies are as follows to fulfill the objectives as laid down for the state of Meghalaya:

6.1.2: BREEDING STRATEGIES:

Cross breeding of indigenous cattle using bulls of improved exotic/Indianbreed(s) is recommended as the major strategy to increase milk productivity in elite, large commercial and Government farm's cattle herds and in field where resources to maintain the crossbreds are provided and available. Artificial insemination using frozen semen from proven/selected bulls will be the main tool for breeding. Cross breeding and upgrading of the germ plasm available in the state are advocated for different livestock production system of the state based on the infrastructure and other input availability. Zone/location specific strategies to implement the policy are also suggested. Selective breeding for conservation and improvement of indigenous cattle of Meghalaya for their good quality type characteristics, body size, disease resistance etc. are also recommended. Despite all efforts to propagate the animals through A.I., a large number of the cattle populations may not be possible to cover under A.I. due to topography and transport bottlenecks of the state and hence these animals may have to be provided with natural services (NS). As such making available good quality breeding bulls for natural service in all those localities will be produced.

6.1.3: CHOICE OF BREEDS OF CATTLE FOR BREEDING IN MEGHALAYA:

(a) Indigenous/Nondescript cattlefor crossbreeding/Upgrading: The Indigenous/Nondescript cattle of the stateare the basic foundation stock for improvement of their genetics and production potentiality for the largely existing Extensive (low input low output production) system prevalent in the state. These animals although produce less milk in comparison to good Indian breeds of cattle, but have traits of better adaptability in the harsh environment and in extensive production system besides disease resistance. They also produce high quality of milk with higher butterfat content. Selective breeding with selection of bulls and dams with higher yield and generating nucleus stocks for use in field is suggested with a well laid down mating system. This would also help in conservation as well as improvement of the valuable indigenous cattle of the state. This system would be followed in field/areas where there is no alternative to the extensive production system at present due to obvious reasons.

(b) Exotic cattle breeds for crossbreeding with Indigenous: In the context of Meghalaya, Jersey and Holstein Friesian had been the breeds of choice for crossbreeding with the indigenous cattle. HF and Jersey may be the exotic breed of choice in the foreseeable future too because of their high milk yield and reasonably good butter fat percentage and high breeding efficiency and lifetime production and low age at sexual maturity.

Although, Holstein Friesian yields more milk than Jersey, the performance of HF halfbreds will largely depend on feed and fodder availability and better management. In hilly terrain where ambient temperature is relatively low HF inheritance may be infused to enhance milk yield. Also, progressive farmers with better knowledge of scientific cattle management and possessing means to provide better housing, feeding and health coverage can go for HF halfbreds.

As per the existing strategy in force, Jersey and Holstein-Friesian breeds are used as exotic breeds in varying proportions of inheritance level. Jersey breed because of its smaller size, high fat content in milk, heat tolerance and disease resistance is preferred for breeding of thesmall sized non-descript cattle. Shortage of roughage, high cost of concentrate feeds, the preference and economic advantage, the Jersey will continue to be the breed of choice in the state. However, for farmers and areas where feeding is less expensive and more roughage based, Holstein-Friesian would be suitable and preferable. Considering all these aspects in the state, it is proposed that Jersey and Holstein-Friesian will be used as exotic breeds for genetic improvement of the indigenous cattle of Meghalaya through cross breeding.

(c) Indian cattle breed for pure breeding and grading up of Indigenous/Nondescript: Sahiwal, Red Sindhi, Gir and Tharparkarare some of the Indian breeds of cattle preferred in Meghalaya for using as a purebred or for grading up of the indigenous/nondescript cattle of Meghalaya to develop a multipurpose animal including milch and draught purpose.

6.1.4: LEVEL OF INHERITANCE IN VARIOUS CROSSBREDS:

(a) Exotic (Jersey/ Holstein Friesian) inheritance level: Fifty per cent exotic inheritance level in the crossbreds with indigenous cattle is considered to be the most ideal for growth, reproduction and milk yield under the prevailing conditions of Meghalaya. The higher level of exotic inheritance of 75 percent or morein crossbreds demands relatively more feed and fodder, improved management and are prone to many tropical diseases whichresults in loss of general adaptability making the animal difficult to withstand the physiological stress of production and reproduction. Considering the nature and quantum of inputs offered by the farmers these limitations will have to be overcome nowby switching over to intensive or semi-intensive

management system for increased level of exotic inheritance beyond 50 percent. It has also to be supported by proper animal health care and management inputs in the populations with higher exotic inheritance level in field. In case of improvement of indigenous cattle as a multipurpose animal for milk, work etc. by use of improved Indian breed, viz. Red Sindhi or Sahiwal or Tharparkar the system of grading up can be followed to attain maximum productivity improvement without losing the good quality genes for disease resistance and adaptability.

(b) Pure breeding ofIndian breed of cattle (Sahiwal/Red Sindhi//Tharparkar): It has been suggested that one or more of the suggested three Indian breeds of cattle viz, Sahiwal,Red Sindhi and Tharparkar may be introduced and reared as a purebred. A purebred stock of at least one Indian breed mentioned above may be raised with special funding from Govt. of India or the state.

(c) Grading up of Indigenous cattle using Indian breed: The Indian improved cattle breed adopted for the state viz, Sahiwal,Red Sindhi or Tharparkar may be may be used for grading up of the nondescript cattle of the state.

(d) Production of multiple breed cross (Exotic, Indian breed, Meghalaya Indigenous): Multiple breed (usually three breeds) crosses with inheritance of Indigenous, Sahiwal/Red Sindhi/Gir/Tharparkar and Jersey/HF can also be produced by using imported high grade semen from within or outside the country for higher productivity and for adoption of climate resilient cattle husbandry.

(e) Conservation of Meghalaya Indigenous cattle:

In order to conserve the native indigenous cattle of Meghalaya retaining the traits of disease resistance, adaptability to harsh environment and management conditions and also to improve their production potentiality to utilize as a very good foundation stock for crossbreeding with improved breed, selective breeding of the indigenous cattle are also suggested in its breeding tracts.

6.1.5: AREA OF COVERAGE BY DIFFERENT BREEDS IN VARIOUS ZONES:

The areas of coverage in the state for use of Jersey/ HF/Indian breed will be as determined by the state Department as per suitability, feasibility, adoption criteria and choice of farmers in different specified areas/zones/districts of Meghalayaand breeding plans will be developed and followed for different zone of the state as per requirement. The levels of inheritance of different breeds of exotic and/or Indian breed aresuggested. For instance, in zone I, II and III, exotic HF is recommended while in zones IV and V Jersey breed would be adopted for crossbreeding while in East and Ri-Bhoi district both the breeds may be utilized. In all the districts, grading up of

indigenous/nondescript cattle by using Red Sindhi or Sahiwal or Gir or Tharparkar breed to produce multipurpose crossbreds has been recommended. However, looking into the quality and type of indigenous cattle availability in all the zones, selective breeding amongst the Meghalaya indigenous cattle in field situation is also suggested to improve their inherent production potentiality and for conservation of the precious genes of adaptability and disease resistance *in situ*.

Holstein Friesian (HF)/Jersey inheritance will be infused in defined geographic zones/areas/herds where fodder production and its availability is more promising with a well-developed milk marketing channel, in town areas having higher market demand of milk, and in areas of high elevation with congenial climate and also in areas where sizable number of improved (graded) animals already exist with HF /Jersey inheritance.

6.1.6: SOME IMPORTANT TECHNOLOGIESTO BE USED:

Artificial Insemination (A.I.), Reproductive biotechnology: The scientific selection procedures and the breeding systems will ever remain the most potent tools for cattle improvement. The modern reproductive biotechnology can make these tools even more effective by increasing the reproductive efficiency of breeding animals. Besides extensive use of Artificial Insemination (A.I.), other technologies available for use in animal improvement strategies such as cryopreservation of semen and embryo, Multiple Ovulation and Embryo Transfer Technology (MOET), cloning etc. will be gradually introduced in the state.For A.I. best of the best proven bulls identified by progeny testing will be used for large-scale insemination of cows.

Embryo Transfer Technology (ETT) by which fertilized ova are collected from a female called donor and transferred for development to term to another female called recipient. The main objective of ETT is the improvement of animal population through better utilization of superior females. The technique will allow expansion of desirable gene pool for the females for breed improvement. Using current technology of Multiple Ovulation and Embryo Transfer Technology (MOET), it is feasible to obtain large number of calves from a single cow over a period of one year. The intensity of genetic selection of females can thus be enhanced by MOET, since it is possible to obtain several daughters from a single mating of a superior dam using recipients of a lesser genetic value as foster mothers. The techniques of A.I. and MOET will providemeans of efficient use of superior males (bulls) with much higher selection intensity for breedingand highly meritorious females to propagate improved progenies.

Use of frozen semen from selected Bulls/Siresfor AI:A bull is said to be *half the herd*. The success of the cattle breeding policy will depend on the genetic worth of the breeding bulls from which semen is collected for Artificial insemination. In absence of selection of bulls, degeneration and dilution of characteristics is inevitable due to segregation of genes. There is a necessity to produce and test bulls locally in the environment in which their progeny are to perform to avoid genetic slippage and to improve the genetic potential. However, production of progeny tested bulls and establishment of bull mother farms for regular production of bulls of highest merit are very costly and time consuming proposition which may not be feasible for the state to pursue alone. In order to use the outstanding bulls/sires of the chosen breeds, frozen semen from certified Grade- A Semen station(s) of the country/abroad will be procured for breeding of cattle in the state. Frozen semen will be procured from the bulls of higher genetic merit as evident from their records of breeding value/PD from the source of procurement.The infusion of superior germplasm from exotic donor breeds of Jersey/Holstein Friesian should be a continuous process to widen the genetic base. The breeding value of bulls thus introduced should preferably be above the bulls in service.

Extensive use of top ranking tested bulls will be ensured through a well-conceived A.I. programme. For this the already available infrastructure facilities of the state Animal Husbandry and Veterinary department will be revamped and put to use to the maximum extent possible. Also, large-scale procurement/production of semen doses from top bulls and their cryopreservation will be ensured. This will meet the farmers' demand of quality semen year round, and also help in preserving valuable germplasm for posterity.

Artificial Insemination, Pregnancy diagnosis and Identification:

All the breedable females will be bred through Artificial Insemination using semen from identified bulls of Grade-A semen station. Proper records of A.I., pregnancy diagnosis (PD) and calves born will be maintained. Each animal covered under the evaluation programme will be registered and issued a card where all information in regard to that animal will be recorded and maintained at the A.I. centre as well as at the executing centre. Heat detection kits may be supplied for use by the veterinary officers and farmers.

Wherever, natural mating has to be advocated for want of appropriate A.I. facilities and infrastructure, records pertaining to the bulls introduced, their pedigree records etc. have to be maintained by the govt. institutions. At the same time, castration of the unwanted bulls and their culling has also to be done to get the desired level of genetic gain in production.

Advanced GIS technology may also be used in field data recording with traceability of the milchanimals.

Production/Raising of Bulls in the state: Establishment of elite herds of chosen breeds as bull production/raising farms may be continued in the state for generation of purebred/crossbred/graded young bullsto produce semen locally or to distribute and use them for natural mating where A.I. facilities could not be created so far.Pure/crossbred bulls thus produced will have to be evaluated continuously by using pedigree/performance records. The half-bred bulls for evaluation may also be obtained from the farmers herd on the merit of pedigree performance. Number of young bulls put to test and numbers finally selected for the purpose will be worked out from time to time as per the need and availability of infrastructure, manpower and other required facilities. The young bulls of different categories of pure or crossbreds for evaluation will be produced locally in the state to avoid genetic slippage and to overcome the problem of genotype-environment interaction in selection/ranking of bulls.

6.1.7: WORK PLAN UNDER Meghalaya State Implementing Agency (MSIA), ICDPs:

For execution of the breeding policy, detailed work plan and technical programmewill be framed by the Meghalaya State Implementing Agency (MSIA) and Intensive Cattle Development Project (ICDP) of the Department of AH & Veterinary. The ICDP Centres, Govt. Cattle Breeding farms have been identified and recommended for developing infrastructure required for Semen stations and laboratories, and for rearing of outstanding elite cows and bulls for production of germ plasm locally. The main centres to be located in the state capital establishing a network of nucleus herds, semen centres and AI facilities in different districts and zones. Male calves born of the elite class may be identified, selected and purchased as per requirement on weaning and enlisted for future use.

Prerequisites for breeding policy involving Holstein Friesian/Jersey:

1. There are three strategies for implementation of this policy:
   (i) Use of frozen semen of proven bulls procured or imported from within the country/abroad for A.I.
   (ii) Rearing and production of Jersey/ HFbulls in state Cattle Breeding farm(s), their evaluation/testing and production of semen for A.I. or distribution of bulls in different areas for natural mating till A.I. facilities are developed in remote areas.

(iii) Procurement of good quality crossbred F_1 bull calves from the farmers' herd, selection of the superior bulls through pedigree records/progeny testing or other reliable and feasible selection methods and use for inter-se mating.

Field data recording:

For genetic improvement of cattle and buffalo population of the state, use of outstanding bulls of superior breeding merit is essential. For evaluation of the breeding worth of bulls, besides the performance records of their dams and sires, cows inseminated and the male and female progenies produced by each bull are to be given identification numbers using suitable tags or microchips in the field for keeping their records in regard to various production and reproduction traits. Besides that some information on the status of the farmers and management systems followed by them will also be recorded.

All information in regards to the A.I. records, bull records, calving records, health records are to be maintained at the A.I. centres. It is important to note that the farmers maintain their female progeny covered under the project at least up to completion of their first lactation. Appropriate proforma for keeping certain records of the dam and progeny are to be maintained by the farmers also.

Some important information to be recorded is as follows:

On the farmer house:

- Occupation and education of the farmer, Land-holding and area devoted to fodder production,
- Number of animals - age and species wise,
- Housing system of animals, Management - stall feeding or grazing, and
- Identification of animals.

On animals:

Data on Dams:

- Lactation number, Date of A.I., Date of conception, Date of calving, Sex of calf,
- Test day milk yield at monthly intervals,
- Fat percentage in milk.

Data on progeny:

- Date of birth, Pedigree of the animal, Date of insemination, Date of conception, Date of calving.
- Milk production at monthly interval,

❖ Quantity and type of fodder and concentrate at monthly interval.

To implement ONBS, all breeding farms are to be associated with field herds.

Milk recording system:

Milk recording in the field may be done by the Integrated Sample Survey (ISS) workers and/or casual milk recorders on contract basis at monthly interval on test progenies and in dams of the progenies and bull mothers etc. both in morning and evening. At least one milk recording on each test progeny should be done in the presence of senior technical staff. Milk records will be compiled by the milk recorder and sent to the executing centre with one copy to the owner of the field animals.

All the female progeny born will have to be identified by alphanumeric code by ear-tag or microchips.

6.1.8: OPEN NUCLEUS BREEDING SYSTEM (ONBS):

This system envisages formation of a nucleus population of breedable animals of exceptionally high genetic merit. Nucleus herds of HF/Jersey/Half-breds/Indian breeds/indigenous cattle may be established in the stations/farms located in or around district/zonal headquarters where infrastructure, manpower and other facilities are readily available or can be developed with minimum effort. The outstanding breedable males are to be let out and/or frozen semen from the nucleus herd to the farmer or breeders in the neighbouring areas to bring about genetic improvement of their animals.

This system is useful under the conditions prevailing in the state of Meghalaya where field progeny testing and Artificial Insemination have not yielded much success for want of necessary infrastructure and lack of field performance recording.

Plan of work for ONBS:

1. Screening of the unrecorded base population for identifying some outstanding females.
2. Collection of the outstanding females to form a nucleus herd which would be used as test group of animals.
3. Production of semen from good quality bulls and A.I. of the cows/heifers in participating herds in field and production of progeny.
4. Efforts may be made to superovulate the elite animals from the outstanding herds and *in vitro* fertilization with semen of superior sires.
5. Transfer of the resulting embryos to the test group in the nucleus herd as well as to the females in the unrecorded base population.

6. The best males are to be selected on the basis of their own performance as well as on dams' and siblings' performances. They are then to be extensively used in the field.
7. The female offspring are next considered as potential elite females to donate embryos by Multiple Ovulation and Embryo Transfer (MOET) for the following cycle after their appraisal against elite cows already present in the nucleus herd and used upon for MOET.

ONBS can be used as an alternate way of testing young bulls at an early age of about 3-4 years instead of 7 years in conventional breeding plans.ONBS can be followed for genetic improvement of both purebred and crossbred population. In Meghalaya, ONBS can be tried for genetic improvement of crossbred population for which some nucleus herds of about 200 animals are to be established in three zones of the State considering the magnitude of the crossbred population. The animals collected from the field after their screening as outstanding animals will form these nucleus herds. In the Nucleus herds, besides other, facilities for proper recording systems must be there so that the best males can be selected on the basis of available records of their Dam, sibling and own records. Simultaneously, a system should also be there for recording of at least these females' progenies, which would be collected and used as replacement stock in the field. To start with, if facilities are developed, ONBS can be initiated in cattle breeding tracts in and around Department headquarters.

6.1.9: PLAN OF BREEDING:

The zone wise breeding approaches for cattle and buffaloes are presented in Table below:

			FIRST CROSSING		SUBSEQUENT CROSSING	
	Zone	**BULLS**	**Target/Foundation Population (Breedable cows/heifers)**	**BULLS**	**Target Population (Breedable cows/heifers)**	**Method of Breeding**
CATTLE		HF	Indigenous cattle (ML)	HF X ML	CROSS BRED (50:50)	Cross breeding and Selection
		JERSEY	ML	J X ML/ Sahiwal/ Tharparkar/Red Sindhi/Gir Graded	CROSS BRED(50:50)/ Tharparkar/Sahiwal/ Red Sindhi/Gir Graded	*Interse-mating*/ Grading up.
		ML	ML	ML	ML	Selective breeding for mprovement and conservation.
		ML/Graded bulls with good draught traits	ML	ML/Graded selected bulls with good draught traits	ML	Selective breeding for mprovement of draught power.
		Sahiwal/Red Sindhi/GirTharparkar	ML	Sahiwal/Red SindhiGir/Tharparkar	CROSS BRED Graded	Grading up for dual purpose(Draft and milch) animals

BUFFALO	***Availa -ble zones***	Indigenous/ Swamp/ Murrah	Indigenous/ Swamp/ Murrah	Indigenous/ Swamp/ Murrah	INDIGENOUS/SWAMP/ Murrah CROSS	PURE BREEDING/ UPGRADING

6.1.10: BREEDING POLICY FOR DRAUGHT/DUAL PURPOSE:

Draught animal power (DAP) is an excellent example of mass application of appropriate technology. It is ideal for small farmers of less than 4 hectares. DAP is also appropriate for small-scale transportation (about 1 tone over short distance). The energy output of a draught animal is dependent on the breed, size, weight, nutrition level etc. In Meghalaya, due to its topography and lesser adoption of mechanized agriculture, the role of draft animals becomes very important.

The male progeny of indigenous cattle under selection which are adapted for work in the prevailing topography of the land and climate can fulfil the demand of draught power. The Jersey/ HF/Indian breed and Meghalaya indigenous half-bred/graded bullocks can be trained to perform in such conditions. However, the exotic crossbreds may exhibit more stress during summer season limiting their work performance. The large numbers of crossbred bulls with Jersey/ HFinheritance, to be produced as a result of the implementation of cattle improvement programme for milk, will be used as draught animals. One of the options for production of draft/dualpurpose animals is the up gradation of indigenous cattle by use of sires of outstanding Indian breed viz. Red Sindhi or Sahiwal or Tharparkar. Such an up gradation programme will aim at increasing both draught and milk production ability.

6.2: BREEDING POLICY FOR BUFFALO

The buffalo population of the state is concentrated primarily in valleys and plain areas of the states. The animals are of either indigenous or resembled to swamp buffaloes of Assam. Though, in regard to milk yield, these buffaloes are not at par with those of improved riverine breeds, the milk of these buffaloes is very rich in fat and protein content. Whole milk and milk products of these buffaloes are always valued for quality. The buffaloes are also good draught and meat animal. These buffaloes are distinctly different from the riverine breeds not only in behaviours but also in respect of chromosome number. In spite of this difference, they are interbreeding.

The Buffalo breeding policy of Meghalaya will fulfil three basic requirements as follows:

(i) Augment production of milk with high fat percentage in buffalo dominated areas.

(ii) Conservation of indigenous buffalo germplasm.

(iii) Meeting the draught and meat animal requirement of the State and export.

In the light of the above observations, the buffalo breeding policy for milk production for the state is proposed as under.

6.2.1: Selective breeding of indigenous/swamp buffalo:

Improvement in genetic potential of indigenous/swamp buffaloes of Meghalaya will be sought through selection and pure breeding for higher productivity of milk. For this, few elite herds of these buffaloes will be established. Basis of selection of the breeding animals in these herds mainly will be type consolidation, milk yield and quality traits. Emphasis will be on achieving maximum genetic gain by way of selection of breeding bulls and their extensive use by A.I. or natural service in absence of A.I. facilities.

The breeding bulls will be selected based on their dam/progeny and/or siblings' performance. Young bulls born in the elite herd or born in the farmers' herd will be selected on the basis of conformation, general health and pedigree records. Number of young bulls to be selected for inclusion in test mating and the number of tested bulls to be finally selected will be worked out on the basis of requirements, infrastructure availability or creation of needed facilities.

6.2.2: Introduction and Pure breeding of Murrah breed:

Two outstanding riverine breeds of buffalo viz. Murrah and Surti were found to have performed satisfactorily under organized farm environment in some of the agro-climatic regions of North East India. Trained farm entrepreneurs and well to do farmers will be encouraged to rear Murrah buffaloes in scientific manner under intensive or semi-intensive system of management. The State Govt. will maintain at least one elite herd of Murrah buffalo as a source of improved germplasm. Initially this may be started by establishment of a buffalo nucleus herd in the district having highest concentration of buffaloes and other facilities.

6.2.3: Crossbreeding of Indigenous/Swamp buffaloes with Murrah breed:

In absence of sufficient data on the performance and fertility status of Riverine x Swamp crossbred buffalo in Meghalaya, the approach to such a crossbreeding programme has to be cautiously implemented. Therefore, initially such a crossbreeding programme will be taken up in limited scale using the bulls of organized elite herds of Murrah and crossing them to indigenous/swamp females. The F_1 and subsequent generations will be mated *inter se*. Data on production and reproduction performanceof the crosses will be collected and analysed besides the fertility status of the F1 animals to proceed further and to design the breeding plans.

The future of this crossbreeding programme will rest on the performance of the crossbreds under farm and field conditions. In order to implement the suggested breeding policy for buffaloes, the following points need to be considered for appropriate action so that the policy can be implemented in its true spirit.

(i) Production of indigenous/swamp buffalo breeding bulls, their selection and evaluation for straight breeding.

(ii) Standardization and implementation of Artificial Insemination (A.I.) in buffalo for breeding with Assisted Reproduction techniques including collection and preservation of semen.

(iii) Distribution of selected bulls of indigenous/swamp buffalo in different herds for natural service where A.I. facility does not exist.

(iv) Identification of Govt. L/S farms and programme for rearing of pure Murrah buffalo breed.

(v) Identification and Field performance recording system has be introduced and monitored.

6.3: INTRODUCTION OF MITHUN IN MEGHALAYA

Mithun*(Bos frontalis*) is a semi domesticated bovine species found in Arunachal Pradesh, Nagaland, Manipur and Mizoram states of North East India. This animal has an important place in the economic, social, cultural and religious life of the local tribal populations. This animal thrives well in humid climate and hilly terrains of North Eastern Hill region and reared by the tribal people mainly for meat, besides its use in barter trade, marriage gift etc. The mithun is a strongly built animal with average adult weighs of 400 – 500 kg. The new born calf weighs 19.5 to 33 kg.The mithuns are distributed in the altitude range of 500 – 2,700 metres above mean sea level. The mithun is semi wild in nature and the owners keep these animals under forest based management system. However, consideration of the base line data generated on possible production system shifts to semi-intensive or intensive system by the ICAR-NRC on Mithun, Jharnapani, Nagaland there is a scope of introducing mithun rearing in Meghalaya in a suitable hill zone. The Department of AH and Veterinary, Govt. of Meghalaya may explore the possibility of introducing the animal in the state by establishment of a stock in high altitude zone.

Chapter –7

7.1: MEGHALAYAPIG BREEDING POLICY

Pig Breeding Policy for the state of Meghalaya has been formulated with the mission and target toimprovethe genetic potentiality of the pig germ-plasm for increased productivity of local indigenous/nondescript pigs/pig breed through scientific breeding strategies and using improved exotic breeds and advanced technology. However, this has to be supported by appropriate production system ensuring optimum and economic feeding and management of the animals, adequate animal health care and disease control, assured organized market for animal products, adequate post-harvest processing and value addition of the products and sustainability of pig farming.

7.1.1: Objectives of the Pig Breeding Policy:

Pig Breeding policyand strategies for the State have been recommended with the following objectives:

(A) Genetic improvement of the nondescript andindigenous pig breeds/strains of Meghalayafor productivity enhancement by crossbreeding with exotic pig breeds to a desired level of combination of exotic and local inheritance.

(B) Improvement and Conservation of Indigenous pig breed NiangMegha and crossbred Lumsniang of the state through selective breeding.

(C) Establish and maintain pure germ-plasm pool of exotic breeds suitable for the state to meet the requirement.

(D) Maintenance of well-planned crossbred animals at farmers' field.

(E) Expansion of infrastructure and support mechanism to propagate the elite germ-plasm through Artificial Insemination (AI).

(F) Ensure that the breeds introduced and crossbreds produced and propagated are adapted to local environmental conditions and emerging climatic challenge.

(G) Strengthen support mechanism and development of the sector in respect of feeding, housing and health care besides value addition and marketing of the produce with value chain development.

The breeding policy for pigs in Meghalaya has been recommended and designed for implementation based on the production system prevalent and suitable in different zones/locations and also based on the demand of the area, interest of the farmers and pig rearers, type of pigs

available for production, availability of feed resources, climate and other environmental conditions, markets etc.

7.2: POLICY RECOMMENDATIONS:

The recommended policies are as follows to fulfill the objectives as laid down for the state of Meghalaya:

7.2.1: Genetic improvement of the nondescript and indigenous pig breeds/strains of Meghalaya for productivity enhancement by crossbreeding with exotic pig breeds to a desired level of combination of exotic and local inheritance.

For the purpose of improving genetic potentiality of the local nondescript pigs of Meghalaya, crossbreeding of these pigs will be done with exotic breed(s). Boars of pure exotic breed will be utilized for breeding of the gilts and sows of local nondescript/indigenous breed of pigs.

7.2.1.1: Choice of exotic breeds:

The choice of a particular breed for a locality/zone will depend on farmers' preference, consumers' demand and suitability of the breed depending on their adaptability and resources available.The exotic breeds of choice for the state are Large Black, Hampshire, Large White Yorkshire,Duroc and Saddleback for adoption of purebreeding/crossbreeding These breeds will be used in different zones and locations of the state as per preference and demand of the farmers besides the production performance of the crossbreds and their adaptability.

7.2.1.2: Foundation stock for pig breeding in field/breeding farms of the state:

Genetic improvement of the indigenous pig population of Meghalayawill be attempted by introduction of superior exotic/improved pig breeds using Artificial Insemination/Natural mating. Selective breeding within the populations of indigenous/crossbred pig and culling of poor meat producers owned by large number of farmers will be attempted to achieve sizable gains both in genetic and economic terms. Good quality half-bred boars with exotic inheritance level of 50 percent will be mated *inter se* with selected gilts/sows for their further improvement in productivity. Selective breeding of good quality indigenous NiangMegha pigs will be done to conserve the breed and gradually improve its productivity.

7.2.1.3: Development of Exotic and Indigenous breeds' nucleus herds:

Nucleus herds for the exotic breeds viz, Large Black, Hampshire,Large White Yorkshire, Duroc, Saddleback and for Indigenous NiangMegha, Lumsniangwill beestablished in the

Government Pig Breeding farms and also with the private participating entrepreneurs to carry out pig development programmein the state.

The nucleus herd in the govt. farm will consists of 50 to 150 sow units/dam line depending upon the carrying capacity of the existing farm or newly established farm. Foundation stock will be procured from pedigreed herd of organized farms or reliable sources from different locations of the state and the country.The technical committee to be constituted for implementation of the breeding programme will fix the procurement criteria, number and age and body weight of animals to be procured, criteria of selection of the stock etc. Mating plans avoiding inbreeding will be designed by the farm management to breed the best animals to ensure optimum number of farrowing and to produce sizable number of piglets in each farrowing as per breed norms.Standard procedure will be followed for weaning of piglets. Selected sows will be bred and maintained up to 3$^{rd\ or}$ 4thfarrowing depending upon performance. The replacementstock for both male and female will be selected on the basis of litter traits of dams, weaning weight, body weight gain and numberof functional teats. Data recording on various growth, reproductive and productive traits will be made using standard formats. After keeping the required number of selected piglets, gilts and boars, the rest of the animals will be provided to the multiplier farms and field units. Sire replacement will be a regular feature from new sources or on rotational basis to eliminate inbreeding effects.

For efficient use of the exotic breeds in crossbreeding programme, import of the new improved germplasm to the state is highly desirable and recommended to increase the genetic variability.

7.2.1.4: Exotic inheritance level in crossbreds:

The level of exotic inheritance in crossbreds of exotic breed and indigenous pigs will be ranging from 50 percent to 87.5 percent depending upon the production system followed in a particular location/zone and availability of inputs required for the purpose. The exotic inheritance level in the crossbreds may vary according to the farmers' choice, adaptability in a zone/area and suitability in a particular production system followed and resources available for scientific management and resistance to diseases. Based on these situations recommendations have been made while framing the breeding policy. In the Government Pig Breeding farms pure exotic pig breeds will also be bred as per need for maintaining pure lines besides the crossbreds generated using the exotic and indigenous breed of Meghalaya, namely NiangMegha, Lumsniang

and nondescript pigs and pigs from other state which are found to be suitable for the state such as T&D crossbreds and Ghungroo pigs.

7.2.1.5: Breeding Policy under Extensive Production system of pig rearing:

1. Under this system in remote areas/villages where mostly the indigenous local pigs are reared in open ranging conditions without any scientific inputs in the form of feed or improved management thereby depending only on naturally available resources. Upgrading of indigenous local pigs by use of exotic boar of suitable breeds viz.,Large Black, Hampshire, Large White Yorkshire, Duroc or Saddleback in rural areas may be done keeping the interest of poor farmers in mind. However, the choice of exotic breed in different locations/zones may be different depending upon the adaptability of that breed, choice of farmers and consumers demand, feed resources and other input availability.
2. In the areas where crossbred pigsare maintained by the small holders in households/farms having pig shelters constructed with indigenous materials or penning system and provides very little feed from household and agricultural wastes the breeding policy recommended going for cross breeding of these pigs with the boars of suitable pure exotic breed or improved Crossbreds. Inter se mating of the selected crossbreds may be followed for fixation of desired genes for higher productivity and adaptability.

7.2.1.6: Breeding Policy under Semi intensive Production system of pig rearing:

Rural and semi urban pig farms maintained by the farmers with small to medium herd size under semi intensive production system having good housing or shelters as required giving some amount of compounded feed and maintain or capable to raise good crossbred animals, the breeding policy recommended is to practice cross breeding of local female stock with boars of Hampshire or Large Black or Durocetc. up to 75 percent or more of exotic inheritance. The breed for a particular location will be selected according to the suitability and adaptability of the breed and market demand.

7.2.1.7: Breeding Policy under Intensive Production system of pig rearing:

Urban, peri-urban, and well accessible rural pig farms maintained under intensive rearing with provision of modern housing system, good quality feeding and management and capable of rearing reasonably medium to large herd of crossbreds and exotic animals under the system, breeding policy recommended are as follows:

(i) For commercial farming of improved exotic purebred/crossbred pigs of proven potential, elite populations of breeds like *Hampshire*, *Saddle Back*, *Large Black*,

*Duroc or Large White Yorkshire*may be maintained as per market demand for providing quality germplasm.

(ii) Commercial farming of improved exotic purebred pigs with proven potential of black coat colourand their crosses with Desi/NiangMegha may be encouraged.

(iii) Crossbreeding of Indigenous pig breed *NiangMegha* may be carried out using *Saddle Back*/*Hampshire*/*Duroc*/*T&D* boars in different areas as per available demand of consumer/market. (a) The level of inheritance may be fixed at 50 percent for both the exotic and indigenous pigs. *Interse*mating of the halfbreds may be done for fixation of the genes with 50 percent exotic level of inheritance.(b) In elite herds of organized farms under intensive production system, the inheritance level of exotic breed can be raised to 75 percent or more for higher growth rate and body weight gain to attain maximum weight at market age.

(iv) Lines of selected exotic breeds and crossbreds may be maintained in the government Pig Breeding farms with the required mating plans for production of breeding stocks to be supplied to the multiplier pig farms for production of piglets for distribution in field for fattening purpose and marketing.

7.2.2: Improvement and Conservation of Indigenous pig breed NiangMegha through selective breeding.

Policy for improvement and conservation of NiangMegha pigs:

1. In order to conserve and improve theNiangMegha indigenous pig breed/germplasm, a Government pig breeding farm will be established as Nucleus herd for the breed where selective breeding will be practiced to produce improved piglets for supply quality genotypes to the field.
2. The NiangMegha pig breeding farm will be initially started as a 30 sow unit which will be expanded gradually by adding required infrastructure facilities. Best quality boars and gilts/sows of NiangMegha will be procured from the breeding tracts of the state to start the farm. Animals from different tracts will be procured in order to avoid inbreeding.
3. In the native breeding tracts and localities where the NiangMegha pigs are available these animals will also be bred pure for their conservation and improvement *in situ* through selective breeding.

4. In rural and remote areas where crossbred pigs as well as improved variety ofNiangMegha are maintained by the small farmers under extensive or semi-intensiveproduction system having very little facilities in regard to shelters and provision of feed inputs breeding policy recommended to be followed by the farmers is to go for cross breeding of these pigs with the boars of specified exotic breeds/selected crossbreds.

5. In localities where relatively larger variety of indigenous pigs i.e., NiangMegha is available, these may also be bred pure for their conservation and improvement through selective breeding in their selected breeding tracts.

7.2.3: Establish and maintain pure germ plasm pool of exotic breeds suitable for the state.

In order to carry on the and implement the policies creation of a gene pool of different breeds of exotic pigs and crossbreds and its continuous improvement is of utmost importance so that these animals could be utilized in various breeding programmes under different production systems. Purebred lines of the proven exotic breeds of pigs will be bred and produced in organized farms of the Department. Hence it is recommended that new Pig breeding farms may be established preferably in each zone/districts for production and supply of breeding boars, gilts/sows as per demand of the state. The locations of these farms will be decided by the state department of AH and Veterinary.

Each farm will have two mandates,(1) Each farm will be started with about 20 sow units of selected exotic breed(s) for pure breeding to raise the required number of breeding animals, and (2) to produce required numbers of suitable crossbreds of exotic and indigenous pigs following selection and inter-se mating of suitable crossbreds in the state.

7.2.4: Maintenance of well-planned crossbred animals at farmers' field.

Crossbreds produced by using boars of exotic breed(s) mated with Indigenous nondescript pigs as mentioned above with desired level of inheritance may be maintained and bred by *inter-se*mating for fixation of the genes at farmers' field. Selection of breeding boars may be made by evaluating their performance in respect of litter size and body weight at birth and weaning, age at first farrowing, body weight and measurements and weight gain of the initial crops of the progeny.

In order to generate the required number of pigs for slaughter to meet the demand of pork in the state, a three pronged development strategy is advocated as mentioned below-

(a) Each district of the State should set up at least one "Seed Stock Farm" to provide superior germplasm to the Multiplier Pig Farms / Self Help Groups / Farmers' Societies.

(b) Each subdivision should have at least two "Multiplier Farms". However, thickly populated districts where piggery is popular should have at least three such farms.

(c) In addition, each subdivision of the districts should form at least 100 Self Help Group/Farmers' Societies/Clubs who will take up this pig-rearing venture.

(d) Interested and trained pig farmers in in field will be provided with good quality improved crossbred pilets/gilts/sows/boars of desired breed combinations from the Pig breeding and nucleus farms for scientific rearing, breeding and production of piglets for maintenance by small holders for fattening and production of pork.

7.2.5: Expansion of infrastructure and support mechanism to propagate the elite germ plasm through Artificial Insemination (AI).

Artificial insemination (AI) technology will be introduced/strengthened in all the Government Pig breeding farms as well as in some village herds initially by adopting nearby villages from the Pig breeding farms and multiplier farms. Initiation will be made by using fresh semen for the purpose and gradually frozen semen will be used based on the facilities available and created. Besides collection of semen from outstanding locally available boars of selected breeds, efforts will also be made to import frozen semen from other countries to develop elite herds and improvement of local germ plasm.

The following pig breeding farms of the state are selected to start the activities by developing suitable infrastructure and other facilities:

1. Pig Breeding Farm,Nongpiur,East Khasi Hills District
2. Regional Pig Breeding Farm,Kyrdemkulai,RiBhoi District
3. Pig Breeding Farm,Khliehtyrshi, West Jaintia Hills District.
4. Pig Breeding Farm, Gindo, West Garo Hills District.

Pig semen laboratories will be established in these farms along with a state level central laboratory for procurement of frozen semen of outstanding quality from outside sources, processing and preservation of locally collected semen from good quality boars of different breeds at regular interval.

Man power development will be made to implement the AI programmes through training of required number of personnel.

7.3: BREEDING PLAN AT GOVT.PIG BREEDING FARMS:

Policy recommended for Government pig breeding farms and strategies suggested for implementation of the breeding programmeas per plan are as follows:

(a) Purebred lines of the pigs of chosen exotic breeds may be bred/maintained and produced in organized Pig breeding farms of the State Department of Animal Husbandry and Veterinary.

(b) Artificial insemination will be followed for breeding besides natural mating developing suitable facilities and required trained manpower. Semen will be collected from selected boars on the basis of their performance and superiority in the farm for the purpose. Rotational use of boars will be made with other farms in order to avoid inbreeding and introduce genetic variability. Frozen semen technology will be introduced after its standardization. Frozen semen may also be imported to introduce superior genetic merit of desired traits from other countries/sources.

(c) Selection of breeding boars may be made by evaluating their performance in respect of litter size and body weight at birth and weaning, age at first farrowing, body weight and body measurements and weight gain of the initial crops of progeny. Selection Index will be designed by the farm for efficient selection of the animals of outstanding merits.

(d) Elite crossbreds of superior genotypes with designated inheritance level of exotic breeds with local will be produced and raised with planned breeding for production of breeding boars, gilts and piglets for distribution to the multiplier farms and field.

(e) Animals for breeding should be certified by the Department of AH & Veterinary for which necessary guidelines will be developed.

7.3.1: Selection of breeding /replacement stock:

The following guidelines will be followed for selection of breeding animals:

(a) Selection of males is to be done in two stages:

(i) In the first stage two male piglets may be selected from each litter at weaning.

(ii) In the second stage two males against each sire line at the age of six monthsmay be selected to make the total number to 20 males with a target to utilize ten boars of the ten sire-lines for breeding.

(b) Selection of females to be done in two stages:

(i) In the first stage, 3 female piglets will be selected from each litter at weaning.

(ii) In the second stage, 15 females will be selected against each sire line considering not morethan two gilts per dam,at the age of six months to make the total number to 150females for breeding to ensure 100 farrowings.

7.3.2: Identification and traceability:

A systematic process of identification, registration and recording of animals will be done to keep track of the individual animals. On successful operationalization of the above, attempts will be made to implementa system to keep track of the value chain in respect of germ-plasm and foodsafety protocols.

7.4: BREEDING PLAN TO BE FOLLOWED IN THE STATE:

1. The breeding programmes will be followed as structured in the breeding pyramids through the Central Nucleus Breeding Scheme (CNBS) as depicted in Figure 1 and Figure 2.

Figure 1: Breeding pyramid

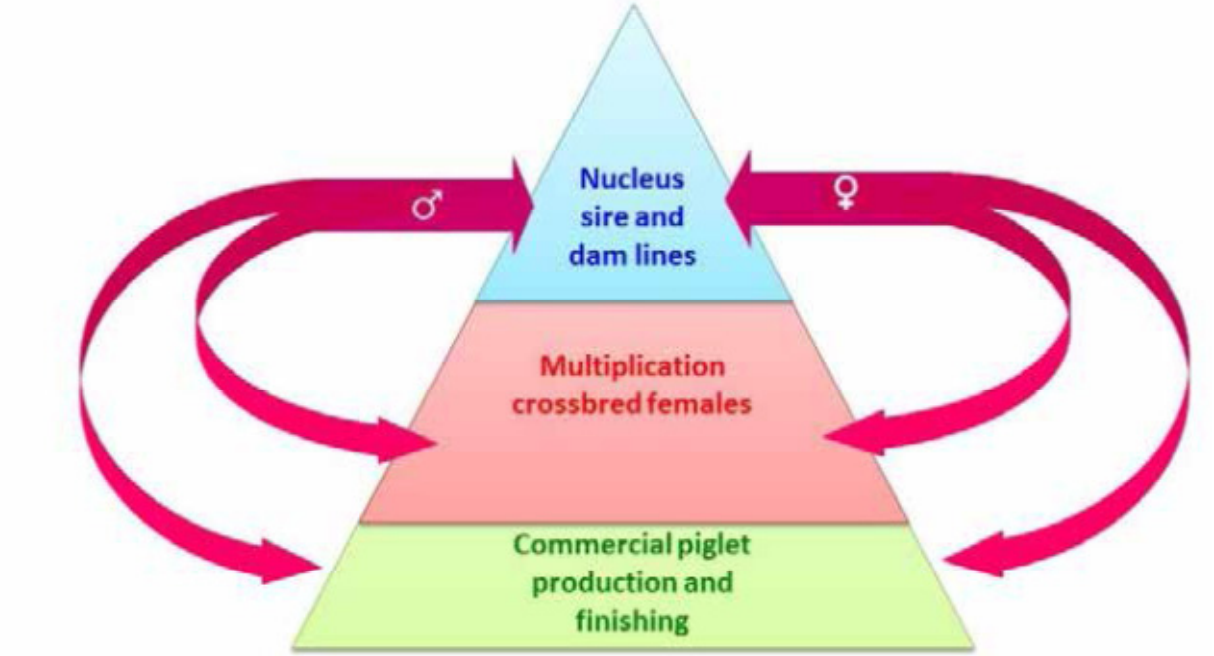
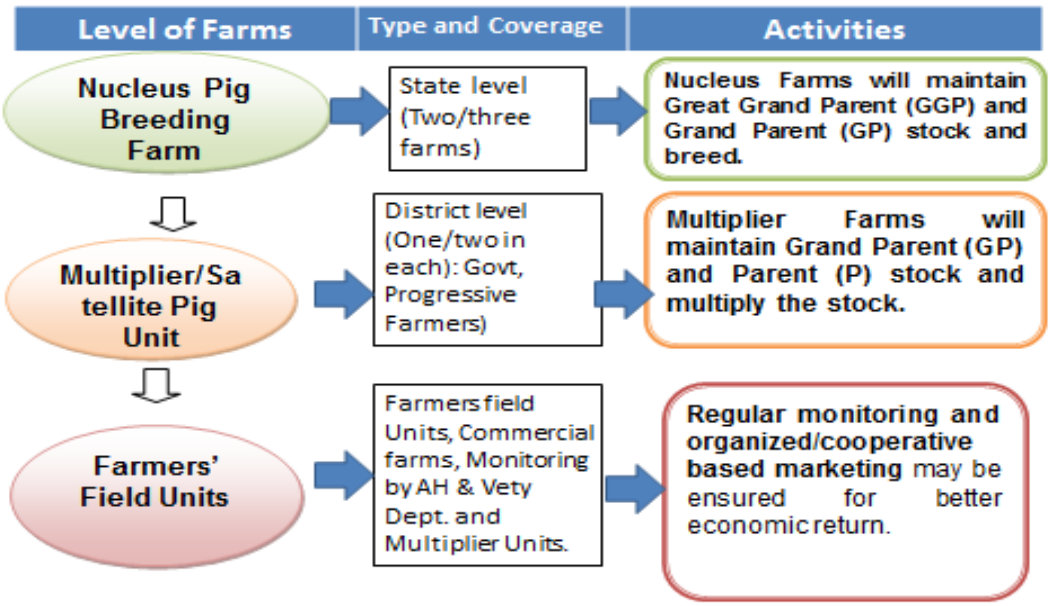


Figure 2: Breeding plan



2. Open Nucleus Breeding Scheme (ONBS) will be followed for Indigenous NiangMegha and elite crossbred pigs.

This system envisages formation of a nucleus population of breedable animals of exceptionally high genetic merit. Nucleus herds of exotic/indigenous pigs can be established in the stations/farms located in or around district/zonal headquarters where infrastructure, manpower and other facilities are readily available or can be developed with minimum effort. The outstanding breedable males are to be let out from the nucleus herd to the farmers or breeders in the neighbouring areas to bring about genetic improvement of their animals.

This system will be useful under the conditions in the state of Meghalaya where field data recording and Artificial Insemination is being introduced gradually along with necessary infrastructure facilities.

7.5: Plan of work for ONBS:

1. Screening of the unrecorded base population for identifying some outstanding females.
2. Collection of the outstanding females to form a nucleus herd which would be used as test group of animals.
3. Production of semen from good quality boars and A.I. of the gilt/sows in participating herds in field and production of progeny.

4. The best males are to be selected on the basis of their own performance as well as on dams' and siblings' performances. They are then to be extensively used in the field.
5. ONBS can be tried for genetic improvement of crossbred population for which some nucleus herds of about 200 animals are to be established in different zones of the State considering the magnitude of the crossbred population. The outstanding animals collected from the field after their screening will form these nucleus herds. In the Nucleus herds, besides other, facilities for proper recording systems must be there so that the best boars can be selected on the basis of available records of their dam, sibling and own records. Simultaneously, a system should also be there for recording of at least these females' progenies, which would be collected and used as replacement stock in the field. To start with, if facilities are developed, ONBS can be initiated in pig breeding tracts in and around Department headquarters.

7.6: Technical Plans for pig breeding in field units:

1. Boar/semen of selected pure exotic/crossbreds pigs from nucleus herds/Government Pig breeding farms will be providedto farmers in the rural areas for breeding their Indigenous/nondescript pigs.
2. Boar/semen of pure/straight bred pigs from nucleus herd of Hampshire/ Large Black/ saddleback/Duroc and other chosen breed will be provided to commercial/progressive farmers forbreeding their animals and to multiplier farms to produce 50 percent Hampshire/Large Black/Saddleback/Duroc crossbreds and others chosen for the purpose.
3. Boar/semen of 50 percent exotic Hampshire/Large Black/Saddleback/Durocetc. inheritance produced in multiplier farms will besupplied to farmers to breed their local animals or for rearing for commercialpurpose towards increasing the number of good quality piglet production.
4. Some of the existing Government farms in districts will be converted into multiplier farms. Private entrepreneurs will also be encouraged to start multiplier farms forproducing crossbreds as mentioned above.

7.7: Establishment of Multiplier farms:

The state Govt. will establish Multiplier farms in different districts and also encourage and support private farmers/entrepreneurs to establish Multiplier farms through bank linkage to produce crossbred pigs with 50 percent or more exotic inheritance as recommended. Multiplier farms will be established in each district with 20 to 30 sow families of selected/preferred

crossbreds. The Multiplier farms may follow *inter-se* mating of the half breds and may also breed for increased exotic inheritance level depending upon the feasibility to produce good quality piglets for distribution to field farmers for fattening. The multiplier farms will select the boars and gilts/sows for breeding on the basis of the performance records of their pedigree/family. The farms may follow rotational mating of boars and exchange the boars from other farms to avoid inbreeding.Sows completing 3rdor 4th farrowingmay be disposed of and new selected gilts/sows may be brought in for breeding.

The multiplier farms will act as a source of piglets for the rural farmers for fattening purpose as well as the slaughter house by disposing the excess and culled animals.

Selected surplus malesmay be provided to the field units, boar rearers to replace their poor quality stock and to avoid inbreeding effect in the herds.

Castration may be done for non-selected males for breeding to prevent them from breeding and to improve their meat quality.Un-productive and infertile sows may be culled from time to time from the herd.

7.8: Ensuring adaptability of theintroduced breeds and crossbreds propagated to local environmental conditions and emerging climatic challenge.

The exotic pig breeds introduced in the state from time to time namely Large Black, Hampshire, Large White Yorkshire, Duroc and Saddleback and T&D crossbred etc. are found to be adapted for crossbreeding of local indigenous breed and nondescript pigs. These breeds/crossbreds while breeding for propagation of the future generations, efforts will be made to the following for making them adaptable to the emerging climate change without losing their productivity and resistance to environmental changes and diseases.

Information on meteorological data like atmospheric temperature, humidity and rainfall will be regularly maintained and analyzed from time to time on the changes on seasonal/yearly basis to correlate it with the performance of the animals in regard to their growth, reproduction and production traits and disease pattern. Accordingly measures on breeding management and housing will be taken up from time to time so that productivity of the animals is not affected adversely. Efforts will also be made to monitor and regulate the reproductive traits of the animals by ameliorating the stress factors due to probable climate change. Pig shelter and housing parameters will be designed for optimum comfort along with improvement in management systems to minimize climate stress.

7.9: Strengthening support mechanism and development of various sectors for implementation of the Policy:

7.9.1: Infrastructure: Establishment of Nucleus herds:

- Nucleus Pig breeding herds are to be developed for successful implementation of the various recommendations of the breeding policy in regard to the maintenance and production of suitable and required number of breeding stock of high genetic merit of the exotic, crossbreds and NiangMegha. The Nucleus herds are to be located in appropriate places to cater into the need of all the districts and the state. Additional number of Nucleus herds may also be developed in private sector. These herds may maintain the recommended and chosen exotic breeds and crossbreds.
- Considering the popularity and performance at farmers' field exotic breeds with black body colour may be imported as per government norms for development of nucleus herds.
- The nucleus herd of indigenous NiangMeghapig has to be established inthe proposed Government pig breeding farm in a location in the native breeding tract of the breed.
- The Nucleus farms should have all the facilities in regard to housing, feeding and management such as sheds for farrowing, piglets, grower, replacement and parent stocks as required for each breed, Feed store, water supply provisions, water treatment plant wherever necessary and distribution system to individual pen, Sewage treatment plant and pits, boar sheds separately for each breed, Semen collection sheds, Artificial insemination sheds with all amenities, semen processing laboratory etc. Establishment of satellitesemen centers with facilities of semen storage in the area of operation will be necessary to expand the AI activities in field units.
- Feed mill with a production capacity of about 10-15 quintals production or more per day having a storagecapacity of 500 quintals also may be established for production of quality compounded feed at reasonable cost. All the free land of the Pig breeding farms and Nucleus herds will be utilized for production of feed crops, Tapioca etc.

7.9.2: Feeds, Fodder and Nutrition:

- Introduction of feed processing technology and fodder cultivation (particularly Tapioca) to be made for improving the animal feed and fodder scenario in the state.

- Optimum nutritional plans and low cost feed formula with locally available feed ingredient to be formulated and used. Improvement of nutritional status of the animals in respect of micro- nutrient availability to be made.
- The locally available pig feed ingredients of the state such as rice polish, maize etc. may be made available through increased production to the local feed manufacturers/mills and pig farmers. The feed ingredients which are procured from outside the state, the price may be fixed at a reasonable rate by the Government. Production of quality feed at Govt. level will initiate a healthy competition among the private enterprises to sell their feed at a reasonable rate to the benefit of pig farmers.

7.9.3: Processing and production technology:

- Modern Slaughter house(s) will be established for adoption of scientific and humane method of slaughter, carcass quality assessment, certification, packaging and marketing of meat and meat products. This can be done PPP mode or in collaboration with private company or entrepreneurs.
- Surplus and perishable meat products may be processed and marketed with value-addition.
- Marketing channel and network be organized for distribution of marketed animals and pork.Cooperative system, SHGs may initiated/strengthened and expanded along with Livestock Corporation in the state.

Chapter 8

8.1: OTHER SUPPORT SYSTEMS FOR BOVINE AND PIG BREEDING POLICY

8.1.1: Animal Health, Disease Control and Bio-security measures:

- Disease surveillance and monitoring for incidence of diseases in animals may be strengthened. Regular reporting may be made for control of important diseases for sustainable production.
- Periodical health care and vaccination camps may be organized in the field/livestock rearing areas.
- Interstate check post may be strengthened to provide strict vigilance with facilities for screening of the animals before certification for movement.
- Some of the important facilities to be created in order to prevent disease incidence and to tighten the bio-security measures are: Setting up of check gate and quarantine stations at the point of entry to Meghalaya, Regular vaccination against prevailing and other emerging diseases in pigs (FMD, CSF etc.), cattle (FMD, HS, BQ etc.) and other livestock, Standard operating protocol to prevent spread of diseases and infection, and Postmortem facilities and incinerator.

8.1.2: Manpower requirements:

Support in terms of human resource will be required to implement the policies and programmes and manage the livestock breeding and development scenario in the state. Required number of officers and staff in each farm has to be placed for various categories such as Farm Manager, Animal Breeder and reproduction specialists, Assistant Farm Manager, all having the required qualifications and training in related fields.Livestock Supervisor, Veterinary Field Assistants for Farm, Laboratory, fodder field, feed mill, health care etc. will have to be also provided besides the required number of Farm, Animal and laboratory attendants, office staff etc.

8.1.3: Training and capacity building:

In order to properly implement and execute the breeding policy, suitable human resources are to be placed in various positions and regular training has to be imparted in the state or outside for the followings:

- Training of trainers and officers on Breeding management,Farm management, Traceability, Food safety, Value addition and value chain in pig industry, Artificial Insemination(AI) technology, Semen processing and preservation, Health and disease management, Training

for Para-vets on Training boars for semen collection, Disease management, Farm management, Feed processing etc.

- Training and refreshers' courses periodically for the Field Veterinary Officers as well as the Para veterinarians, entrepreneurs and farmers.
- Training for community level workers on awareness creation and community mobilization, Awareness and training for farmers on care and management of pigs, marketing, food quality and safety including zoonosis.
- Training of farmers, unemployed youths, women, SHG members on management practices and technology providing suitable package of practice on breeding, feeding, management, marketing etc. to be provided.
- A package of practice on management and control of diseases for different categories of animals may be evolved and suggested for field application.

8.1.4: Marketing/disposal of animals:

- Development of organized marketing network may be made for disposal of the farm produce by the farmers.
- Incentive price may be fixed by the Government for the animal products in the State so that the farmers get remunerative price for economic farming and earn their livelihood.
- Proper guidance in the marketing procedures is felt essential and hence Government may initiate a Livestock and Poultry corporation to deal with all these matters.

8.1.5: Follow up action by a group of experts in an effective way:

- Effective follow up action will be taken up by the Department to monitor the progress of implementation of policies and achievements made. A Technical Committee may be constituted for the said purpose by the Government.

8.1.6: Extension Network:

- The success of any project like genetic improvement of livestock and poultry in a state would largely depend on proper execution of the programmes and peoples participation besides farmers' acceptance. The extension network of the state A.H. & Veterinary Department has to play a vital role in this regard. The information wing of the department must organize programmes from time to time to disseminate the information and technical knowhow to the people.

- Awareness programmes should be undertaken at regular interval with the aid of Information and Communication Technology (ICT), audio-visual display, film shows, distribution of pamphlets, radio talk, display boards, shows, fairs etc.
- Awareness about mixed/integrated and organic farming may be made amongst the farming community through various extension networks.
- A package of practice on management and control of diseases for different categories of animals may be evolved and suggested for field application.

8.1.7: Animal production/performance data and Health information system:

- Data collection and performance recording system may be developed and meticulously followed in the farms and field. Farmers may be made aware of the importance of data recording and trained from time to time along with other training programmes.
- The Department may adopt a policy to collect information in regards to different aspects of animal production, animal health, developmental activities etc. through MIS technology. Under this Animal Production and Health Information System, a computer based networking system may be established enabling faster flow of information. The network is to cover all the districts of the state.
- The Department of A.H. & Veterinary may also launch and update its own website to provide access to vital information and activities pertaining to the department and the programmes. The computer network facilities and the website will help the farmers, breeders, planners, veterinarians and others providing easy information access for successful implementation of the policies.

8.1.8: Livestock Insurance:

- The department should initiate a comprehensive livestock insurance scheme in collaboration with appropriate agencies to extend the benefit of insurance cover of the valuable animals reared by the farmers. The animals purchased by the farmers under Bank loan/DRDA scheme are generally insured by the Insurance Companies. The Department of A.H. & Veterinary should streamline the entire issue of livestock insurance to protect farmers' interest.

8.1.9: Collaboration:

- In order to be successful in implementation of the breeding policies close collaboration of the Department of A H & Veterinary of Meghalaya with different other States of North Eastern Region; National Research Centres on Pig, ICAR, located in the NE Region;

ICAR complex, Barapani; NBAGR, Karnal, Agricultural Universities located in the region, etc. would be made as and when required.

8.2: ADDITIONAL RECOMMENDATIONS TO IMPLEMENT THE POLICIES

The following additional recommendations are made for implementation of the Cattle/Bovine and Pig breeding policy:

(1) Required fund for proper implementation of the policies and development of infrastructure may be allocated and provided as per the programmes.

(2) The proposed breeding policies for the state of Meghalaya will be implemented by the A.H. & Veterinary Department. Any effort for Cattle/Bovine and Piggery development by individuals, public organizations and non-government organizations etc. must be in conformity and within the purview of the proposed policies. Thus, the policies will be mandatory for the state of Meghalaya.

(3) In order to develop a pool of improved germ plasm of livestock/breeds as envisaged in the policy, provisions may be made for procurement/import of breeding stock/semen from national and international organizations/sources.

(4) A technical committee may be constituted to monitor and evaluate the implementation of the policies. This committee will also act in the advisory capacity.

(5) Each Breeding farm will have a Farm Advisory committee to see the progress of the farm and provide suggestions from time to time.

(6) Artificial Insemination may be carried out by the veterinarians or trained technicians (Para veterinarian) under the supervision of the qualified veterinarians. The scrub bulls are to be castrated in the areas covered under A.I. programme in cattle.

(7) The A.H. & Veterinary Dept. Meghalaya will carry out farmers' awareness programme on the policies and record keeping system. Necessary formats for keeping records in farms/stations and also in field by the farmers be developed and distributed.

(8) Human resource development and management must get priority in the state so that the qualified and trained manpower can be increased and utilized effectively to handle the policies successfully.

(9) Training/refreshers course for field veterinary officers on different areas of breeding, reproduction, management, nutrition, health cover etc. may be conducted/organized for effective implementation of the policies.

(10) An organized marketing system with the required facilities may be developed in collaboration with all concerned agencies and corporations.

(11) Impetus may be given to the small scale as well as large scale industries to handle the animal products for value addition and marketing.

(12) Improvement in extension network of the state utilizing modern ICT and mobile technology, Entrepreneurship development and farmers training must be carried out on priority to implement the policies and improve the livestock and poultry production scenario of the State.

8.3: WORK/ACTION PLANS TO BE PREPARED BY THE DEPARTMENT

For implementation of the policies, detailed work/action plans with appropriate time frame may be prepared in accordance with the guidelines of the policies by the experts and State Departmental officials for the followings:

(1) Establishment and revamping of Cattle and Pig Breeding farms as per need of the policy. Identification and utilization of the existing breeding farms for the purpose.

(2) Action plan for identifying the areas where a specific breeding plan and breed(s) to be introduced in different districts/zones/agro-climatic zones/production systems.

(3) Detail plans for breeding and evaluation of breeding bulls, boars as well as females.

(4) Work plan for semen production in different production centres and distribution in respect of cattle and pigs.

(5) Breeding plans for straight/cross breeding of buffalo with selection.

(6) Plan for implementation of data and milk recording system.

(7) Open Nucleus Breeding System (ONBS) plans in designated areas for cattle and pig.

(8) Establishment of elite herd(s) of indigenous cattle, NiangMegha pigs for their conservation.

(9) Plan for production and use of indigenous/cross bred bullocks as draught animals.

(10) Scheme for adoption of MOET in designated areas.

(11) Indigenous fodders be identified which are relished by the farm animals and strategies formulated for fodder development. Plans for cultivation of perennial fodders in large scale such as Napier, Guinea, Para etc. Maize cultivation in a massive scale in the state to become self-sufficient in its requirement not only as fodder but also as a vital and important feed ingredient for concentrate feed.

(12) Farmers training, training of unemployed youths and women, awareness camp for implementation of the policy, data recording system in field, etc.

(13) Animal production and health information system, computerization, data bank and networking, website updating.

(14) Scheme for Livestock Insurance, credit, etc.

(15) Restriction/check in movement of animals from and to the State by crossing state and international boundaries.

CONCLUSION

The Meghalaya Bovine and Pig breeding policy has been framed to augment productivity of Cattle, Buffaloes and Pigs of the state for higher production of milk, meat and other animal products and sustainable adoption of suitable breeding and production systems for economic upliftment of the farming community and boosting the livestock industry for attaining self-sufficiency in animal protein requirements of the people of the state. This policy will be mandatory for the state and once implemented will raise production and contribute towards sustainable animal husbandry practice of the farmers and provide income generation and assured livelihood to the people including farmers, youths and women of the state. Besides recommending strategies for bovine and pig genetic improvement, some important recommendations have also been made for development of work plans as per need for fruitful implementation of the policies. The implementation of the policy would improve the livestock production system with better adaptability of the genetically improved animals under changing climatic condition and management needs. It is also expected that once implemented the breeding policy will gradually minimize the gap between production and demand of the milk, meat and other animal products in the state and ultimately lead the state towards self-sufficiency. The progammes developed as per the policy recommendations will be supported by appropriate production system ensuring optimum and economic feeding and management of the animals, adequate animal health care and disease control, assured organized market for animal products, adequate post-harvest processing and value addition of animal products for sustainability of livestock farming and economic upliftment of farming families as a whole. The policy once implemented will raise production and contribute towards sustainable animal husbandry practices, enhance rural livelihood, industrialize the dairy and piggery sectors thereby enhancing Gross Domestic Product (GDP) growth of the state of Meghalaya.

ANNEXURE - I

GOVERNMENT OF MEGHALAYA
ANIMAL HUSBANDRY & VETERINARY DEPARTMENT
::::::::::::::::
ORDERS BY THE GOVERNOR
NOTIFICATION

Dated Shillongthe 15th April, 2008

No. **VET(SCH)206/2000/222** – The Governor of Meghalaya is pleased to re-constitute the Technical Committee for framing of Breeding Policy for Cattle and Buffalo of the State under Centrally Sponsored Scheme 'National Project on Cattle and Buffalo Breeding' with the following members and until further orders.

1.	Dr.Dharmeswar Das Dean-cum-Joint Director (Academic) IVRI-Izatnagar, Bareilly, U.P.	-	Chairman
2.	Director of A.H & Veterinary Department, Meghalaya, Shillong	-	Member
3.	Joint Director (AHP) A.H & Veterinary Department, Meghalaya, Shillong	-	Member
4.	Joint Director (Hq) A.H & Veterinary Department, Meghalaya, Shillong	-	Member
5.	Deputy Director (Hq) A.H & Veterinary Department, Meghalaya, Shillong	-	Member
6.	Deputy Director (Planning) A.H & Veterinary Department, Meghalaya, Shillong	-	Member Convener

The Terms of reference are :-

1. The Committee will formulate breeding policy for Cattle and Buffaloes in the State of Meghalaya to augment milk production and sustainable growth.
2. Formulate breeding policy for improved draft and meat production through production of quality germplasm of Cattle and Buffaloes.
3. The Committee may visit any farm and places within the State to form a database while formulating the policy.
4. The Committee may recommend other necessary action plans require to be adopted for implementing the policies.

Sd/- D.K.Dkhar, IAS
Commissioner & Secretary to the Govt. of Meghalaya
A.H & Veterinary Department.

Memo No.**VET(SCH)206/2000/222-A** Dated Shillongthe 15th April, 2008

Copy to :-

1. Dr.Dharmeswar Das, Dean-cum-Joint Director (Academic), IVRI, Izatnagar, Bareilly, U.P.
2. Director of A.H & Veterinary Department, Meghalaya, Shillong.
3. Joint Director(AHP), A.H & Veterinary Department, Meghalaya, Shillong.
4. Joint Director(Hq), A.H & Veterinary Department, Meghalaya, Shillong.
5. Deputy Director(Hq), A.H & Veterinary Department, Meghalaya, Shillong.
6. Deputy Director (Planning), A.H & Veterinary Department, Meghalaya, Shillong.
7. Financial Adviser, A.H & Veterinary Department, Meghalaya, Shillong.
8. Office Copy.

By Orders. Etc.,
Sd/-
Under Secretary to the Govt. of Meghalaya
A.H & Veterinary Department, Shillong.

ANNEXURE- II

GOVERNMENT OF MEGHALAYA
ANIMAL HUSBANDRY & VETERINARY DEPARTMENT
ORDERS BY THE GOVERNOR
NOTIFICATION

Dated Shillongthe 6th November, 2008

No. **VET(SCH)206/2000/277**– In pursuance to this Department's Notification No. VET(SCH)206/2000/222 dt.15.4.2008, the Governor of Meghalaya is pleased to re-constitute the Technical Committee for framing of Breeding Policy for Cattle and Buffalo of the State under Centrally Sponsored Scheme 'National Project on Cattle and Buffalo Breeding' with the following members and until further orders.

1. Dr.Dharmeswar Das Dean-cum- Director (Academic) IVRI-Izatnagar, Bareilly, U.P.	-	Chairman
2. Director of A.H & Veterinary Department, Meghalaya, Shillong	-	Member
3. Joint Director (AHP) A.H & Veterinary Department, Meghalaya, Shillong	-	Member
4. Joint Director (Hq) A.H & Veterinary Department, Meghalaya, Shillong	-	Member
5. Deputy Director (Hq) A.H & Veterinary Department, Meghalaya, Shillong	-	Member
6. Deputy Director (Planning) A.H & Veterinary Department, Meghalaya, Shillong	-	Member Convener

The Terms of reference are :-

1. The Committee will formulate breeding policy for Cattle and Buffaloes,Pig,Sheep,Goat and Poultry in the State of Meghalaya to augment milk,Meat and Eggs production and sustainable growth.
2. Formulate breeding policy for improved draft and meat production through production of quality germplasm of Cattle and Buffaloes.
3. The Committee may visit any farm and places within the State to form a database while formulating the policy.
4. The Committee may recommend other necessary action plans require to be adopted for implementing the policies.

Sd/- P.Naik, IAS
Commissioner & Secretary to the Govt. of Meghalaya
A.H & Veterinary Department.

Memo No.**VET(SCH)206/2000/277-A** Dated Shillongthe 6th November, 2008

Copy to :-

1. The Commissioner & Secretary to the Govt.of Meghalaya.A.H & Veterinary Department.
2. Dr.Dharmeswar Das, Dean-cum-Joint Director (Academic), IVRI, Izatnagar, Bareilly, U.P.
3. Director of A.H & Veterinary Department, Meghalaya, Shillong.
4. Joint Director(AHP), A.H & Veterinary Department, Meghalaya, Shillong.
5. Joint Director(Hq), A.H & Veterinary Department, Meghalaya, Shillong.
6. Deputy Director(Hq), A.H & Veterinary Department, Meghalaya, Shillong.
7. Deputy Director (Planning), A.H & Veterinary Department, Meghalaya, Shillong.
8. Financial Adviser, A.H & Veterinary Department, Meghalaya, Shillong.
9. Director of Printing & Stationary,Meghala,Shillong for favour of publication inthe Gazette.
10. Office Copy.

By Orders. Etc.,
Sd/-
Under Secretary to the Govt. of Meghalaya
A.H & Veterinary Department, Shillong.

ANNEXURE- III

MINUTES OF THE TECHNICAL COMMITTEE MEETING FOR FRAMING OF BREEDING POLICY FOR CATTLE AND BUFFALO OF THE STATE UNDER THE CENTRALLY SPONSORED SCHEME "NATIONAL PROJECT on CATTLE & BUFFALO BREEDING" HELD ON 11th JULY 2008 AT 11:00 AM IN THE OFFICE CHAMBER OF THE DIRECTOR OF A.H & VETERINARY DEPARTMENT, MEGHALAYA, SHILLONG.

Members present :

1. Dr.Dharmeswar Das, Chairman, Dean-cum-Joint Director (Academic), I.V.R.I., Izatnagar, UP.
2. Dr. D. Khonglah, Member, Director, A.H & Veterinary Department, Meghalaya, Shillong.
3. Dr. R.B. Massar, Member, Joint Director(AHP), A.H. & Vety. Deptt., Meghalaya, Shillong.
4. Dr. L. Lyngwa, Member, Joint Director(Hq), A.H. & Veterinary Deptt., Meghalaya, Shillong
5. Dr. E. Pyrbot , Member, Deputy Director(AHP), A.H. & Vety Deptt., Meghalaya, Shillong
6. Dr. E. Bareh, Member-Convener, Deputy Director (Planning), A.H. & Veterinary Deptt., Meghalaya, Shillong
7. Dr. B.W. Momin, Invitee , Joint Director(Tura), A.H. & Veterinary Deptt., Meghalaya, Shillong
8. Dr. T.B. Newar, Invitee, Project Officer, ICDP, Tura, West Garo Hills District.

At the very outset, Dr.Dharmeswar Das, Chairman of the Technical Committee for Framing of Breeding Policy for Cattle & Buffalo of the State of Meghalaya under CSS-"National Project on Cattle & Buffalo Breeding" (NPCBB), welcomed all the members of the Committee as well as Invitees present. He highlighted on the task entrusted to the Committee as per terms of reference for framing the Breeding Policy for Cattle & Buffalo of the State. The Chairman explained that while formulating breeding policy, detail information/ data pertaining to the purpose needs to be collected. He further mentioned that the present data being collected may not be sufficient to suffice the requirement, perhaps still more data may be collected, if necessary.

Threadbare discussion was made and accordingly decisions were taken as recorded below :-

1. First draft of Breeding policy will be prepared and this shall be circulated to all members of the Committee, District and Sub-Divisional AH & Veterinary Officers, Livestock & Poultry Farm Managers for views and comments. It was suggested that while framing Breeding Policy, other species like pig, sheep, goat and poultry should also be included besides cattle and buffalo. Hence, in order to enable the Committee to cover other areas, it was decided to modify the existing terms of reference with approval from the concern authority. It was felt that meeting for discussion and interaction with other technical officers and progressive farmers is necessary to be arranged so as to gather more information and also to know the actual requirement and demand for further improvement of livestock and poultry at the grass root level.
2. The meeting decided to collect more information/data from District, Sub-Division and village level with the assistance of field officers and staff as follows :-

- ☞ Agro-climatic zone – on the basis of All India and State.
- ☞ Profile of the State/District (separately) on (i) Geographical area, (ii) Forest area, (iii) Cultivable land.
- ☞ Human population – district-wise, density of population per sq.km.
- ☞ Literacy rate.
- ☞ Metrological data.
- ☞ Health status & service at State level.
- ☞ Information on Cattle & Buffalo farms, present status of Bull Rearing Centres.

3. Action by officers & field staff of District, Sub-Division, ICDP, livestock & poultry farms on the following :-

☞ Agriculture scenario and its allied – farming and production system :-

i. Livestock farming/Agriculture farming/mixed farming.
ii. Type of animals – local/crossbred/exotic [Pl. indicate the name of breed(s)] – Name of crossbred with its morphology.
iii. Type of farming – backyard/commercial/intensive/semi-intensive.
iv. No. of animal rear in each household (species-wise).
v. Age at first calving/farrowing/kidding/laying.
vi. Production – Milk yield (litre/day & total yield per lactation)/ litter-size at birth/litter-size at weaning/Number of kid per kidding/ No of kidding per year/Nos.of egg per laying period/birth-weight(male/female)/Adult body weight(male/female) and average Productive age.
vii. Mortality rate (with reason), susceptible/prevalent diseases, any outbreak of disease (species-wise) and No. of outbreak.
viii. Morphological description of local breed (non-descript) of animal with photograph.
ix. Feeding system – type of feed – type of ingredients in case of home-made feed – At Govt. farm/commercial farm/ individual farm.
x. Labour component – Nos. of labourer engaged.
xi. Production cost of livestock and poultry products.
xii. Nos of family solely depending on livestock farming.
i. Availability of water & its source of water for farming operation.
j. Percentage of household in District/sub-division/village engaged in livestock farming/mixed farming.
k. Breedable animal district/sub-division-wise (cattle).
l. Road connectivity – metallic/non-metallic road.
m. No. of Veterinary Institution, its location & facilities available– Hospital/dispensary/VAC/ Stockman/KVC/Farm, etc.
n. No. of villages – District/Sub-Division-wise.
o. Power supply – District/Sub-Division-wise.
p. Type of animal preferred by farmer for farming – District/Sub-Division-wise.
q. Market – nearby market (weekly/daily market), mode of marketing of livestock & poultry (breeding/fattening/slaughtering), approximate number of animal (species-wise) sold in the market for rearing (breeding/fattening) and availability of transport facility.
r. Nos. of Co-operative Societies/SHG/other organization involve in livestock farming activities in each District/Sub-Division.(Pl. indicate the activities of such organization - production/marketing of livestock or both).

Action by ICDP

s. LN Plant – production unit/quantity produced monthly/annually, production cost, LN2 utilized monthly, quantity purchased from outside.
t. Nos. of breeding bulls for AI and NS (breed-wise) available in the State. Bulls maintained & their standard, age, Dam's yield, Sire-dam's yield, source of procurement of bull/farm-born, span for semen production.
u. Nos. of breeding bulls for NS, area of distribution.
v. <u>Semen production scenario</u> – Breed use for semen production, doses of semen produced, doses of semen required to cover for breedable cows, semen purchased from outside, Area (village) covered under AI and NS. Number of breeding bulls require for production of required semen-doses. Quality of semen produced as per MSP by each bull (average).

i. Nos. of AI done – conception rate – AI calf-born – percentage of mortality.
ii. Present network of AI service – by flowchart.

Action by Managers Feed Mill

w. Feed Mill – Govt Mill: daily & monthly production of concentrate feed, daily & monthly supply to Govt. & private farms (species-wise). Private Mill – daily & monthly production of concentrate feed, daily & monthly supply to Govt. & private farms (species-wise).
x. Feed & fodder resources–Type of fodder available (green & dry), quantity of fodder available, monthly & annual requirement, availability of fodder land, Land tenure system, etc.
y. Seasonal livestock production, reason of shortfall of livestock production.

5. The Committee may examine and suggest for establishment of Bull Mother Farm in the State.
6. Further, it was suggested that while formulating breeding policy, proposal for constitution of State Livestock & Poultry Development Board may be worked out if necessary.
7. After thorough discussion, it was felt necessary to request the Department of A.H & Veterinary, Meghalaya to provide some fund to the Technical Committee to meet the expenses involving preparation of State Breeding Policy, Traveling Expenses for field visits, contingencies, etc.

The Chairman, while expressing his thanks to all members as well as to the Director of AH & Veterinary, Meghalaya for the co-operation being extended, once again stressed upon that the collection of data has to be made as quickly as possible.

The next meeting is proposed to be convened as soon as data is ready within a period of one month.

The meeting ended with vote of thanks to and from the chair.

Sd/-(Dr. E. Bareh)
Member-Convener

Sd/-(Dr.Dharmeswar Das)
Chairman

Memo No. MVD/DEV/NPCBB-12/2008/17-A Dated Shillongthe 11th September, 2008

Copy to :-

1. All members for information.
2. All District A.H & Veterinary Officers for information and necessary action.
3. Deputy Director, Regional Pig Breeding Farm, Kyrdemkulai, for information and necessary action.
4. Deputy Director, IDP,Upper-Shillong, for information and necessary action.
5. Senior Manager, Reg Poultry Breeding Farm, Kyrdemkulai, for information and necessary action.
6. Manager, Reg. Crossbred Cattle Breeding Project, Kyrdemkulai, for information and necessary action.
7. Manager, CH-cum-Poultry Farm, Umsning, for information and necessary action.
8. Project Officer, ICDP, Upper-Shillong/Tura, for information and necessary action.
9. All Sub-Divisional AH & Veterinary Officers, for information and necessary action.

Sd/-
Member-Convener

ANNEXURE – IV

MINUTES OF THE TECHNICAL COMMITTEE MEETING FOR FRAMING BREEDING POLICY FOR CATTLE AND BUFFALO OF THE STATE UNDER THE CENTRALLY SPONSORED SCHEME "NATIONAL PROJECT on CATTLE & BUFFALO BREEDING" HELD ON 14th JULY 2010 AT 11:00 AM IN THE CONFERENCE ROOM OF THE DIRECTORATE OF A.H & VETERINARY DEPARTMENT, SHILLONG.

Members present :-

1. Dr.Dharmeswar Das, Chairman, Dean-cum-Joint Director (Academic), I.V.R.I., Izatnagar, UP.
2. Dr. L. Lyngwa, Member, Director, A.H & Veterinary Department, Meghalaya, Shillong.
3. Dr. M. Gatphoh, Member, Joint Director(AHP), A.H. & Veterinary Deptt., Meghalaya, Shillong.
4. Dr. E. Pyrbot, Member, Joint Director(Hq), A.H. & Veterinary Deptt., Meghalaya, Shillong
5. Dr. E. Bareh , Member-Convener, Joint Director(Planning), A.H. & Veterinary Deptt., Meghalaya, Shillong
6. Dr. J.S. Jyrwa, Member, Deputy Director(Hq), A.H. & Veterinary Deptt., Meghalaya, Shillong
7. Dr(Mrs). B. Rapthap, Invitee , Project Officer, ICDP, A.H. & Veterinary Deptt., Upper-Shillong.
8. Dr. C.A. Sangma, Invitee, Project Officer, ICDP, A.H. & Veterinary Deptt., Tura.

At the very outset, Dr.L.Lyngwa, Director welcomed Dr.Dharmeswar Das, Dean-cum-Joint Director (Academic), IVRI, Izatnagar, Bareilly, U.P. as Chairman of the Committee who have come a long way to chair the meeting which is meant for preparation of draft Breeding Policy for Livestock and Poultry in the State of Meghalaya and also welcomed all the members present.

Dr. Das then gave the presentation of the First Draft materials for discussion and interaction and he requested the department and all concerned to provide further information for incorporation in the draft at the earliest possible so that the next sitting for discussion/interaction on the Second Draft could be held in time.

During the course of presentation of the draft, the following points were recorded for further necessary action.

1. Profile of the State of Meghalaya

(a). To provide the latest version of Statistical handbook, if available and to indicate the Year of publication and the course of collection including the name of the Publishers, etc. *Action to be taken by Deputy Director (Hq).*

(b). To collect recent information on forest area, land-use, power generation, road connectivity and agro-climate, zone-wise and/or district-wise in the following proforma (indicating also the source of materials and publication). *Action to be taken by all District A.H & Veterinary Officers.*

Name of the Agroclimatic zone/district

Area	
Forest	
Pasture and grazing land	
Number of Sub-divisions	
Number of Blocks	

Number of Circles	
Number of Villages	
Total population (……. Census)	
Percentage of cultivators	
Net area sown (in hec)	
Roads	

Livestock population :-

1. Cattle	:	5. Sheep	:
2. Buffalo	:	6. Poultry	:
3. Pig	:	7. Duck	:
4. Goat	:	8. Dog	:

etc.

Action to be taken by Livestock Census Officer.

(c). To collect information on metrological data for a period of atleast 5 (five) years. *Action to be taken by Veterinary Information Officer.*

2. To incorporate Livestock farming production System

Low ☞	Low input =	Low output =	Intensive =
Medium ☞	Medium input =	Medium output =	Semi Intensive =
High ☞	High input =	High output =	Extensive =

The above information is required so as to enable to formulate breeding policy in such a way that may encourage farmers to adopt the above production system.

3. Livestock Census

To include date of Livestock Census 2007 including Growth pattern of all species.*Action to be taken by Livestock Census Officer.*

4. Mandate envisaged by the Department of A.H & Veterinary

(i). To indicate what programmes/schemes that the Department intends to implement for the benefit of the people. What we should do to the State of Meghalaya, as follows –
   (a). Objectives to achieve such mandate.
   (b). Establishment set up – (to update the existing set up).
   (c). Approach and thrust area of the Department.
   (d). Major programmes including CSS viz, NPCBB, RKVY, etc.

(ii). Livestock Development – To prepare write up of the schemes.

(iii). Animal Health coverage – Objectives, achievements, disease prevalence (monsoon wise/zone-wise/season-wise).

(iv). Education and Training approaches of the Department.

(v). Dairy Development programmes.

(vi). Special Development programme on piggery.

(vii). To indicate the type and category of animals preferred by farmers – District-wise/zone-wise/species-wise.

Action to be taken by the Joint Director (Planning).

5. Production status of the State

To provide upto-date information on –

(i). Livestock census, 2007

(ii). Estimation on milk, meat and egg production and its projection on per-capita availability and gap based on national average.

Action to be taken by the Deputy Director (Statistics).

6. Information on Infrastructural facilities of A.H & Veterinary as on March , 2010 or the latest.

7. Information on breedablecatlle population : District-wise, upto-date data on –

(i) Nos of Exotic, Crossbred, Indigenous cattle & Buffaloes.

(ii) Semen production scenario, A.I coverage, breed of cows covered under AI, calf born, etc.

(iii) Percentage of mortality and reason thereof.

(iv) LN Plant, production of Liquid Nitrogen in the State, procurement of Liquid Nitrogen from outside, if any.

(v) N.S Bulls for breeding – source of procurement, Number of NS bulls produced from State Govt. farms and private farmers. Breed of NS bulls, population covered, area where NS bulls distributed.

(vi) Foundation stock and numbers of indigenous cows covered under AI and NS.
Action to be taken by the Project Officers, ICDP, Upper-Shiilong& Tura.

(vii) Cattle breeding history in Meghalaya – Pre and Post-Independence. *Action to be taken by the Joint Director (Planning).*

8. Poultry development

(i). Information on establishment of Poultry Farms under RKVY.

(ii). Brief note on Regional Poultry Breeding Farm, Kyrdemkulai including present status.

(iii). Breed and type of poultry (including duckery) preferred by farmers for rearing.
Action to be taken by the Poultry Development Officer.

9. Piggery development

(i). Brief note on the three new Pig Breeding Farms of 100 sows unit being set up at district level for incorporating the draft breeding policy.

(ii). Brief note on Regional Pig Breeding Farm, Kyrdemkulai – present status, no. of stock maintained, breeding system/ plan being followed, breeds maintained, growth rate of pigs, reproduction and production performances, number of pigs supplied to farmers/breeders within and outside the State, etc.

(iii). Description and name (if any) of indigenous pigs in Meghalaya with photograph.

(iv). Status report on pigs – indigenous, crossbred, exotic pigs.

(v). Preference of indigenous and Hampshire pigs by farmers in the State.
Action to be taken by the Piggery Development Officer.

10. Sheep & Goat development

(i). Brief history and present status of Goat farm, Nongshillong and Sheep & Goat Farm, Saitsama

(ii). Goats of Meghalaya along with photographs.

(iii). Area of concentration of goat population.
Action to be taken by all District A.H & Veterinary Officers.

11. Feed and Fodder development

(i). To update the earlier report of 2004-05 with latest report.
(ii). To indicate the production and supply of mixed feed.
(iii). Fodder production in the State – type and variety of fodders.
Action to be taken by the Fodder Development Officer.

12. Total numbers of Veterinary Institutions

To update the number of hospital/dispensaries/veterinary Aid Centres/Stockman Centres/Key Village Centres in the State. *Action to be taken by the Deputy Director (Statistics).*

13. Marketing of animals

(i). To update the selling cost of milk, meat and eggs.
(ii). To update the number of markets in the State.
(iii). To update the number of Co-operative Societies involving with animal husbandry activities.
(iv). Name and status of Government Feed Mills including private mills.
(v). Status of availability of mixed feed and constraints, if any.
(vi). Brief note on how to improve the present situations of mixed feed.

14. Progamme for Duck and Turkey

Brief note on programme for duck and turkey.Type of duck reared by farmers.*Action to be taken by Poultry Development Officer.*

15. Pony

To provide information on its population, type of animal and utility.*Action to be taken by Piggery Development Officer.*

16. Brief note on Indo-Danish project and present status with infrastructure facilities, animals' status, etc.

17. Animal production in organized farms and private farms. *Action to be taken by all District A.H & Veterinary Officers.*

18. To collect information on performance of Jersey and Holstein Friesian cattle from the government farms and private farmers. *Action to be taken by Project Officers, ICDP, Upper-Shillong& Tura.*

19. Field Recording System

To prepare a format for collection of information from the field by the Department.*Action to be taken by Joint Director(Planning)*

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20. To provide information on

i. Backyard poultry farming.
ii. Layers – maintenance of commercial parent stock in hatcheries.
iii. Broiler – maintenance of commercial parent stock in hatcheries.
iv. Brief note on Quail, Turkey and Rabbit farming.

Action to be taken by Poultry Development Officer.

21. **Suggestion on** how to develop an organized marketing of livestock and poultry and their products.

22. **Insurance coverage** and implementation of **subsidy schemes** in the State.

23. **Suggestion for** collaboration/understanding with other organization like IVRI, etc on disease control aspects. *Action to be taken by Disease Investigation Officer.*

24. **Modern Slaughter House** for multi-species is being set up in Shillong and the same will be extended to other districts in the State. In this regard, Meat Processing Plant is also required to be set up in the later stage.

25. It was decided that the above information should be submitted to the Chairman by the end of August, 2010.

The Committee discussed the first draft of Breeding Policy prepared by Dr.Dharmeswar Das, Chairman in detail to find out Indian and Exotic breeds suitable for Meghalaya for enhancing productivity and production of milk, meat or dual purpose animals and also to fix the level of inheritance. It was also discussed that the outstanding bulls of HF cross and Jersey cross may be utilized for improvement of cattle in the State. All relevant issues for formulating the breeding policy of different species of animals will be recorded according to the information to be provided by the field officers as listed above and on receiving the information, second draft will be prepared.

It was also agreed that by midst of September 2010, second draft will be circulated to all officers of the Department for views and suggestions, if any.

The next meeting will be fixed tentatively during the month of October, 2010.

The meeting ended with a vote of thanks to and from the chair.

Sd/- Dr. E. Bareh
Member Convener

Sd- Dr.Dharmeswar Das
Chairman

Memo No. MVD/DEV/NPCBB-12/2010-11/43-A Dated Shillongthe 11th August, 2010

Copy for information and necessary action to :-

1. All Members for information.
2. All District A.H & Veterinary Officers.
3. Deputy Director (Hq)/Deputy Director (Statistics)
4. Vety. Information Officer/Livestock Census Officer/Poultry Dev. Officer/Piggery Dev. Officer/Fodder Dev. Officer/Disease Investigation Officer/ Project Officer, ICDP, Upper-Shillong/Tura.

Sd/-
Member-Convener

ANNEXURE –V

MINUTES OF THE TECHNICAL COMMITTEE MEETING FOR FRAMING BREEDING POLICY FOR CATTLE AND BUFFALO OF THE STATE UNDER THE CENTRALLY SPONSORED SCHEME "NATIONAL PROJECT on CATTLE & BUFFALO BREEDING" HELD ON 26th MAY 2012 AT 9:00 AM IN THE OFFICE CHAMBER OF THE DIRECTOR OF A.H & VETERINARY DEPARTMENT, SHILLONG.

Members present :-

1. Dr.Dharmeswar Das, Dean-cum-Joint Director (Academic), I.V.R.I., Izatnagar, UP, Chairman.
2. Dr. L. Lyngwa, Director, A.H & Veterinary Department, Meghalaya, Shillong, Member.
3. Dr. M. Gatphoh, Joint Director(AHP), A.H. & Veterinary Deptt., Meghalaya, Shillong, Member.
4. Dr. E. Bareh, Joint Director(Planning), A.H. & Veterinary Deptt., Meghalaya, Shillong, Member-Convener
5. Dr. J.S. Jyrwa, Deputy Director(Hq), A.H. & Veterinary Deptt., Meghalaya, Shillong, Member.
7. Dr(Mrs). W. Papang, District A.H & Veterinary Officer, Shillong, Invitee.er.
6. Dr. R. Swer, Deputy Director(AHP), A.H. & Veterinary Deptt., Meghalaya, Shillong, Member
8. Dr. B.K. Mawthoh, Livestock Census Officer, Invitee.
9. Dr(Mrs). G. Khonglah, Fodder Development Officer, Invitee.
10. Dr(Mrs). B. Rapthap, Project Officer, ICDP, Upper-Shillong, Invitee.
11. Dr(Mrs). A. Pakyntein, Disease Investigation Officer, Shillong, Invitee
12. Dr. M. Langstieh, Piggery Development Officer, Invitee.
13. Dr(Mrs). T.A. Sohkhlet, Poultry Development Officer, Invitee.

Dr.Dharmeswar Das, Chairman, Technical Committee presided over the meeting, while Dr. L. Lyngwa, Director welcomed the Chairman, members and invitees to the meeting. The Chairman highlighted the purpose of the meeting and informed that framing of breeding policy of livestock and poultry in the State of Meghalaya has been completed and final draft copy of the same was circulated to all members for comments and discussion.

During the course of discussion, the members suggested to make some modifications/corrections, etc on the final draft as recorded below:-

1. To include graphical presentation (in colour) of the tables wherever necessary and other information like growth rate of livestock population, Production scenario, etc are to be given in tabular form.
2. To review and make necessary changes in Table -12 and to indicate the source of collection of information in each table.
3. The government approved rates of livestock & poultry products are to be given with latest revision.
4. Decision was taken to incorporate in the final draft all Annexures, namely, Government Notifications, Minutes of all Technical Committee meetings, Acknowledgement, Content of the Draft, including the Recommendations of the Workshop organized during the World Veterinary Day, 2011 where Draft Breeding Policy was presented and discussed. India and Meghalaya Maps should also be incorporated.
5. During the course of discussion, it was agreed that in case the State intend to introduce any new breed of livestock and poultry to the farmers or Government Farms, it should be with the recommendation of the Technical Committee to be constituted by the Government for Livestock

and Poultry Breeding Farms. Further, if necessary, Research Committee may be constituted for such purpose.

6. It was decided that the cover page of the Draft should depict the developmental activities in the State.
7. The Member Convener is entrusted to re-check the draft and make correction wherever necessary in consultation with the Chairman.
8. The meeting decided to submit the final draft to the Government for necessary approval by the concern authority.

The meeting ended with a vote of thanks to and from the chair.

Sd/- Dr.Dharmeswar Das
Chairman, Technical Committee
For Framing Breeding Policy of Livestock &
Poultry in the State of Meghalaya.

No.
Copy to :-

1. All Members of the Technical Committee for information.
2. All Invitees for information.

(Dr. E. Bareh)
Member Convener

ANNEXURE – VI

OFFICE OF THE CHIEF EXECUTIVE OFFICER
STATE IMPLEMENTING AGENCY NATIONAL PROJECT
ON CATTLE & BUFFALO BREEDING & DIRECTOR A.H. & VETERINARY
MEGHALAYA :: SHILLONG

No.MAHV/SIA/NPCBB-32/2010-12/10 **Dated Shillong, the 12th Oct. 2011**

From : Dr. L. Lyngwa,
Director A.H. & Veterinary &
Chief Executive Officer, State Implementing Agency
National Project on Cattle & Buffalo Breeding,
Meghalaya, Shillong.

To

Dr. Dharmeswar Das
(Chairman, Technical Committee)
Dean cum Joint Director (Retd.)
Indian Veterinary Research Institute,
Izatnagar – 243122, U.P.

Subject : **Livestock and Poultry Breeding Policy for Meghalaya- Reg.**

Sir,

With reference to the subject cited above, I have the honour to inform you that the Department is organizing workshop on the 21st October 2011 in Shillong where presentation of paper on Livestock and Poultry Breeding Policy for Meghalaya is included in the programme. In this connection, I would like to request your kind presence in the workshop for presentation of paper on the above subject.

Further, I would like also to request you to make a short speech highlighting the Breeding Policy in the presence of the Chief Secretary to the Government of Meghalaya and the Principal Secretary to the Government of Meghalaya, A.H. & Veterinary Department during the Inaugural function at **9.30 A.M. on the 21st October 2011.**

I am also to inform you that arrangement has been made for your stay in Shillong on the 20th October 2011. Kindly intimate your traveling plan so as to enable to make necessary arrangement for the same.

Programme enclosed

Yours faithfully,

Director A.H. & Veterinary
& Chief Executive Officer,
State Implementing Agency,
National Project on Cattle Breeding Buffalo,
Meghalaya, Shillong.

Memo No.MAHV/SIA/NPCBB-32/2010-11/ **Dated Shillong, the 12th Oct. 2011**

Copy to :-

1. Dr. B. Tyagi, Joint Commissioner, Ministry of Agriculture, Department of A.H., Dairying & Fisheries, Krishi Bhavan, New Delhi for kind information.

Director A.H. & Veterinary
& Chief Executive Officer,
State Implementing Agency,
National Project on Cattle Breeding Buffalo,
Meghalaya, Shillong.

ANNEXURE-VII

MINUTES OF THE MEETING ON PIG BREEDING POLICY HELD ON THE 5TH JANUARY 2017 IN THE OFFICE CHAMBER OF THE DIRECTOR A.H & VETERINARY,MEGHALAYA,SHILLONG

Officers present:

1. Dr D.Das, Chairman,Technical Committee on Breeding Policy,Meghalaya
2. Dr B.Rijal, Director A.H & Veterinary
3. Dr K.Kharmihpen,Joint Director(AHP)
4. Dr C.Shilla,Deputy Director(Pl) & Member Convener
5. Dr(Mrs)G.Kynwir,Deputy Director(AHP)
6. Shri S.Kurbah,Joint Director(Stat)
7. Dr(Mrs)A.Pakyntein,DVO,Shillong
8. Dr(Mrs)S.M.Kharbudon,DVO,Jowai
9. Dr K.B.Sahkhar,Asstt.Director(LC)
10. Dr M.Tongper,Asstt.Director(VIO)
11. Dr(Mrs)A.Laloo,Asstt.Director,ICDP
12. Dr P.R.Joshi,Asstt.Director(RP)
13. Dr(Mrs)W.N.War,Asstt.Director(FD)

At the outset Dr B.Rijal, Director AH & Veterinary welcome all officers to the meeting and expresses his extreme gratefulness to all especially Dr D.Das, Chairman,Technical Committee who has come all the way from Guwahati inspite of a short notice. Highlighting on the purpose of the meeting, he impressed upon everyone to share their views and thought, and later on called upon the Chairman-Technical Committee to initiate the discussion and presentation.

In his short introduction, Dr D.Das, Chairman-Technical Committee gave a brief account of the Pig Breeding Policy for the State of Meghalaya prepared on the basis of the National Guidelines provided by the Government of India. He also reminded, that the draft on Livestock and Poultry Breeding Policies for Meghalaya has been submitted to the Government from the year 2012.

The Chairman then presented a power point presentation on the Pig Breeding Policy for detail discussion and sought updated datas on livestock census and other statistical datas, which was agreed by the department to provide the same at the earliest possible time to enable to fine tune the policy for further discussion in the next meeting, before it could be finalized for submission to the higher level.

The Chairman further suggested the Department to examine the draft in depth and make appropriate and suitable suggestion for implementation of the Policy in the State.

Following discussion and suggestion on the draft, the meeting concluded with a vote of thanks from the chair.

Sd/-Dr Dharmeswar Das,PhD
Chairman-Technical Committee
Livestock & Poultry Breeding Policies

ANNEXURE-VIII

MINUTES OF THE SPECIAL MEETING ON CATLLE & PIG BREEDING POLICY HELD ON THE 30TH MARCH 2017 IN THE OFFICE CHAMBER OF THE DIRECTOR A.H & VETERINARY,MEGHALAYA,SHILLONG

Officers present:

1. Dr D.Das, Chairman,Technical Committee on Breeding Policy,Meghalaya
2. Dr B.Rijal, Director A.H & Veterinary
3. Dr K.Kharmihpen,Joint Director(AHP)
4. Dr B.K.Mawthoh,Joint Director(Admn)
5. Dr C.Shilla,Deputy Director(Pl) & Member Convener
6. Dr(Mrs)G.Kynwir,Deputy Director(AHP)
7. Shri S.Kurbah,Joint Director(Stat)
8. Dr(Mrs)B.Rapthap,Deputy Director,IDP-Upper Shillong
9. Dr.J.Langstang,Deputy Director,RPBF,Kyrdemkulai
10. Dr K.B.Sahkhar,Asstt.Director(LC)
11. Dr M.Tongper,Asstt.Director(VIO)
12. Dr(Mrs)A.Laloo,Asstt.Director,ICDP
13. Dr(Mrs)W.N.War,Asstt.Director(FD)

Welcoming all Officers to the meeting, Dr B.Rijal, Director AH & Veterinary expresses his gratitude with special mention to Dr D.Das, Chairman,Technical Committee who has come all the way from Guwahati. The purpose of the meeting was then highlighted to everyone with a request that all can participate and share their views and suggestion. Later he invited the Chairman-Technical Committee to give a brief account on the Breeding Policy that includes Cattle & Pig and make presentation accordingly.

While making presentation on the Breeding Policy, Dr D.Das, Chairman-Technical Committee mentioned that Cattle Breeding Policy also requires to be discussed as requested by the department besides Pig Breeding Policy.

During a power point presentation, a thorough discussion was made on specific paras concerning Cattle and Pig Breeding section, which was recorded accordingly for finalising the draft.

Before concluding the meeting and interaction, the Chairman suggested the Department to have another round of discussion tomorrow the 31st March 2017, and in the meantime the department will arrange the draft incorporating all suggestion.

The meeting concluded with a vote of thanks from the chair.

Sd/-Dr Dharmeswar Das,PhD
Chairman-Technical Committee
Livestock & Poultry Breeding Policies

ANNEXURE-IX

MINUTES OF THE MEETING OF THE TECHNICAL COMMITTEE ON CATLLE & PIG BREEDING POLICY HELD ON THE 31st MARCH 2017 IN THE OFFICE CHAMBER OF THE DIRECTOR A.H & VETERINARY,MEGHALAYA,SHILLONG

Officers present:

1. Dr D.Das, Chairman,Technical Committee on Breeding Policy,Meghalaya
2. Dr B.Rijal, Director A.H & Veterinary
3. Dr K.Kharmihpen,Joint Director(AHP)
4. Dr B.K.Mawthoh,Joint Director(Admn)
5. Dr C.Shilla,Deputy Director(Pl) & Member Convener
6. Dr(Mrs)G.Kynwir,Deputy Director(AHP)
7. Shri S.Kurbah,Joint Director(Stat)
8. Dr K.B.Sahkhar,Asstt.Director(LC)
9. Dr M.Tongper,Asstt.Director(VIO)

The meeting was chaired by Dr D.Das, Chairman,Technical Committee. In his brief address, the Chairman expresses his happiness that the document on Cattle and Pig Breeding Policy has reached this level, in which he appreciated the department for the diligent work.

The corrected copy of the document was presented to the Committee for information of everyone and was explained of the content accordingly. A thorough discussion ensued in both cattle and Pig section. Finally it was agreed to make submission of the Breeding Policy to the authority concern.

The meeting concluded with a vote of thanks to and from the chair.

Sd/-Dr Dharmeswar Das,PhD
Chairman-Technical Committee
Livestock & Poultry Breeding Policies

ANNEXURE-X

GOVERNMENT OF MEGHALAYA
DIRECTORATE OF ANIMAL HUSBANDRY & VETERINARY::SHILLONG
email: meghvety@gmail.Com Ph-0364-2548388/2547456

No.MVD/DEV-16/CSS/2017/104 Dated Shillong the 22nd March 2017

From: Dr B.Rijal
Director A.H & Veterinary
Meghalaya,Shillong

To: Dr D.Das,PhD
Chairman,Technical Committee on Breeding Policy-Meghalaya

Sub: **Breeding Policy**

Sir,

Following a discussion of the Technical Committee Meeting on Breeding Policy held on the 5th January 2017 in my office chamber, a one day workshop was also conducted on the 13th January 2017 with officers of the department to share views and suggestion for preparation of the Breeding Policy. Considering all materials relevant with the Policy, I am submitting herewith the whole text of Breeding Policy for your kind perusal and necessary action. Should you require more inputs to be incorporated, we would be glad to share the same accordingly.

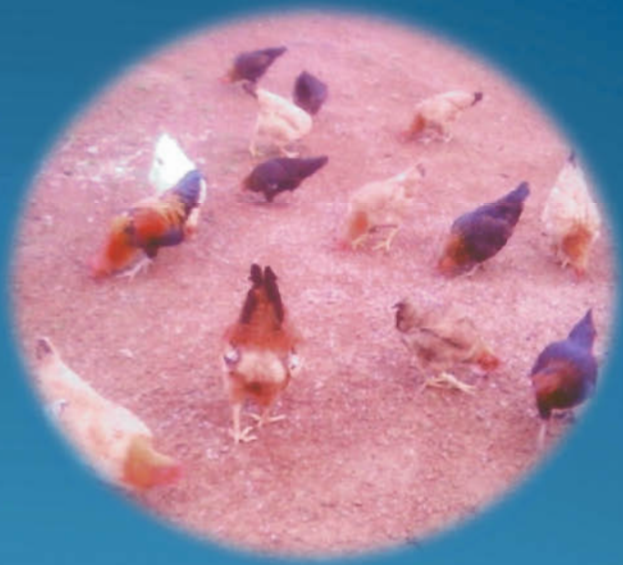
In the above connection, kindly convey your convenient date and time to hold another round of discussion to finalize the draft Breeding Policy.

Yours faithfully

(Dr B.Rijal)
Director A.H & Veterinary
Meghalaya,Shillong

Memo No.MVD/DEV-16/CSS/2017/104 Dated Shillong the 22nd March 2017
Copy to:
The Deputy Secretary to the Government of Meghalaya, AH & Veterinary Deptt., for kind information.

Director A.H & Veterinary
Meghalaya,Shillong



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Departmental website: http://meghlvt.gov.in.