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অসম ৰাজপত্ৰ

সত্যমেব জয়তে

THE ASSAM GAZETTE

অসাধাৰণ

EXTRAORDINARY

প্ৰাপ্ত কৰ্ত্তৃত্বৰ দ্বাৰা প্ৰকাশিত

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GOVERNMENT OF ASSAM

ORDERS BY THE GOVERNOR

ANIMAL HUSBANDRY AND VETERINARY DEPARTMENT

NOTIFICATION

The 6th December, 2019

No. VFV.234/2019/Pt-II/83.- The Governor of Assam is pleased to notify the "Assam Pig Breeding Policy, 2019" to focus on core issues of pig breeding for conservation and germplasm improvement and other associated issues to be addressed for sustainable growth of the sector in the state.

The "Assam Pig Breeding Policy, 2019" is enclosed at **Annexure-I** and hosted on website URL (https:// animalhusbandry.assam.gov.in)

This policy shall come into force with effect from the date of the publication in the Official Gazette.

ASSAM PIG BREEDING POLICY, 2019

1. PREAMBLE:

Assam with a land area of 78,438 sq. km. is the home to a population of 31.2 million people (Human Census, 2011, Govt. of India). Of this about 21.9 per cent live below poverty line (Human Census, 2011, Govt. of India). The economic upliftment of the people had been a major challenge. This is where pig can play a vital role in the state. More than 90 per cent of the populace being non-vegetarian and pig being a major source of meat, importance of pig in the socio-economic life is paramount. Assam has the unique advantage of its geographic position placed strategically surrounded by other north eastern states of India with predominantly non-vegetarian and tribal population. Although there is religious or social restriction on pork eating in some community, Assam and the North Eastern Region (NER) as a whole has far more acceptability of pork as compared to rest of the country. Locally, demand of pork is very high and also there are market opportunities in adjoining NER states. The prospect of foreign market in the countries of the east is also promising. As such, among the livestock species, pig plays a very important role as a provider of quality protein. Besides, traditionally the tribal population of the state, who are resource poor and socially downtrodden, rear pig for their livelihood and sustenance.

As compared to the other states of India, Assam and other NER states are performing well in pig production. Pig population in the NER is above 38.42 percent of country's total and in Assam it is 15.89 percent. The share of meat production from pig is 18730 tonnes as against the total meat production of 46870 tonnes in Assam during 2016-17 (Integrated Sample Survey Report 2016-17).

The pig population in Assam is comprised preponderantly of non-descript local varieties and genetically graded pigs and hybrids. Local pigs are small sized with low prolificacy, but are highly adaptable to the harsh management conditions. Traditionally, these pigs in Assam are reared as scavengers under zero-input system. These animals are not profitable as commercial venture. Crossbreds and graded pigs are, therefore, slowly gaining popularity. Even entrepreneurs have started showing interest to rear pure superior exotics, although there is no provision to support their wish.

However, low production and low productivity of the present pig population of the state is not commensurate with the high demand of pork in the region. Well-targeted interventions to improve pig production could deliver significant livelihood benefits for tribal and other marginalized groups in the region.

At the core of all interventions is the breeding that aims at genetic improvement of germplasm for enhancing productivity, production efficiency and profitability. By providing livelihoods and food security, pig sector can ensure sustainable growth of the state. This is achievable only if a directional state pig breeding policy is in place, and measures are taken for its implementation. Major changes at two levels are now inevitable. Conservation and genetic upgradation of the pig germplasm in one hand and changeover to intensive system without, however, jeopardizing the zero-input system of pig rearing by the resource poor farmers. ***It is therefore obvious that although the State Pig Breeding Policy will focus on core issue of pig breeding for conservation and germplasm improvement,***

other associated issues to be addressed for sustainable growth of the sector will also be indicated. Therefore, brief narratives of the related issues are noted on this policy paper for better understanding of their implications.

2. AGROCLIMATIC ZONES OF ASSAM:

For the success of any livestock centric programme, it is important to keep in mind the climatic conditions of the region. The livestock centric programmes need to be friendly to the local climatic condition.

Based on rainfall, terrain and soil characteristics, Assam is broadly divided into the following six agro-climatic zones.

ZONES	DISTRICTS (Also see Figure 1)
North Bank Plains	Lakhimpur, Dhemaji, Darrang, Udalguri, Sonitpur and Biswanath with an area of 14421 km^2.
Upper Brahmaputra Valley	Sivasagar, Charaideo, Jorhat, Majuli, Golaghat, Dibrugarh and Tinsukia with an area of 16,192 km^2.
Central Brahmaputra Valley	Nagaon, Hojai, and Morigaon with an area of 5561 km^2.
Lower Brahmaputra Valley	Kamrup (Metro), Kamrup, Dhubri, South Salmara, Bongaigaon, Nalbari, Barpeta, Kokrajhar, Chirang, Baksa and Goalpara with an area of 20148 km^2.
Barak Valley	Cachar, Hailakandi and Karimganj with an area of 6922 km^2.
Hill Region	Karbi Along, West Karbi Anglong, and Dima Hasao with an area of 15322 km^2.

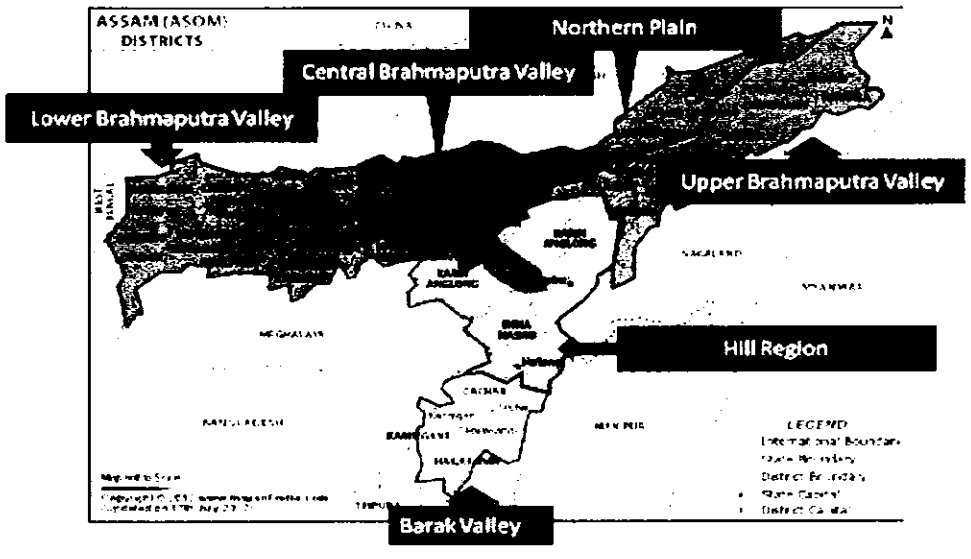

Figure 1 Details of meteorological data pertaining to different agro-climatic zones are shown in *Annexure-I.*

3. POPULATION AND PRODUCTION TRENDS OF PIG IN ASSAM:

The district-wise population of pig in Assam as per National Livestock Census 2003, 2007 and 2012 are annexed (*Annexure-II*). The climatic-zone wise population of pigs in Assam is worked out as under.

CLIMATIC ZONE	PIG POPULATION		
	2003	2007	2012
Northern Bank	3,37,198	5,48,814	4,85,518
Upper Brahmaputra	4,92,961	6,97,729	4,26,504
Central Brahmaputra	60,335	90,330	67,878
Lower Brahmaputra	4,41,331	5,12,083	4,09,697
Barak Valley	36,284	35,135	49,766
Hills	1,65,386	2,49,343	1,96,659
Total of Assam	15,33,495	21,33,434	16,36,022
Total of India	1,35,19,000	1,11,334,000	1,02,94,000

Year-wise Meat Production Trend of Assam (in thousand tones) from 2007-08 to 2016-17

Sl. No.	Year	Cattle	Buffalo	Goat	Sheep	Pig	Poultry	Total
1	2007-08	4.35	0.41	6.81	0.18	11.74	6.39	29.90
2	2008-09	5.19	0.37	6.51	0.17	12.01	6.44	30.69
3	2009-10	5.13	0.31	7.56	0.18	13.25	5.13	31.59
4	2010-11	4.12	0.10	9.41	0.23	14.91	5.06	33.83
5	2011-12	4.00	0.07	9.07	0.22	14.70	6.08	34.19
6	2012-13	3.53	0.08	10.91	0.37	14.61	7.13	36.63
7	2013-14	3.74	0.08	7.56	0.18	15.96	6.17	38.34
8	2014-15	3.45	0.06	14.02	1.00	16.53	7.53	42.60
9.	2015-16	3.16	0.10	14.56	1.47	17.48	8.02	44.81
10.	2016-17	3.20	0.11	14.60	1.53	18.73	8.69	46.87

Source: Integrated Sample Survey Report 2016-17

Data reveals that pig population of the country is declining steadily in successive censuses in years 2003, 2007 and 2012. In Assam, Pig population in years 2003 and 2012 is almost the same with a marginal increase in 2012. However, although pig population of the state increased substantially in year 2007 over that in year 2003, in year 2012 it was found to show sharp decline. It is interesting to note, however, that as against the population trend of pig in Assam, pork production during the period showed consistent increase during 2007-2008 to 2012-2013. The decline in pig population with an increase in pork production can be explained only by the fact that during the period high yielding crossbreds of exotics became very popular across the state. Therefore, looking into the aspirations of the people, the pig breeding policy must give space for promotion of crossbreeds and pure high yielding exotic breeds in modern scientific line ensuring higher productivity and profitability.

4. INFRASTRUCTURES AND SERVICES:

The basic infrastructure framework and the manpower availability in the Animal Husbandry and Veterinary Department, Assam, which is the main veterinary service provider, are shown in *Annexure-III*, along with the list of pig farms under the department. A fairly large infrastructure of veterinary institutions, vaccine and diagnostic production units, breeding farms, feed and feed crops production units etc. are owned by government. Some of these are not used optimally. These facilities need to be restructured and strengthened for effective utilization and for ensuring optimal services.

The role of cooperatives, NGOs, farmers' organizations and other private organizations in strengthening piggery at grass root level, and entrepreneurship development in pig sector leading to industry need to be promoted aimed at rapid economic development with inclusive growth. There is need that the Government play a proactive role in creating enabling environment at the state level and inclusive planning at regional and community level for generation and delivery of required services in the rural and urban areas.

Livestock marketing facility is inadequate and often unorganized. Lack of proper marketing facility and related infrastructure limit the benefits of piggery enterprise. It is necessary to create required infrastructure and frame proper policy and procedures to organize piggery trade for better returns for farmers and market actors and faster growth of livestock sector. The processing industry need to be encouraged to provide basic services and technology to farmers relating to piggery production and to establish marketing linkages to ensure better remunerative returns.

5. MAJOR CHALLENGES:

The pig sector in the state of Assam faces the following major challenges which need to be addressed enabling the sector to grow according to its potential:

Shortage of Feed and Feed Crops: There is a big gap between the requirement and availability of feed and feed crops in Assam, particularly when it comes to pig. Maize is an important feed ingredient of pig feed. As maize cultivation is not very popular in Assam, its market price is high and availability is low. This result in higher cost of quality pig feeds affecting profitability and price of pork. It is imperative to locally produce or arrange supply of sufficient good quality feed and feed crops for efficient utilization of genetic potential of pig and for sustainable improvement in productivity. Emphasis on maize production in Assam is a need. In addition, however, attention has to be paid for sufficient production of other major feed ingredients including locally available low-cost feeds.

Low Productivity of indigenous pig: The indigenous Doom pig of Assam and the other non-descript local pigs are adaptable to local climate as well as the traditional scavenging mode of zero-input system of pig rearing. However, these pigs are very poor performer in terms of body weight and prolificacy, making them unsuitable for profitable commercial venture. Although it is achievable, improvement of the indigenous pigs through scientific selection as pure breeding stock is time consuming with an uncertainty factor. The challenge is to conserve the local indigenous

pigs (although unprofitable) in one hand and also to take parallel measures for propagation of crossbreds/upgrades of exotic improved breed(s) with local as well as pure exotic breed(s) of proven credential in Indian condition.

Pig Health: A large number of infectious and metabolic diseases that are prevalent in Assam have serious implications on pig productivity, export potential and safety and quality of pig products. Beside, many of these diseases have zoonotic importance. Prevention and control measures of these diseases need to be strengthened. Shortage of veterinarians and para-veterinary staff is a constraint that needs attention for action. Facilities including mechanisms for diagnosis, treatment, tracking and prevention of the diseases need to be strengthened. Adequate infrastructure for ensuring bio-security, proper quarantine systems and services to prevent the ingress of diseases across the states and national borders need to be in place.

Pig and Environment: Climate change and global warming may have serious implications on the pig sector. These may be manifested in the form of heat stress, scarcity of quality feed and feed crops, and changes in epidemiological pattern of vector borne diseases etc., ultimately leading to reduction in production and therefore, economic losses. Mitigating the impact of climate change, calls for critical appraisal of the situation on continuous basis and advance planning. Following mitigation measures would be required to reduce the impact of climate change.

a. The research on impact of climatic change on pig production and measures required to mitigate the same would be strengthened.
b. Efforts shall be made to modify the management and feeding systems so as to reduce emission of green house gases by pig, if any.
c. Efforts should be made for better management of farm yard manure through composting and bio-gas plants under different programmes.
d. Awareness building on improved practices of pig, feed and waste management would be supported by Government.
e. Monitoring of the epidemiological status of various infectious diseases, more particularly the vector borne diseases, is a necessity for devising redressal measures.

Knowledge Gap at the level of primary producer: Most of the pig producers of the state being small and marginal farmers, their capacity and understanding required to absorb the latest technologies in modern line is limited. Strengthening of the extension machinery and easing out access to institutional finance are essential.

Inadequate Infrastructure for Marketing, Processing and Value Addition: The pig sector is handicapped by inadequate marketing and processing infrastructure as a result of which the primary producers do not get remunerative price most of the time. Major share of marketable surplus of pig products are not handled by organized processing industry, resulting in reduced price realization by farmers and post production losses and wastages. Establishment of slaughter houses in strategic locations aimed at humane and hygienic slaughter, scientific processing and packaging for value

addition of products is an important requirement. Attention may be paid to marketing infrastructure strengthening.

6. POLICY FRAMEWORK:

The National Policy for Farmers, 2007 (http://agricoop.nic.in/sites/default/files/npff 2007%20%281%29.pdf) aims to improve viability of farming through sustainable development of agriculture sector with the main goal to improve welfare of farmers and farm income, also provides for sustained development of the livestock and fisheries sectors. The Assam Pig Breeding Policy, 2019 has been formulated to have a policy framework for improving productivity of the piggery sector in a sustainable manner, taking into account the provisions of the National Policy of Farmers, 2007 and the recommendations of the stakeholders, including the States.

The State Pig Breeding Policy is for streamlining the activities relating to the conservation and germplasm improvement of pigs in Assam. The policy would also support sustainable development of Assam aimed at vibrant and inclusive socio-economic growth, through the contributions of pig sector.

6.1 NEED OF STATE PIG BREEDING POLICY:

Small-scale pig production is the basis of livelihoods of many poor tribal people living in India's remote northeast corner. Pigs could provide a pathway out of poverty for many people if they were able to transform their subsistence production into market-oriented systems.

Many efforts have been taken by the Government for development of piggery sector. Efforts of Government included initiative for cross-breeding of the non-descript stock with exotic germplasm to improve productivity and steps for control of diseases through preventive vaccination and control measures.

As noted earlier, piggery sector is facing a number of challenges that calls for proper strategy and action plan. A breeding policy for pig in Assam is, therefore, wanting.

In order to conserve and improve the indigenous pig germplasm and to increase the productivity of the non-descript stock by crossbreeding with exotic germplasm is necessary. But, in absence of State Pig Breeding Policy, import of exotic breed from the country of its origin is restricted. A relook at this restriction and alternate use of synthetic breed/ variety of pig developed in the region seem indispensible. The State Pig Breeding Policy would also facilitate better coordination in regulating the export and import of pigs and pig products, development of required infrastructure, feed and food safety and biosecurity to boost up the sector.

6.2 POLICY STATEMENTS FOR EXECUTION:

The below mentioned policy statements indicate the initiatives that the Government will have to take up expeditiously. These policy statements would be the executable part of the Pig Breeding Policy of Assam.

1. Conservation and genetic improvement of indigenous pig breed/varieties of Assam through

scientific selection and breeding methods. For this nucleus herd, at least one for each type of indigenous pig, will be established for developing elite stock for ultimately propagation at a larger scale in their breeding tract. It is envisaged that these animals will be relatively better in terms of productivity and profitability under the presently prevalent zero-input system being adopted by resource poor farmers.

2. The state will take necessary steps for characterization and documentation as per already developed breed descriptors and initiate registration process of indigenous demographic variants of pig germplasm. In due course, farmers may be encouraged to create Breed Registration Societies/Breeder's Association.
3. Genetic improvement of indigenous non-descript pigs by grading up infusing blood of improved exotic breed(s). For this few improved exotic breeds with proven credential under Indian / Assam conditions will be selected for crossing them with indigenous nondescripts or their grades. The idea would be to convert the nondescripts gradually into pure improved exotic breed or to a level of exotic inheritance best suited for the region. The breeding method would essentially be upgrading. Nucleus herd(s) of such selected exotic improved pig breed(s) would be established. Their further improvement under local environment and measures to prevent inbreeding would be taken up. Proper selection procedure and breeding plan would be worked out. Expansion and strengthening of breeding infrastructures and support mechanism to propagate elite germplasm through Artificial Insemination (AI) are emphasized.
4. Import of pigs of exotic breed(s) within the purview of this policy would be allowed by the Government. Restriction, if any, on such import will have to be removed. Breeds of exotic origin within the purview of the policy can also be included in the state from within the country.
5. Research funding would be provided by the state under suitable scheme for enhancing conception rate of frozen boar semen. State institutes of highest learning and research in the area would be involved and supported.
6. Holistic development of piggery sector *with respect to* breeding, feeding, management, housing, value addition and marketing would be targeted. To support research and development initiatives on issues pertaining to pig sector for improving production and productivity, bio-security and profitability.
7. Growth of commercially viable small, medium and large sized pig units would be encouraged through technology back up for production, processing and value addition.
8. This policy would provide space for private sector to invest in the state for establishment of medium and large scale commercial farms of outstanding exotic pure pig breed(s) using state-of-the-art technology targeting potential export markets. This would generate more income and create employment avenues for youths.
9. The policy advocates stronger linkage of the State Animal Husbandry and Veterinary Department and other stakeholders like the State Veterinary Colleges and also with National Research Centre located in the state. The aim would be to disseminate scientific knowledge, skill and newer technologies to the end users.
10. The policy also advocates special efforts for making available quality feeds for pig and feed ingredients at affordable price. Cultivation of feed crop like maize and other crops used as pig feed ingredient in Assam will be promoted. Convergence with State Agriculture Department is suggested.

11. The policy also emphasizes that the pig health coverage need to be strengthened aimed at prevention, control and eradication of various disease conditions.

12. Adherence to standard food safety measures in regards to quality pig products like pork must also be ensured.
13. Under this policy, creation of an enabling environment to attract investment in infrastructure development like seed stock farms, multiplier farms, vaccine production, and support for piggery production, processing, value addition and marketing in the pig sector would be a goal.
14. For proper execution of the works as per policy statements, strengthening of manpower commensurate with requirements will be ensured.
15. Animals entering in the State from outside will be ensured to be free from any infectious diseases. Mechanism be devised and facility be created for the purpose.

The above fifteen policy statements constitute the fundamental policy recommendations for implementation by the state Government under this policy.

Below, general guidelines touching some areas of importance that would be required for addressing the core issues of pig breeding are highlighted.

7. THE BREEDING PYRAMID:

In order to boost both commercial as well as farmers' friendly pig venture, the general strategy of pig breeding to be followed would be a three strata breeding process named "Breeding Pyramid" where continuous attempt would be made to improve the genetic merit of elite nucleus animals and at the same time maximizing propagation of animals at farmers (or entrepreneurs) door. In case of only pure breeding, the breeding pyramid would allow two-way gene flow, top down – bottom up ensuring continuous improvement and maintenance of genetic variation required to prevent degradation of stock.

A representative breeding pyramid with emphasis on propagation of crossbred could be like Figure 2. The type of animals to be reared in the three strata would, however, vary depending on the breeding plan as conceived for different type of germplasm.

BREEDING PYRAMID

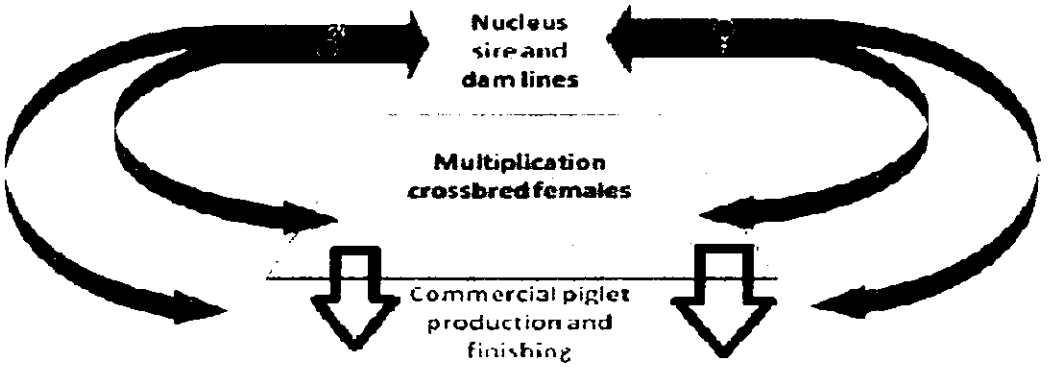

Figure 2

8. BREEDING PLAN FOR PURE INDIGENOUS PIGS:

For conservation and improvement of indigenous pigs of Assam breeding plan would be as under with two strata only.

At the top stratum selected elite herd of pure indigenous pig of the selected breed/variety would be maintained with a minimum of thirty breeding sows. There will not be the middle stratum.

The bottom stratum would be the farmers herds preferably maintained in designated clusters in the breeding tract. Excess progeny over the replacement requirement would be distributed to the farmers in the designated clusters. Also selected boars of the nucleus herd would be used to breed the sows in the bottom stratum i.e. in the farmers' herds. Best of the best animals found in the farmers' herds would be introduced in the nucleus herd as and when felt desirable to prevent inbreeding and to induce genetic variation and to induct good genes.

9. BREEDING PLAN FOR CROSSBREEDING:

Separate nucleus herds, at the top stratum, one each for the male and the female line will be established. There will be multiplication farms of crossbreds at the middle stratum for distribution of their progeny at the bottom stratum i.e. the primary producers/ farmers/ entrepreneurs. The elite stock at the nucleus herds will be continuously improved upon for superior performance and better adaptability by scientific selection and breeding. Breeding plan would be devised to minimize inbreeding. In order to induce genetic variability and induct good genes, provisions be made to introduce/import few superior animals of the breed from outside the elite herd. Attempt would be made to carry out progeny testing for selection of superior boars. Earlier is better. Crossbreds of male and female lines of the nucleus herds will be further propagated in the multiplication farms at the middle stratum for commercial production of pork at the bottom stratum i.e. the primary producers/farmers and entrepreneurs.

The breeding plan for crossbreeding should not be confused with that of upgrading. In case of upgrading, the non-descript animals maintained by farmers would simply be upgraded by crossing with designated pure breed maintained in nucleus herd(s).

10. BREEDING PLAN FOR SUPERIOR EXOTIC BREEDS OF PIGS:

The breeding plan for improved pure breeds of pig would be nothing different from that of the breeding plan for crossbreds except that the middle stratum would consists of the multiplication farms of the progenies of elite animals in the nucleus herd(s).

11. BREEDING PLAN FOR DEVELOPMENT OF SYNTHETIC BREED:

It is important to realize that cross between two breeds or a cross between indigenous and exotic breed or for that reason triple cross involving three breeds/varities are meant for fattening only. Such crosses cannot be declared as variety, not to speak of being called as breed. This is because such crosses if bred, there would be gene segregation leading to rapid genetic degradation. At the same time, however, such crosses if are bred inter-se for a number of generations as closed herd with concomitant selection eliminating poor animals will slowly result in consolidation of good traits resulting from increased homozygocity. The process would ultimately lead to development of synthetic breed after some generations. Such synthetic breed(s) developed locally in Assam would not only be superior in performance, but more importantly would also be highly adaptable to Assam condition. The policy advocates also establishment of elite close nucleus herd of selected cross(s) of proven merit where generation after generation inter-se mating of the crossbred stock would be carried out with selection without ever allowing introduction of animals from other herd. Depending upon the uniformity observed, after about 10 generations of inter-se mating, such stock may be registered as breed (synthetic). Also, from about 6 to 10 generations of inter-se mating, progeny of these animals may be used for breeding purpose just like pure breed. Thus, in the initial stages, surplus animals (piglets) of the crossbred stock may used for fattening only. After about 6 to 10 generations, the surplus piglets would be used as breeding animals. *The HD-K75 pig developed in the College of veterinary Science, Assam Agricultural University and Rani pig developed in ICAR-NRC on Pig by this process only be extensively used in line of that of a pure breed adopting appropriate breeding pyramid as explained earlier.* More such attempts be made for synthetic breed development.

12. BREEDING PLAN FOR TOP AND MIDDLE STRATA OF BREEDING PYRAMID:

Some salient aspects of the breeding plan specific to nucleus herd and multiplication farms would be as under.

Nucleus Farm:

1. Nucleus farm would be of pure exotic breed, synthetic breed or of pure indigenous breed.
2. Crossbred animals will not be maintained in the nucleus herd.

3. Minimum "30 breedable sow" units are to be maintained with a sex ratio of 1:3 and thus 10 sires (2 sires from each 5 unrelated sire lines) need to be maintained by each of the units.
4. Two-stage sequential selection is suggested. Stage 1 selection of male animals should be based on litter size at weaning and weaning weight (best 25%). Stage 2 selection of male be done based on 8 month body weight (best 5%), based on two stage sequential selection. Selection of female animals would be based on dam's litter size at birth and weaning weight (best 25%) and number of functional teats (at least 6 pairs of functional teats) of the animal. Sows with poor performance in 1st farrowing would be culled/ disposed. Selection criteria are subject to review.
5. Centralized data recording system be initiated. Generation wise genetic evaluation may be done by estimating genetic parameters and response to selection.
6. Inbreeding should be avoided by proper mating plan. Replacement of boars needs to be done at regular interval of 2 years of productive herd life. Replacement of boar at nucleus herd should not be practised as a rule. Only under exceptional cases jeopardizing the existence of stock like failure of the breeding programme or decline in herd strength due to disease etc. However, in case of indigenous breed improvement programme nucleus herd will not be a close herd, where a type of Open Nucleus Breeding System (ONBS) can be followed. Sire exchange programme will also be encouraged only in farmers' farm.
7. Three number of farrowing per sow need to be recorded. Three farrowing per sow should be completed in 2 years.
8. Weightage of selection need to be given on litter size and weight at weaning.
9. Besides routine productive, reproductive, adaptive and carcass traits, lifetime production traits may also be recorded.

Multiplier and Farmers' Farm:

Breeding plan for multiplier and farmers' field would be very simple. Its aim is just to increase the number of piglets for distribution to end producers of pork.

13. IMPORT OF EXOTIC GERMPLASM:

Import of exotic germplasm from reputed sources after all bio-security checking is recommended. Breeds of choice are Hampshire, Large Black, Large White Yorkshire and Landrace. Preferentially, import of live animals is suggested looking into the poor fertility status of frozen boar semen. However, Pilot trials be made by import of limited doses of frozen semen. If results of pilot trials are found satisfactory, option for import of frozen boar semen of breeds recommended under the policy would be made open.

The suggested layout of the breeding pyramid for Assam is as under

State level **Nucleus Farm** in 5 regions as follows

1. Central Brahmaputra Valley
2. Hill Region
3. Lower Brahmaputra Valley
4. Northern Plain
5. Upper Brahmaputra Valley

The corresponding Nucleus Farm will maintain Great Grand Parent (GGP) and Grand Parent (GP) stock of corresponding variety as mentioned elsewhere or as is decided from time to time

Multiplier

Multiplier farm will consist of State Govt. farms, Central Govt. farms and institute farms.

(Each district of a region will have minimum one such kind of farm)

The Multiplier Farm will maintain Grand Parent (GP) and Parent (P) stock of corresponding recommended for production and distribution of their crosses.

Farmers' Field

Mass scale propagation of region specific variety to farmers' field and the local large/medium scale entrepreneurs (commercial farm) will be monitored by district level multiplier farm.

Regular monitoring and cooperative based marketing may be ensured for better economic return.

14. MATING SYSTEM:

Artificial Insemination (AI) practice would be encouraged and promoted. To achieve the target, the State Level Multiplier Farm will have a training centre for the farmers and entrepreneurs with minimum facility for semen collection, evaluation and preservation. Till required infrastructures and man power requirements are not met, natural mating would also be supported and adopted.

Selection of boars in breeding programme will be based on following points:

1. The breeding boars would require a recorded pedigree, a quality certificate for the breed issued by the authority for boars used for AI/natural mating. Animal Husbandry and Veterinary Department, Assam will take necessary action.
2. The boars used for AI will be quarterly performance tested for semen quality.
3. The minimum area for keeping a breeding boar is 5 m2 for the local breed and 6 m2 for the exotic breed.
4. The maximum frequency of use of boars is 2 times a week for AI boars younger than two years, 3 times a week for AI boars older than 2 years, and 3 times a week for natural mating boars.
5. The earliest age of use for AI or natural mating is 8 months for local boars and 10 months for exotic boars.
6. AI boars may be used for more than 3.5 years, and natural mating boars for not more than 3 years.
7. The reports on the quality of these boars shall be annually sent to Department of Animal Husbandry, Dairying and Fisgeries (DADF) for evaluation.
8. Boars needs to be vaccinated against swine fever, pasteurellosis, foot and mouth disease and other diseases as regulated.
9. A certification system should be implemented step by step for better quality breeding boars and sows for organized farms which can be recognized as certified breeding animals.

15. CULLING:

Bad/unproductive animals would be routinely eliminated from the breeding stock. Animals with specific genetic disorders will be eliminated along with the family in a breeding stock, as a rule. However, such decision will be subject to case by case study.

16. TRACEABILITY AND DISEASE CONTROL:

A systematic digital process of identification, registration and recording of animals would be followed to keep track of the individual animals and to help implementing breeding programme successfully. This would also make it easy to execute progeny testing programme for boar selection. Similar system may also be developed for pig disease surveillance and monitoring. Available online system like that developed by ICAR-NRC on Pig for traceability and identification of pig diseases may be adopted.

17. INFRASTRUCTURE BUILDING:

Apart from the basic infrastructures, attention to be paid to the following:

1. Provision be made for import/purchase of advanced machinery for feeding and watering.
2. Research and Development (R&D) efforts be made for development/provision of infrastructure at farmers' field for climate resilient housing for pigs.
3. Establishment of one bacon factory (or more) in the State is recommended. Also, value addition of pork and pork products would be promoted.
4. Cooperative based market chain as an adjunct to small and medium scale production system is also advocated aimed at infrastructure development and employment generation.
5. Establishment of a skill development institute for taking care of all pig sector related capacity building requirements.
6. Development of Specific quarantine facilities for import of animals to be created.

18. SUBSIDIES AND OTHER FINANCIAL SUPPORT:

State Government would examine policy decision and develop suitable mechanism on the following.

1. Easy bank credit facility
2. One time subsidy for smallholders purchasing breeding boars
3. Annual subsidies for using AI services
4. One time subsidy for AI service providers
5. One time subsidy for waste management system
6. Subsidies for the import of Grand Parent (GP) and Parent (P) stocks
7. Price subsidies for indigenous pork producers
8. Subsidies for infrastructure development
9. Tax holiday for specific period for large scale commercial pig farms

19. CLUSTER APPROACH AND VERTICAL INTEGRATION:

Policy suggests that it is not necessary that all types of pigs be reared anywhere and everywhere. Rather, it is always good to rear a particular type of animals in some defined well delineated areas i.e cluster. Depending upon suitability and farmers' preference different clusters would be identified for different genotypes of pig. The Department of Animal Husbandry and Veterinary would identify such clusters. Although, there would not be any stricture, the policy suggests encouraging and promoting of cluster approach in pig production system in the state.

Once clusters are defined, all out efforts be made to integrate all components of successful commercial pig venture. It would be ensured that all the inputs like availability of seed(piglet/semen), feeds, health coverage support, slaughter house with processing and packaging etc. etc. are made readily available at hand of the pig farmers. Also, proper linkages for financing and technology support to producers (backward linkage) and market linkage (forward linkage) are established. This is vertical

integration. Policy advocates cluster approach with vertical integration.

Although not mandatory under the policy to be exactly so, on the basis of some preliminary information clusters may be identified under the six agro-climatic zones for the genetic groups as indicated. This is tentative and not all inclusive.

Barak Valley	• **Large white Yorkshire (To be decided for less consumers preference)**
Central Brahmaputra Valley	• **Hampshire X Ghungroo cross**
Hill Region	• **Hampshire X Local cross**
Lower Brahmaputra Valley	• **Hampshire X Ghungroo cross** • **Doom (Dhubri, Bongaigaon, Kokrajhar area)**
Northern Plain	• **Hampshire X Local cross**
Upper Brahmaputra Valley	• **Hampshire X Ghungroo cross**

20. STATE LEVEL POLICY MONITORING COMMITTEE:

There will be a state level monitoring committee that would monitor and review as well as suggest measures for proper implementation of the policy on regular basis with at least two sittings in a year. The composition of the committee will be as under.

Chairman: An eminent veterinarian specialized in animal genetics and breeding with knowledge of pig sector in Assam, preferably with administrative experience.

Member Secretary: The officer of the Animal Husbandry and Veterinary Department, Assam; responsible for pig sector.

Members:

1. The Director, Animal Husbandry and Veterinary Department, Assam or his nominated officer
2. An eminent veterinarian with specialization in Animal Genetics & Breeding, preferably with knowledge of pig breeding
3. An eminent veterinarian with specialization in Animal Gynecology & obstetrics
4. An eminent veterinarian with specialization in Microbiology

5. An eminent veterinarian with specialization in Veterinary Medicine/Epidemiology/ public health
6. Two members will be nominated by the Director, Animal Husbandry and Veterinary Department, Assam from amongst the field veterinary officers
7. Two representatives from farmers/entrepreneurs

Presenting Officer: The Member Secretary, who is also the officer of the Animal Husbandry and Veterinary Department, Assam responsible for pig sector will appoint/ entrust one senior officer as the Presenting Officer to the Committee. He will be a non-member.

Ordinarily, the term of the State Level Monitoring Committee will be for a period of three years.

21. REVISITING THE POLICY:

Implementation of the State Pig Breeding Policy will not only target socio-economically weak communities including women folk in terms of their sustainable livelihood security but also will address the issues of pig production system under changing climatic scenario by improved production and productivity. It would also substantially enhance employment opportunities for youths and catalyze rapid entrepreneurship development in pig sector and promote export market. That being the case, it is very important to revisit the policy periodically. As the pig sector enterprises are dynamic and global scenario is also changing rapidly with palpable effects in Assam as well. Therefore, the present breeding policy requires to be examined time to time to ensure its relevance. Quinquennial review of this policy is recommended.

ANNEXURE–I

METEOROLOGICAL DATA OF DIFFERENT AGRO-CLIMATIC ZONES OF ASSAM

Based on rainfall, terrain and soil characteristics, Assam State has been broadly divided into the following six agro-climatic zones:

Zone (A): North Bank Plains
Zone (B): Upper Brahmaputra Valley
Zone (C): Central Brahmaputra Valley
Zone (D): Lower Brahmaputra Valley
Zone (E): Barak Valley
Zone (F): Hill Region

(A) NORTH BANK PLAINS	Physiography, climate and soils: This zone can be divided in to 3 parallel belts. 1. In the foothills of Himalayas, alluvial soils are found with dense forests. On the south of this belt there are small tea plantations extending from Subansiri river to river Barnadi; 2. The central belt comprises old alluviums which are acidic. Near the river banks there are new alluvial which are either neutral or less acidic. 3. The low lying riverine belt lies by the side of Brahmaputra on the eastern side Darrang district. The climate is characterized by an average rainfall of 1000 mm and high humidity of more than 80%. The maximum temperature rises upto 37°C in July-August and the minimum falls to 5°C in January. Fifty per cent of total rainfall comes during 7 month period of the rainy season.
(B) UPPER BRAHMAPUTRA VALLEY	Physiography, climate and soils: The topography slopes down gradually from the hills towards the Brahmaputra. It has got half a dozen important tributaries of the Brahmaputra. These tributaries start in the hills of Nagaland and Arunachal Pradesh and traverse the zone rapidly to join in the Brahmaputra. The soils are mostly new alluvium near the Brahmaputra and old alluvium in the central belt of the zone. The climate is characterized by high rainfall, i.e., more than 2000 mm per annum and high humidity (more than 80%). The maximum temperature rises up to 37°C in July-August and minimum falls to 5°C in January.
(C) CENTRAL BRAHMAPUTRA VALLEY	This zone comprises the district of Nagaon, Hojai, and Morigaon with an area of 5561 km^2. Physiography, climate and soils: This zone is situated in the centre of the State is encircled by hills on all sides, except on the north where it is bounded by the Brahmaputra. Because of its Physiography, this zone is like a basin and is inundated during the monsoon. A number of rivers traverse through this zone. These rivers start in the Karbi Along and flow into the Brahmaputra. Compared to lower Brahmaputra Valley, soils here are lighter in texture and are not underlain by rocks and aquifers. About 30% of the area in this zone comes under rain shadow belt where the rainfall is much lower (600 mm) than other areas of the Assam plains (1600 mm). The maximum temperature rises upto 38°C in July-August and minimum falls to 8°C in January. Both new alluvial and old alluvial soils are found here.