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NOTIFICATION

No.B.18012/2/2014-AH &V, the 28th July, 2017. In the interest of public service and as per direction of the Ministry of Agriculture and Farmers Welfare, Government of India, the Governor of Mizoram is pleased to notify the 'Mizoram Pig Breeding Policy' to scientifically define better and adaptable breed of pigs and also to improve and sustain the genetic of the existing swine population of the State of Mizoram.

B.Lalthanliana,
Secretary to the Govt. of Mizoram,
AH & Veterinary Department.

1. INTRODUCTION

Pig rearing is a traditional occupation adhering to the society since past beyond memory. The practice still today, is that almost every household are keeping pigs as backyard farming. Mizoram have the potential to take piggery to a more profitable enterprise with the right approach with its available resources. In 1973 improved pure breeds like pure large white Yorkshire, Duroc were introduced for the first time for crossbreeding, resulting a higher yield and improved performances. But these breeds/crossbreeds have been developed without following any systematic and scientific breeding programme which results in Inbreeding problems and poor performances overtime even under optimum feeding condition. Due to haphazard breeding practice in rural areas indigenous non-descript pig breeds of Mizoram was declining. The bulk of indigenous germplasm are with poor growth rate and productivity but they have some genetically inherited good traits like dark coat colour, good mothering ability, early maturity, tolerance and resistance to parasites and diseases and low nutrient requirement. Thus, conservation of this indigenous breeds was utmost important. So to address the above issues and to develop pig breeds/crossbreeds that are appropriate, adaptable and productive even in smaller context in Mizoram, a scientific intervention in assessing the profile of existing breeds, correlating them with production performance and identifying the desired breed(s) for Mizoram are very much necessary for the state. This can rightly contribute in framing a breeding policy for the state. Thus, in aiming at improving the genetic of the existing swine population of the state in the interest of the pig rearing farmers economic sustainability. The Govt. of Mizoram Department of Animal Husbandry and Veterinary, do hereby develop a pig breeding policy know as the "Mizoram Pig Breeding Policy".

2. JURISDICTION AND DEFINITION

It shall be called the "MIZORAM PIG BREEDING POLICY" which shall become effective from the date of publication in Government Gazette and follow up notification. The Mizoram Pig Breeding Policy shall be effective all over the state of Mizoram.

DEFINITION :

Breed : A group of animals related by descent and similar in most characters like general appearance, features, size, configuration, etc. are said to belong to a BREED.

Animal Breeding : The science of animal breeding is defined as the application of the principles of genetics and biometry to improve the efficiency of production in farm animals. Animal breeding in this case - contextually, is producing improved breeds of domesticated pigs by improving their genotypes through selective mating.

Mizo Indigenous Pigs : Any or all the animals classified under the term, swine, that has been inherently in existence indigenous within the state and reared as domestic pigs by the people of Mizoram.

3. STATE PROFILE

3(a) Geographic, agro-climatic conditions and demographic pattern :

Mizoram is the 23rd state of Indian Union on 20th February, 1987 with a total area of 12,087 square kms located in North Eastern region. It is a landlocked state whose southern parts shares 722 kms long international borders with Myanmar and Bangladesh, and northern part share domestic borders with Manipur, Assam and Tripura. The state also has about 871 kms of national highways, with NH-54 and NH-150 connecting it to Assam and Manipur respectively. It is also a growing transit point for trade with Myanmar and Bangladesh.

Mizoram is land of rolling hills, valleys, rivers and lakes. As many as 21 major hill ranges or peaks of different heights runs through the length and breadth of the state with plains scattered here and there. It has a population of 1,091,014 with sex ratio of 976 females per thousand males higher than the national ratio of 940. The literacy rate of Mizoram in 2011 was 91.33 per cent and second best among all the states of India. About 52% of Mizoram lives in urban areas.

Mizoram has a mild climate, being relatively cool in summer 20 to 29 degree Celsius with winter temperatures ranging from 7 to 22 degree Celsius. The region is influenced by monsoons, raining heavily from May to September with little rain in the dry season with average state rainfall of 254 cms per annum. It has the 3rd highest total forest cover 1,594,000 hectares and highest percentage area (90.68%) covered by forests among the states of India (Acc to 2011 Forest Survey of India). Administrative division of Mizoram consists of 8 districts out of which 2 Districts are again divided into 3 Autonomous Districts, 23 sub-divisions, 26 RD Blocks and 853 villages. All districts are classified under hill and tribal district categories.

3(b) Livelihood :

Mizoram is a highly literate agrarian economy, but suffers from slash and burn Jhum or shifting cultivation, and poor crops yields. About 20% of Mizoram's population lives below poverty line with 35% rural poverty. Agriculture has traditionally been a subsistence profession in Mizoram. It is seen as a means to generate food for one's family, ignoring its potential for commerce, growth and prosperity. Rice remains the largest crop grown in Mizoram by gross value of output.

Animal husbandry has been inherently associated with the agriculture farming community for livelihood.

3(c) Pig statistics

The state pig population as per the XIXth Livestock Census 2012 is 242507 of which 21103 are crossbreds and 31504 are indigenous. District wise pig population in Table 1.

Table 1. District wise population of pig (As per 2012 Livestock Census in Nos.)

<u>Sl.No.</u>	<u>Name of district</u>	<u>Crossbred</u>	<u>Indigenous</u>	<u>Total pig</u>
1.	Mamit	22251	4022	26273
2.	Kolasib	20614	2855	23469
3.	Aizawl	73010	8440	81450
4.	Champhai	32181	5608	37789
5.	Serchhip	11761	300	12061
6.	Lunglei	16097	24444	18541
7.	Lawngtlai	17704	7096	24800
8.	Saiha	17385	739	18124
	TOTAL	211003	31504	242507

3(d) Pig Rearing System

Pig farming in Mizoram is typically divided into two systems-backyard pig farming seen in the villages and intensive farming seen in operated farms. The village and traditional farming is characterized by small numbers of pigs reared by the subsistence farmers, either in a small confined pigsty constructed usually with locally available materials wood and bamboo gathered near the house.

Farmers of this region has evolved a self-sustainable local resource based production system, in which pigs are mainly dependent on local vegetation, crop residues and kitchen waste. This system aims to get medium output from nearly zero input and mostly based on the locally available resources. Feeds consist of mainly kitchen wastes, Vegetables - rice, maize, and wild weeds, leaves, and yams. Oil cakes, floor, grains are used to supplement for fattening.

Although the local small, indigenous pigs have been steadily replaced with improved crossbreds over the years, pig production is still largely traditional. The traditional methods involves feeding different porages combined with garden and kitchen waste all cooked with firewood.

Feeding of balanced concentrates feeds, protein rich feeds, required mineral and vitamins mixture are still not a common practice due to financial constraints and lack of managerial knowledge. Thus, this traditional methods of pig rearing do not provide adequate nutritional requirement of the pigs which hamper the growth rate and health of the pig as a whole.

3(e) Characteristics of major pig breeds

(i) Large white Yorkshire (purebred):

It is a native breed of U.K. imported to India from U.K, New Zeland, and Australia. It is large in size with a long and slightly dished face. Body is covered with fine white hairs, free from curls. Skin is pink in colour and free from wrinkles with long and moderately fine coat. Ears are thin, long and slightly inclined forward and fringed with fine hair. Neck is long and full to the shoulders with deep and wide chest, shoulders are not too wide. Back is slightly arched, and loins are long and broad with a well developed wide rump. Ham is fleshy extending upto hocks. Tail is set high. Pasterns are strong and straight with clean feet. It has the capacity to thrive well under different climatic conditions that is why it is extensively use for crossbreeding and breed upgradation.

(ii) Hampshire (purebred):

This breed has been developed in the U.S.A and is now one of the world's most important breeds. The Hampshire is a black Hog with a white band around the body at the shoulder including the front legs and feet. The head, tail, legs and back are black. The ears are erect and the face is longer and straighter compared to other breeds. Hampshire sows are very prolific, have extra longevity, and make good mothers. They have been used extensively in crossbreeding because of their good carcass quality-popular for their lean, meaty carcasses. They were noted and criticized for their large size, but admired for

9.	Goat Breeding Farm	0	0	0	0	0	0	0	0	0
10.	Poultry Farm	1	1	2	1	2	1	1	1	10
11.	Rabbit Farm	0	1	0	1	0	0	0	0	2
12.	Feed and Fodder Farm	0	1	1	1	1	1	1	1	7
13.	Dairy plant	0	1	1	1	0	1	0	0	4
14.	Animals Feed Plant	0	0	1	0	0	0	0	0	1
15.	Piggery Village	0	0	1	1	0	1	0	0	3
16.	Surveillance check post	1	2	0	2	1	3	0	1	10
17.	Liquid Nitrogen plant	0	0	1	0	0	1	0	0	2
18.	Hatcheries	1	1	2	1	1	1	1	1	9
19.	Duck Farm	0	0	0	0	1	0	0	0	1

Table 3 : Authorised Strength under the Mizoram Animal Husbandry and Veterinary Service

Sl.No.	Grade	Posts	No. of posts
1.	Supertime grade	Director	1
2.	Selection	Additional Director - Animal Husbandry & Dairy Development - Veterinary Service & Public Health	2
3.	Junior Administrative grade	Joint Director * Jt. Director (Administration) * Jt. Director (Biogas) * Jt. Director (Livestock Health) * Jt. Director (Southern Zone) * Jt. Director (Planning) * Jt. Director (Veterinary Polyclinic Hospital)	6
4.	Senior grade	Deputy Director and its equivalent posts * Deputy Directors (11nos)- Disease Investigation, planning, Dairy Development, Rinderpest Eradication Programme, Epidemiology, Hospital, Feed & Fodder Development, Livestock & poultry development, Veterinary Extension, Livestock & Environment, Small Ruminants & other Livestock. * District A.H & Vety Officer (8 nos)- Aizawl, Lunglei, Saiha, Champhai, Kolasib, Serchhip, Mamit, Lawngtlai * Chief Veterinary Officer (16 nos)- Veterinary Polyclinic Hospital (3), Central Medicine & Vccine Depot, Tlabung, Chawngte, Mampui, Mamit, Champhai, Kolasib, Serchhip, Lunglei, Lawngtlai, Saiha, Joint Director (SZ) office. * General Manager (2 nos)-Selesih, Thenzawl * Principal (1), School of Vety Science, Lungpher	38
5.	Junior Grade	Veterinary officer and its Equivalent posts Veterinary officer * State Vety Hospital Aizawl (4 nos), State Vety Hospital Lunglei (3 nos) * State Vety Hospital, Saiha (2 nos), State Vety Hospital, Champhai (2 nos), State Vety Hospital, Kolasib (2 nos) * Veterinary Officer, Dispensary (29 nos) * Khawzawl, Mamit, Saitual, Durtlang (KVS), N.Vanlaiphai, Ratu, S.Vanlahai, Serchhip, Sihphir, Lungdai, Haulawng, Thingsulthliah, Tuipang, Chhingchhip, Kawnpui, Lungsen,	68

		Hnahthial, Darlawn, Lawngtlai, Hnahlan, W.Phaileng, Bairabi, Ngopa, Zawlnuam, Sangau, Khawbung, Khuangleng, Tlabung, RBCF Thenzawl Veterinary Officer, Surveillance Checkpost (6 nos) * Tlabung, Vairengte, Vaphai, Thingsai, Ruantlang, Phura Veterinary Officer, Directorate * D.I Laboratory, Veterinary Extension (2 nos), Meat Inspection (2 nos) Manager (13 nos) * District Poultry Farm Lunglei, CBF Saiha, Fodder Seed Farm Thenzawl, CBF Selesih, Piggery Development Farm Kolasib, Poultry Farm Selesih, PBF Selesih, CBF Champhai, P&PF Thenzawl, PDF Thenzawl, P&PF Kolasib, Pig Farm Thenzawl Others * Assistant Project Officer (Dte), Veterinary Officer (Zoological Park)	
		Total Cadre Strength	115

Table 4 : piggery Farms under the Department of A.H & Vety, Mizoram

Sl.No	Name of Farm	District	Capacity	Breed available
1.	Pig farm Lungpher	Lunglei	100 sows unit	LWY (pure) Zovawk (Indigenous) pure
2.	Pig farm Mampui	Lawngtlai	50 sows unit	Hampshire X LWYX
3.	Piglet Multiplication Farm Thingsulthliah	Aizawl	200 sows unit	Hampshire X LWYX
4.	NRC on Pigs (ICAR) Mega Seed Farm, Selsih	Aizawl	100 sowss unit	Pure LWY
5.	Regional Boar Semen Station, Selesih	Aizawl	12 breeding Boars	LWY (pure) Hampshire (pure)
6.	Regional Boar Semen station	In all 8 districts	2 breeding boar in each district	LWY (pure) Hampshire

5. INSTITUTIONAL STRUCTURE AND MANPOWER

Following are the various divisions under A.H & Vety Department

1. Animal Husbandry & Dairy Development
2. Veterinary Service and Public Health
3. Disease Investigation Planning, Dairy Development, Rinderpest Eradication Programme, Epidemiology, Hospital, Feed & Fodder Development, Livestock & Poultry Development, Veterinary Extension, Livestock & Environment, Small Ruminant & Other livestock.
4. Integrated Veterinary & Animal Husbandry Training Institute, Lungpuizawl, Lunglei.
5. Livestock Census & Statistic Division
6. Engineering Division
7. Each district is headed by one District A.H & Vety Officer, under which Veterinary A.I Centres, livestock farms and feed and fodder units are placed at his administrative control.
8. Chief Veterinary Officers - 8 numbers in all the districts to man the Health Institutions like Hospitals and Dispensary.

6. CONNSTRANTS AND LIMITATIONS

Pigs have a deep Socio-economics and cultural importance to the livelihood of the Mizos. Pork is the most favoured meat among the "Mizos" and there is evidence of increased Pig rearing and consumption of Pork which is mainly met from local farmers, there is an increasing demand of Piglets every year. Mizoram have a pig population of 242507 (2012 Livestock Census). The Pork consumption population claimed is 75% of the population and the requirement is considered 25gm/day. Thus, Pork requirement/ annum is 7322812 MT.

Despite the efforts given by the A.H & Vety Department to promote Pig Farmers to rear Sows, most of the farmers intend to rear fatteners which result in non or less production of Piglets within the State. However as the demand gap. Thus, the following are constraints and limitations identified for slow pace of developement in Pig husbandry in the State -

1. Huge gap between needs and supply of piglets.
2. High cost of balanced and commercial Feeds.
3. Shortage of animal/pig resource based Farmers, no parental stocks. Replacement of stocks could not be made in department farm due to non-availability of fund, as all revenues earned are accounted to Government Account.
4. High housing cost and specific housing pattern not available.
5. Poor pig productivity/potential.
6. Prevailing notified and unnotified diseases. The Porcine Reproductive and Respiratory Syndrome (PRRS) which is an emerging Viral Disease that invade the pig population of Mizoram since March, 2013 had greatly affected the pig population with high mortality. The Department had conducted survey among the 16 Pig Multiplication centres where the erconomic loss of the farmer is very huge and accounted to a less or more than Rs. 146.00 lakhs Absence of research on the subject with sufficient technical inputs and lack of support on the public is the main feature.
7. Lack of knowledge, extension works, management skill. The traditional practice followed is to feed pigs with forages, wild leaves, shurbs, herbs collected from locally available areas combined with kitchen and garden waste which is cooked and fed as a wet slop which is coked and fed as a wet slop which is found to be nutritionally inadequate for optimum production. Concentrates feeds are too expensive for the local farmers.
8. No organized breeding anfastructure, Absence of designed breeding programme and planning results in inbreeding.

7. OUTLINE OF STATE BREEDING POLICY FOR MIZORAM

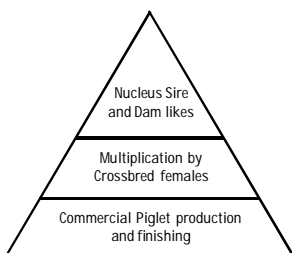
Mizoram have potential to take piggery a more and in technical approach by application of the right instrument. The concept designated is a two way, adopting the Farm Policy and the Farmers.

The following are taken into account in the Breeding Policy -

- (i) Pig Population Dynamic is 9% with a density of 1035
- (ii) Litter size
- (iii) Litter Index
- (iv) Economics
- (v) Feed Conversion Ratio
- (vi) Preference and likes of the Local

Objectives :

- (i) Genetic improvement through delective breeding.
- (ii) Conservation and maintenance of indigenous pig germ plasm.
- (iii) Genetic improvemrnt by crossbreeding and gradually.
- (iv) Expansion and strengthening of Breeding Insfrastructure and support mechanism to propagate elite germ plasm through A.I.
- (v) To establish Regional Boar Seman Station for maintaining Exotic Breed in Closed Herd by import of Frozen Semen or live Pigs.



BREEDING PYRAMID

←Exotic Breed

←2 way crossing (Pure+Local)(Pure+Pure)

←Interse mating (AI) with selective Breed

BREEDING POLICY:

- A
1. Zovawk, indigenous pig breed of Mizoram, where no crossbreeding shall be applied, the germ plasm of this breed shall be established and preserved.
 2. Nucleus breeding farm for such breed be established.
 3. Prized animals may collected from farmers field/State Farm to the Nucleus herd.
 4. No pedigreed animals should be propagated to the farmers who may unknowingly perform crossbreeding to avoid Line Breeding.
 5. Artificial Inseminations may be delivered through Private Inseminator who have taken training courses conducted by the Department.
- B. **CROSS BREEDING :**
Cross breeding may be delivered through selective breeds of Large White Yorkshire, Hampshire and Landrace.

BREEDING POLICY(crossbreeding)

<u>LEVEL</u>	<u>JURISDICTION</u>	<u>ACTIVITIES</u>
Nucleus Farm	State Level Nucleus Farm in 4-5 per regions as per pig population of the state and Demand of pork.	The corresponding Nuclueus Farm will maintain Great Grand Parent(GGP) and Grand Parent(GP) stock of corresponding varieties.
Mutiplier	Multiplier farm will consist of State Govt. farms, central govt. farms and Institute farms. (Each district of a region will have Minimum two such kind of farm)	The multiplier Farm will maintain Grand Parent (GP) and Parent(P) stock of corresponding varieties.
Farmers' Field	Mass scale propagation of region specific variety at farmers field and the local large/ medium scale Entrepeneurs (commercial farm) will be monitored by district level mulliplier farm.	Regular monitoring and cooperative base marketing may be ensured for better economic return.

Schematic diagram for pig breeding programme**C. BREEDING WITH EXOTIC GERM PLASM:**

1. Import of germ plasm of Large White Yorkhire, Landrace and Hampsire from sources which are free from scheduled Diseases.
2. Import of Live Animals may be considered at regular intervals at a first primary strategy with import of Semen as a secondary option, in improving and upgrading herd Quality.
3. As programme for breed-specific nucleus herd imprivement may be developed for subsequent programmes.

BREEDING PLAN:

- (A) Nucleus Farm:
1. Nucleus farm may be of pure exotic breed, well-developed crossbred or pure indigenous breed.
 2. Crossbred animals of desired level of exotic inheritance should be maintained. In case of nucleus herd of pure animals, mixing/crossing of germplasm must be restricted.
 3. Minimum 30 breedable sows unit should be maintained with a sex ratio 1:3 and thus 10 sires (2 sires from each 5 unrelated sire lines) need to be maintained by each of the unit.
 4. Selection of male animals should be based on weaning weight (best 25%) and 8 month body weight (best 5%), based on two stage sequential selection. Selection of female

animals should be based on dam's litter size at birth (>7) and weaning weight (best 25%) and number of functional tests (at least 6 pairs of functional tests).

However, these can be changed as per performance of local crossbred animals.

5. Centralized data recording system may be initiated. Generation wise genetic evaluation may be carried out to estimate the response to selection. The overall genetic gain due to selection, selection differential and heritability may also be calculated.
 6. Inbreeding should be avoided. Replacement of boars need to be done at regular interval of 2 years of productive herd life. Sire exchange programme among the farms will also be helpful to reduce the inbreeding effect. Culled male animals should be castrated before selling to avoid indiscriminate breeding.
 7. Three numbers 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 birth and weaning.
 9. Besides routine productive, reproductive, adaptive and carcass traits lifetime production traits may also be recorded.
- (B) Multiplier and Farmers' Farm :
1. Breeding plan for multiplier and farmers' field should be separate with that of nucleus farm. They are only to make inter-se-mating among the developed crossbred animals. No indiscriminate crossbreeding is allowed at farmers' field.
- (C) Mating system:
- All the breeding propagation activity should follow Artificial Insemination (AI) practice. To achieve the target the State level Multiplier farm must have a training center for the local farmers including modest facility/laboratory for semen collection, evaluation and preservation.
- (D) Capacity building:
1. Training of farm managers/large scale entrepreneurs on breeding management.
 2. Regular/refresher training for technical personnel, para-vets and livestock service provider.
 3. Training on semen collection and AI for farmers/service provider.
- (E) Entrepreneurship development and Industrial development may be explored to promote Piggery and Piggery Products.
- (F) Pig Farming Policy and Guidelines may be developed which will result on organized Pig Farming. This can be implemented and executed through Municipal Corporation.

8. CONCLUSION

The Mizoram Pig Breeding Policy will aim at improving pig production system under changing climate scenario by improves scientific method of production. It will also target at improving socio-economically weak communities including women folk in terms of sustainable livelihood security. It is also expected to meet the current demand supply gap of pork in the state and opening new entrepreneurship and export of pork and pork products. Since, the pig rearing system is dynamic and pig population structure is expected to change over a period of every five years.