

GOVERNMENT OF MAHARASHTRA
Agriculture, Animal Husbandry, Dairy Development
And Fisheries Department
Government Resolution No.LVS-2010/CR198/ADF-4
Mantralaya Annexe, Mumbai-32.
Date :- 14 th May, 2010.

- Read: 1. Agriculture ADF Department G. R. No. LVS 102003/CR-467/ADF-4
Dated 12th November 2003.
2. Agriculture ADF Department G. R. No. LVS 102003/CR-467/ADF-4
Dated 7th February 2004.
3. Agriculture ADF Department G. R. No. LVS102003/CR-467//ADF-4
Date 28/6/2006.

PREFACE

State's Livestock Policy 2006 was in consonance with the provisions of draft National Livestock Policy. It primarily aimed at livestock development for increased production through increased productivity of livestock for attaining self sufficiency at higher level of consumption, by means of the state, e.g. per capita per day milk availability in the State in the year 2003-04 was reported to be only 174 gm as against recommended level of 220 gms. Whereas in the year 2008-09 it was reportedly 187 gm as against the recommended level 250 gm by WHO. Low level of present availability of eggs, meat or any other farm animal protein in human diet in the state, makes it necessary to have planned interventions in the form of Livestock Policy. The policy, at the same time aims at achieving goal of social justice, balanced regional development and increased opportunities for self employment for rural youth. It also aims at conservation of valuable animal genetic resources of the state, addresses the economic upliftment of women and strives to evolve a successful model for Government - NGO- Co-operative sector- Farmer's self help group - private sector participation in the field of Livestock Development of the state. It is aimed to involve Breeder- Farmers and Breeders Associations for optimizing the benefit to the owners of the livestock. The Policy also aims at setting up strict quality control mechanism for critical inputs in genetic improvement programme and increased private sector investment in the sector of livestock development. It also deals with many other aspects of livestock development which make the production system economically viable and market competitive in a well planned regime.

In tune with the changing scenario and needs of the animal owners, society etc., State's Livestock Policy 2006 was reviewed during 2009-10. Hence, a process of wider consultation with all the stake holders involved in livestock development and breeding was initiated through a seminar on " Review of State's Livestock Policy 2006", organized at YASHADA, Baner road, Pune, on 22-23rd January, 2010. The recommendations thus evolved, have now been incorporated while formulating the 'State's Livestock Policy-2010'. Government of Maharashtra is now pleased to declare the 'State's Livestock Policy - 2010' as mentioned below replacing the earlier state livestock policy 2006:

Government Resolution

1. Breeding Policy for Cattle
- 1.1. Strategy and target for genetic up-gradation

- 1.1.1 It aims at increased productivity of cows by genetic improvement. However, it also aims at conservation of native breeds and ensuring adequate supply of quality bullocks for animal draught power in rural areas.
- 1.1.2 In order to achieve self sufficiency in milk production, it is aimed to achieve a level of 60% genetic improvement in terms of proportion of genetically improved animals to the Non-descript population, from present (2009) level of 37%, by end of year 2017 and to further improve it to 80% by the end of year 2025.
- 1.1.3 Above mentioned targets are expected to be achieved through the consolidated and collective efforts of all the agencies engaged in cattle breeding activity viz. State Animal Husbandry Department, Co-operative Milk Unions, NGOs, Private Sector Agencies and unorganized Artificial Insemination (AI) workers in the state. However, regulatory interventions will be implemented, so as to bring all segments involved in implementation of "Assisted Reproductive Techniques" (ART), under uni-controlled modus operandi at the Government level.
- 1.1.4 Due care has been taken to streamline the present policy document to be in consonance with the guidelines issued by the Government of India.

1.2 Strategy for Genetic Up-gradation of cattle -

An area specific breeding policy will be adopted in consideration of Agro-climatic zones, (As depicted in the map) available fodder resources, prevalent breeds of that area and resources available with the farmer / livestock owner. In view of this, the type of respective germplasm to be used in various districts under specified Agro-climatic zones is indicated in the statement at Annexure-I. Government of India have stressed upon the need to evolve an area specific methodology for genetic improvement suitable for the Agro-climatic zones. The land profile, rainfall and cropping patterns of these Agro-climatic zones play a decisive role in supporting the livestock farming activities in particular areas.

For achieving genetic up-gradation, three pronged strategy will be adopted as follows;

- 1.2.1 Genetic improvement of low productive non-descript cattle population in targeted herds / areas will be achieved after, judiciously considering the resources available with the farmer, through cross-breeding programme (by using exotic germplasm i.e. HF / Jersey) where ever it is suitable and desirable. However, in the home / breeding tracts of identified indigenous breeds of the state, the non-descript animals will be continued to be upgraded with the better performing suitable recognized indigenous breeds viz. Deoni, Dangi, Red Kandhari, Gaulao and Khillar and will be subsequently bred with the germplasm of same breed used initially.
- 1.2.2 Pure bred indigenous animals in the home/ breeding tracts as well as in the extended breeding tracts will be continued to be bred with pure bred animals of the same breed through selective breeding to conserve and upgrade the original germplasm.
- 1.2.3 In addition, pedigreed germplasm of indigenous cattle viz. Gir, Tharparkar, Kankrej, Sahiwal etc. will be utilized suitably.

1.3 Use of Bulls for Natural Service:

In the tribal, hilly and non-accessible areas with prevalent practice of free grazing, where cross-breeding using ART is not suitable; genetic improvement of non-descript cattle population will be achieved through provision of natural service by using 'true to type' bulls of selected native breeds. Such bulls will be introduced after ensuring minimum chances of natural service by non-descript bulls by means of castration. Selection of bulls for natural service will be on the basis of Dam's milk-yield and/or draftability character

of the indigenous breed as well, will be considered prior to such an introduction of bulls in the defined areas.

- 1.4 Conservation and propagation of recognized local indigenous breeds by genetic up-gradation: Conservation and propagation of recognized local indigenous breeds by genetic up-gradation will be achieved by using semen of 'true to type' bulls of high genetic merit of the same breed with the help of appropriate advanced means of bio-technology by using ART such as semen preservation, embryo preservation, use of sexed semen etc. The donor bulls will invariably be checked by Karyotyping. It is envisaged that Breeder-farmers and Breeder's Associations will be encouraged for active participation in breed conservation.

1.5 Germplasm for Cross-breeding

Germplasm of Jersey and Holstein-Friesian will continue to be two independent germplasm which will be used for crossbreeding programme in cattle. Any triple-cross-breed such as Phule - Triveni of MPKV Rahuri is not included for this purpose, keeping in view of possible bizarre situation consequential to technical problems in breed stabilization and also experience of other States in this regard.

1.6 Level of Exotic Inheritance

In consonance with the thrust program of achieving genetic improvement of the non-descript cattle by using exotic semen, normally the level of exotic inheritance /blood level, in progeny, will be maintained at 50% initially and could be further enhanced to 62.5% and further maintained at that level by considering the managerial capabilities of common farmers.

However, in favorable environments wherein the farmers are having better resources and managerial capabilities and, also in cases where the cattle have an exotic inheritance of more than 62.5%, appropriate guidelines with need based strategy for breeding such animals will be issued separately in due course of time.

1.7 Ensuring Quality of Cross-breeding Programme (Sustenance of and elevation in improved genetic make-up)

- 1.7.1 For achieving the objective of increased milk production per lactation at any stabilized level of exotic inheritance, it is necessary to use semen of bulls of higher pedigree or progeny tested bulls with daughter's performance better than the cow to be inseminated.

At present, this is not being generally observed in crossbreeding programme resulting into adoption of easier solution of increasing exotic inheritance level in order to attempt for increased milk production per lactation without considering managerial capabilities of the owners/farmers.

- 1.7.2 It will be ensured that within due course of time, semen of proven bulls will be used for genetic up-gradation by all the agencies involved in crossbreeding programme. Progeny testing program has been re-established fully and it will be ensured that within shortest possible time, proven bulls are used for genetic up-gradation by all the agencies involved in crossbreeding programme.

- 1.7.3 Pedigree record of bulls will be updated from time to time at all the frozen semen stations and the relevant information of the pedigree will be made available to the cattle owners through the service outlets as well as through official publications. Preparation of Bull Catalogues will be mandatory for all the agencies producing and supplying frozen semen doses.

- 1.7.4 It will be mandatory for all the agencies to supply artificial insemination (AI) cards to the cattle owners and preferably maintain online database also.

1.8 Selective breeding in Indigenous Breeds for better productivity vis-a-vis environment-adaptability:

- 1.8.1 Considering effect of threatened global warming and preferred trait of heat tolerance and disease-resistance in low input management systems, the animals

of breeds of Deoni, Dangi, Khillar, Gaulao and Red Kandhari will be selectively bred in their home tracts as well as extended breed tracts and thus will be conserved and propagated. While introducing the indigenous breeds of cattle into the extended breeding tracts for upgradation of non-descript cattle, the draught power of the breeding bulls will be evaluated on the basis of FPR (Field Performance Recording) trials. In addition, other recognized indigenous breeds viz Sahiwal, Gir, and Tharparkar will also be used suitably.

1.8.2 Suitable technology for breed identification shall be introduced and a team of properly trained man-power will be made available for this purpose with the help of National Bureau of Animal Genetic Resources (NBAGR) Karnal, Haryana.

1.8.3 Strategies for genetic up-gradation / conservation of recognized local indigenous breeds will be adopted as follows:

1.8.3.1 Introduction of selected breeding bulls in herds / villages for natural service in the home tracts and delineated / extended tracts of these breeds.

1.8.3.2 Supply of frozen semen of true to type bulls of indigenous breeds for carrying out AI work in home tracts and delineated / extended tracts of these breeds and also for cows of any of such breeds elsewhere.

1.8.3.3 Recognized indigenous breeds shall not be allowed to get diminished in the process of cross-breeding.

1.8.3.4 The Breeder's Associations will be encouraged to get involved in conservation of indigenous breeds and will also be entrusted to function on principles of management under its articles of association. Specific methodology will be evolved to extend the assistance (technical, monetary, regulatory, etc.) to the Breeders associations. Self Help Groups (SHGs) will also be encouraged to play active role in breed conservation as well as genetic upgradation of non-descript cattle by providing them breeding bulls of area specific indigenous breed. A tie up between bankers and SHGs / Breeders Associations will be established to trigger the desired activity in this direction. Cattle owners will be educated through Breeders' Associations and SHGs for better feeding and managerial practices.

1.8.3.5 System of herd registration, Field Performance Recording (FPR), etc; will be made mandatory for identifying the high yielding animals of indigenous breeds besides putting in place a suitable buy-back system for getting elite breeding bulls.

1.8.3.6 Karyotyping and testing against the Sexually Transmitted Diseases will be made mandatory for all the bulls prior to being used for frozen semen production. Also, assistance will be given for this purpose to cattle owners for their bulls which are to be used for breeding.

2. Breeding Policy for Buffaloes

2.1 Strategy and target for genetic up-gradation

Due care has been taken to streamline the present policy document to be in consonance with the guidelines issued by the Government of India.

2.1.1 It aims at conservation of recognized indigenous buffalo breeds and also at increased productivity of buffaloes by genetic improvement.

2.1.2 In order to attain self sufficiency in milk production, it is aimed to achieve a level of 60% in respect of genetically improved buffaloes by end of year 2017 and to further improve it to 80% by the end of year 2025.

2.1.3 This is expected to be achieved through the consolidated and collective efforts of all the agencies engaged in buffalo breeding activity viz. State Animal Husbandry Department, Maharashtra Livestock Development Board, MAFSU, State Agricultural Universities, Co-operative Milk Unions, NGOs, Private Sector Agencies and unorganized AI workers in the state.

2.2 Germplasm

Semen of Murrah, Jaffrabadi, Pandharpuri, Marathwadi, Nagpuri and Surti breeds will be used for performance- enhancement of respective descript buffalo-breeds and also for genetic up-gradation of non-descript Buffaloes.

2.3 Strategy

An area specific breeding policy will be adopted in consideration of Agro-climatic zones, available fodder resources, prevalent buffalo breeds of that area and resources available with the farmer / livestock owner. In view of this, the type of respective germplasm to be used in various districts under specified Agro-climatic zones is indicated in the statement at Annexure-III. It is pertinent to have such a policy approach since the same has been stressed upon by Government of India. The land profile, rainfall and cropping patterns of the Agro-climatic zones and market opportunities by virtue of vicinity to the Metros / large towns play a decisive role in supporting the buffalo dairy farming activities in particular areas. Moreover, the consistent inclination of the consumers to buffalo milk on account of its taste and higher fat percentage is the decisive factor in maintaining and proliferating buffalo dairy industry throughout the State. Besides, added advantage of Beef and other byproducts that can be derived from non productive / culled buffaloes adds to the pecuniary gains to the owners. Accordingly, the breeding policy for buffaloes consists of the following parameters:

2.3.1 Buffaloes of descript breeds (viz. Murrah, Jaffrabadi, Pandharpuri, Marathwadi, Nagpuri and Surti) should be bred only with semen of bulls of respective breed.

2.3.2 Non-descript buffaloes should be bred with germplasm of any one of the identified breeds Murrah, Jaffrabadi, Pandharpuri, Marathwadi, Nagpuri and Surti. Use of Mehsana germplasm for upgrading non descript buffaloes will be discontinued since Mehsana itself is a mixed germplasm variety. As a strategy, subsequent selective breeding will be aimed at increasing inheritance level of the first selected breed. For this, superior germplasm of higher pedigreed bulls of respective breed will be used.

2.3.3 Progeny Testing Programme will be implemented for buffalo bulls in a phased manner. So also, Karyotyping and testing against the Sexually Transmitted Diseases will be made mandatory for all the bulls prior to being used for frozen semen production.

2.3.4 Conservation of Pandharpuri, Marathwadi and Nagpuri buffaloes will be practiced especially in their home tracts and delineated / extended tracts and in other areas having similar agro-climatic conditions. These breeds will be used for up-grading non-descript buffaloes.

2.3.5 Development of suitable buffalo breed for beef purpose will be promoted through scientific research and by involving Breeders Associations/ NGOs.

2.4 Conservation of Indigenous Breeds of Buffaloes:

2.4.1 Pandharpuri, Marathwadi and Nagpuri have been identified as three indigenous buffalo breeds of the State, which will be conserved and propagated.

2.4.2 Suitable technology for breed identification shall be introduced and a team of properly trained man-power will be made available for this purpose with the help of National Bureau of Animal Genetic Resources (NBAGR), Karnal, Haryana.

2.4.3 The Breeder's Associations will be entrusted to function on principles of management under its articles of association and will also be encouraged to get involved in conservation and propagation of buffalo breeds. System of herd registration, suitably designed Field Performance Recording (FPR) etc. will be introduced to identify the high-yielder animals of indigenous breed and putting in place a suitable system of buy-back of pedigreed male-calves for developing them in to breeding bulls. Specific methodology will be evolved to extend the

assistance (technical, monetary, regulatory, etc.) to the Breeders associations. Self Help Groups (SHG) will also be encouraged to play active role in breed conservation as well as genetic upgradation of non-descript buffaloes by way of lending them the area specific indigenous breed. A tie up between bankers and SHG/ Breeders Association may trigger the desired activity in this direction. Cattle owners will be educated through Breeders' Associations and SHGs for better feeding and management to reduce exhalation of Methane to tackle the threat of Global Warming.

- 2.4.4 System of herd registration, Field Performance Recording (FPR), etc; will be made mandatory for identifying the high yielding animals of indigenous breeds besides putting in place a suitable buy-back system for getting elite breeding bulls.

3. Ensuring Quality of A.I. Services

Standard Operating Procedures (SOP) for delivery of AI services and guidelines for AI service providers: Standard Operating Procedures (SOP)/guidelines for delivery of AI services and handling of genetic material will be prepared in consonance with the norms specified by Government of India/CMU. Accordingly, relevant guidelines will be communicated to the field staff / service providers in order to provide qualitative AI services to the farmers for effective implementation of AI programme.

3.1 Quality of service rendered by AI workers

- 3.1.1 Close monitoring of AI services provided by inseminators will be introduced.
- 3.1.2 No inseminator should be allowed to carry out AI unless he registers himself with any agency involved in providing breeding services, be it a Government or Co-operative or private.
- 3.1.3 Any agency providing breeding services must have certain specified minimum facilities for storage and distribution of semen and liquid nitrogen as well as maintaining records about sources of semen used.
- 3.1.4 All agencies must implement an AI monitoring system to review the performance of service provided by them.
- 3.1.5 Knowledge updation in respect of advance AI technology and quality consciousness about the AI service delivery will be made mandatory and necessary "Refresher Training Course" will be made compulsory for all AI workers (in Government / private / Co-operative sector).

3.2. Quality of Frozen Semen Doses

- 3.2.1 All agencies producing frozen semen doses shall be put under obligation to have sire selection programs by technically sound progeny testing for crossbred bulls for all levels of exotic inheritance and only semen of top selected bulls will be used for inter-se mating of crossbred cows.
- 3.2.2 All semen stations, whether they are with Government, Co-operatives or private agencies, must be registered with the Government and they should comply with the minimum standards of production specified by the Government of India. These laboratories should have ISO standards.

- 3.3 Quality Standards for Frozen Semen Laboratories and Frozen Semen Production Government of India have prescribed Minimum Standard Protocol (MSP) for frozen semen production. This will be adhered to under National Project for Cattle and Buffalo Breeding. The frozen semen production laboratories at Pune, Aurangabad and Nagpur (which are now under control of Maharashtra Livestock Development Board) will be strengthened with adoption of modern technology of frozen semen production.

3.4. Bull Mother Farms and Production of Bulls:

The bull mother farms functioning under Maharashtra Livestock Development Board will also be strengthened by providing required quality inputs such as F.S. doses of desired standard, elite cows and bulls through procurement from within the country or through import from other countries, modernization of cattle sheds and augmentation in coverage of the available land for fodder production. In case of recognized indigenous breeds of cattle and buffalo, the buy-back system for procuring quality calves from breeder-farmers / breeder-association should be introduced to minimize the requirement of bull-mothers to be maintained at such farms. For this purpose, state level milk- competitions will be organized in view of identification of elite animals.

3.5. Introduction of Livestock Development and Regulation Act:

It is proposed to introduce Livestock Development and Regulation Act for ensuring scientific intervention in the important aspects of genetic improvement of livestock and production of quality critical inputs for genetic up-gradation of livestock, regulation of delivery of AI service, export of genetic material, enforcing good management practices in commercial farming of livestock and for taking care of issues relating to public health, hygiene, disease control and prevention of animal cruelty etc. Such type of legal framework has also been duly recommended by Government of India in form of Draft Bovine Breeding Bill.

3.6. Comprehensive Information System For Enhancement of Breeding, Nutrition and Health Care of Livestock:

A Comprehensive Information System for Enhancement of Breeding, Nutrition and Health Care of Livestock viz. Information Network for Animal Productivity and Health (INAPH) developed by NDDB or a like system will be suitably introduced to monitor breeding, nutrition and health care. This system will be terminally attached with the market development and intelligence cell to be established under the world bank aided MACP project in the office of Commissioner, AH, M.S., Pune for further dissemination of the information.

3.7. Import of Genetic material:

The policy for importing genetic material with its intended use for bringing desired genetic improvement of the local / low productive / improved livestock will be in full consonance with the policy laid down by GoI in this regard. Hence, import of genetic material will be undertaken within this stipulated framework without laying any further restrictions.

4. Breeding policy for Goat:

Breeding policy for goats primarily aims at increased meat production for meeting not only its local demand but also to explore the export avenues. As a result of the consistent use of goat milk in rural areas, the new dimension to goat farming has been incited to boost rural economy as an upcoming new horizon for breeding the goats for milch purpose also. The production of thus increased milk will help to meet the just demand of milk proteins especially of growing children in the areas which are otherwise deprived off the required nutritious diet. This will also act as an added impetus to make the rural goat farming more sustainable. Hence, on this background, desired genetic improvement amongst the goat population will help in reaping the benefits of dual purpose breeds through the use of identified breeds. Priority for this purpose will be given to selective breeding / up gradation of the recognized local indigenous breeds like osmanabadi and sangamneri. Efforts will be made for identifying the local indigenous goat breeds through rigorous phenotypic characterization. Besides using these local indigenous breeds, a strategy will be adopted to evolve sturdy goat which would sustain and thrive in the heavy rainfall areas. Through upgradation of the identified sturdy goat and after finalizing desired phenotypic characters, such goat will be got registered with NBAGR as a specific breed and will be used for genetic upgradation of the local goat in heavy rainfall areas. Exotic/Indigenous

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dual purpose goat breeds with twinning trait will also be considered for improvement of nondescript goats through either importation or locally fetching suitable genetic material on experimental basis.

4.2. AI in Goat :

To bring about desired genetic improvement in the local goats by using indigenous / exotic germplasm, assisted reproductive techniques will be effectively used. A.I. technology being supposedly a convenient tool for expanding the outreach of genetic improvement programme, will be adopted on controlled basis for this purpose. However, considering the low gestation period and reproductive life span in goat and also the other possible implications of use of artificial insemination technology in goat, natural service will obviously continue to be the major strategy for genetic up-gradation in goat. However, in order to hasten the process of genetic improvement in goats through assisted reproductive techniques, Artificial Insemination in does by preferred use of fresh semen will be started on controlled basis in selected areas. The sets of bucks to be used for semen production will be analyzed cytogenetically viz. karyotyping etc. It would be ensured that the bucks will be subjected to field performance recording (FPR) trials. The results thus obtained will qualify them for further use under genetic improvement programme. Such bucks will be procured from State Agricultural Universities, MAFSU, NGOs, Breeders' Associations as well as from the stock owned by the Punyashloak Ahilaya Devi Maharashtra Mendhi va Sheli Vikas Mahamandal, Pune. After reviewing various experiments regarding artificial insemination in does, in due course of time, further strategy for its wide spread use will be decided.

4.3 Marketing strategies for goat meat

It will be based on

- 4.3.1. Designing, promoting and encouraging APMC market like trade models in private, Co-operative as well as corporate sectors, ensuring the trade of live animals (goats) at these trade models on Live-weight basis so as to fetch remunerative price to the producers vis-a-vis ensuring affordable price to the buyers.
- 4.3.2. Ensuring availability of clean and hygienic meat to the consumers and safe guarding public health.
- 4.3.3. Ensuring adoption of the desired bio waste disposal management system associated with present practices of wet slaughter.
- 4.3.4. In order to have a sound marketing strategy in place and for its effective implementation as well as for gaining export- competitiveness, a suitable system will be put in place in due course of time.
- 4.3.5. Establishment of modern and ISO standard small ruminant slaughter houses will be promoted under PPP model in the metros for ensuring development of goat meat industry ascertaining end to end solutions for availability of clean and hygienic meat to the society.
- 4.3.6. IT based information support will be made available for exploring and availing market opportunities to the entrepreneurs in the trade of goats. The Market Development and Intelligence Cell being established in Commissionerate M.S. Pune will be entrusted with this activity.

4.4. Promoting Dual purpose goat breeds (for meat and milk production)

Emphasis will be laid on research oriented promotion of goats for meat and milk production by introducing suitable / improved dual purpose breeds of goats and multiplying them subsequently. MAFSU, State Agricultural Universities (S.A.U.) and Punyashloak Ahilaya Devi Maharashtra Mendhi va Sheli Vikas Mahamandal, Pune will put in cohesive efforts for propagation of such dual purpose breeds. Strategically, for genetic improvement in goats, superior indigenous genetic

material will be used on priority basis. Besides, use of Improved / exotic germplasm will also be permitted in consonance with the approved policy of Government of India in context to Import of genetic material. At field level, for selecting elite *milker-goats*, the system of organizing milk competitions will be put in place. Breeding of thus selected elite milker-goats will be undertaken on pilot basis at the farms of Corporation, SAUs & MAFSU. *Buck Shows* will be organized for selection of elite males to be used for breeding. Alternative possible use of goat milk in consideration of its medicinal value will also be explored.

4.5 Role of SHGs (of breeder-farmers) in development of goats

The Self Help Groups of goat-breeders/ farmers will be encouraged to undertake goat-breeding activity and in carrying out genetic improvement in goats

5. Breeding policy for Sheep

- 5.1 Breeding policy for sheep primarily aims at increased meat production for meeting not only its local demand but also to explore the export avenues. Hence, on this background, desired genetic improvement of the breedable sheep will help in reaping the benefits of meat purpose breeds, through the use of identified breeds. Priority for genetic improvement will be given through selective breeding / upgradation of the local non-descript sheep population. Extensive use of Deccani breed of sheep will be sought for this purpose. Besides this, possible use of newly identified breed namely Madgyal from Jat, Dist. Sangli will also be explored for genetic upgradation of non-descript sheep in extended home tract. For selection of elite rams (to be used for breeding), organization of *Ram Shows* will be encouraged and promoted.

To increase the prolificacy and productivity in sheep, desired genetic upgradation will be achieved by using superior germplasm, restricting to non-descript types in adherence to the guidelines issued by NBAGR from time to time.

Explorative efforts will be triggered for improvement in various desirable genetic traits on experimental / pilot basis viz. prolificacy/ fecundity, meat production, disease resistance and milk production, at organized farms only, identified by the Government. For this purpose, possibility of using the superior germplasm of known indigenous breeds found in other states for the respective traits will be considered.

It will be ensured that, the migratory sheep flocks will be provided all time and efficient health-cover facilities by the Institutions of Animal Husbandry Department.

5.2 AI in Sheep

To bring about desired genetic improvement in the local sheep by using indigenous germplasm, assisted reproductive techniques (ART) will be effectively used. A.I. technology being one of the tools for expanding the outreach of genetic improvement programme will be adopted on controlled basis for this purpose. However, considering the low gestation period and reproductive life span in sheep and also the other possible implications of use of artificial insemination technology in sheep, natural service will continue to be the strategy for genetic up-gradation in sheep. However, in order to hasten the process of genetic improvement in sheep through assisted reproductive techniques, Artificial Insemination in ewes will be started on controlled basis in selected areas using fresh semen. The sets of Rams to be used for semen production will be analyzed cytogenetically viz. karyotyping etc. It would be ensured that the Rams will be subjected to field performance recording (FPR) trials. The results thus obtained will qualify them for further use under genetic improvement

programme. Such rams will be procured from State Agricultural Universities, MAFSU, NGOs, Breeders' Associations as well as from the stock owned by the Punyashloak Ahilaya Devi Maharashtra Mendhi va Sheil Vikas Mahamandal, Pune. After review of various experiments regarding Artificial Insemination in ewes, in due course of time, further strategy for its wide spread use will be decided.

5.3 Marketing strategies for Sheep meat

It will be based on

- 5.3.1. Designing, promoting and encouraging APMC market like trade models in private, co-operative as well as corporate sectors, ensuring the trade of live animals (sheep) at these trade models on Live-weight basis so as to fetch remunerative price to the producers vis-a-vis ensuring affordable price to the buyers.
- 5.3.2. Ensuring availability of clean and hygienic meat to the consumers and safe guarding public health.
- 5.3.3. Ensuring adoption of the desired bio waste disposal management system associated with present practices of wet slaughter.
- 5.3.4. In order to have a sound marketing strategy in place and for its effective implementation as well as for gaining export- competitiveness, a suitable system will be put in place in due course of time.
- 5.3.5. Establishment of modern and ISO standard small ruminant slaughter houses will be promoted under PPP model in the metros for ensuring development of sheep meat industry ascertaining end to end solutions for availability of clean and hygienic meat to the society.
- 5.3.6. IT-based information support will be made available for exploring and availing market opportunities to the entrepreneurs in the trade of sheep. The Market Development and Intelligence Cell being established in Commissionerate M.S. Pune will be entrusted with this activity.

Establishment of Breeders Association for Indigenous Sheep and Goats

For effective implementation of the policy on the development of sheep and goat, awareness will be created to establish breeders' associations for indigenous breeds of sheep and goats. These associations will be entrusted with a much needed assignment / responsibility of conservation and multiplication of their breeds in the home tracts as well as the extended tracts of breeding. The associations shall be helped out so as to make them sound and consistently functional through need based monetary aid and technical assistance. Since conservation of the breed is multi-dimensional process involving breeding, feeding, management, health cover etc., incorporating the collaborative approach of all the concerned so as to achieve the conservation and genetic improvement process simultaneously is necessary. Efforts will be made to identify as well as redefine the breeding tracts and extended breeding tracts / home tracts of the renowned indigenous sheep and goat breeds of the state. It would be ensured that in these identified tracts, pure line breeding and selective breeding using the superior rams /bucks of the same breeds will be continued to be carried out strategically. However, suitable methodology will be worked out on scientific lines, for introduction of different breed in these identified breeding tracts/ adjoining areas, for which conscious decision would be taken only after considering the merits as well as limitations in specific cases.

Academic institutions in the state shall take care of the research and analysis on relevant parameters aimed for the development of sheep and goats benefiting to particular areas / regions and the evolved technology will be implemented for the benefit of the results.

Efforts will be made for recognition of the identified and identifiable breeds of both the species by NBAGR.

Punyashloak Ahilaya Devi Maharashtra Mendhi va Sheli Vikas Mahamandal, Pune; shall be responsible to maintain farms for production of nucleus flocks of selected true-to-type breeds ; organize Breeder-Farmers and Breeder's Association for production of stock to be distributed under its programmes and under its plan schemes by suitable strategy of buy back. It may act as supplier of nucleus flocks to such Breeder-Farmers and Breeder's Associations for multiplication.

Punyashloak Ahilaya Devi Maharashtra Mendhi va Sheli Vikas Mahamandal; MAFSU, Nagpur , Animal Science Division of State Agriculture Universities and selected NGOs shall be the designated agencies responsible for conservation of native breeds of sheep and goat with element of public-sector investment.

6. Breeding Policy For Poultry

6.1 Breeding policy for poultry aims at increased production of eggs and poultry meat by increasing productivity of native poultry birds and introduction of new species of poultry birds.

6.2 The Policy mainly covers chicken, Japanese Quail and Duck. Emu farming is an emerging activity in the state, gaining popularity amongst the farmers. However, unavailability of validated scientific information about breeds, breeding pattern, disease pattern, management under geo-climatic conditions of the state and product development, market-development and economics etc. have put restrictions on establishing the economic viability and the subsequent economic gains / profits so as to prove it a profitable commercial venture. It is thus expected that, efforts will be made to avail data for validating the profitability and economic usefulness of large-scale / commercial Emu-farming with the joint efforts of entrepreneurs , Co-operative societies (engaged in Emu-farming) and the reputed Central Government Institutes (such as CARI) Thus, after availing the relevant data, desired shape will be given to the breeding policy for Emu and appropriate decision for providing financial assistance and concessions to Emu-farmers will suitably be taken. Hence, with a view to propagate and promote Emu-farming as a better business proposition at this juncture, it will be kept open largely through private sector initiatives.

Central Avian Research Institute (CARI) has identified the "Large White or the Broad Breasted White" is the most commercially popular turkey breed being reared in our country. CARI has also reiterated that turkey farming can be adopted as an alternate commercially viable option to broiler farming. However, present status of turkey farming is still at a primary level in the commercial arena. Therefore, efforts will be made to gather relevant scientific / statistical information and data on all aspects. After availing such an information, suitable decisions will be taken for promoting and propagating turkey farming in the state. Presently, it would continue to be privately funded activity.

6.3 Breeding Policy for chicken breeds mainly covers the species suitable for backyard poultry and low input poultry. Breeds for commercial poultry involve import of germplasm and parent line which will be determined by Government of India's Policy in this regard and will continue to be carried out primarily by private sector initiatives.

6.4 With a view to develop and proliferate backyard poultry activity in the state, a policy has already been initiated to propagate the CARI developed poultry breeds viz. Giriraja, Vanraj, CARI- Nirbhik etc. in backyard poultry as well as for genetic

upgradation of local / desi poultry. Expert Committee headed by Additional Commissioner (livestock development) will identify public-sector breeds suitable for introduction in backyard poultry from time to time. This strategy will be continued and recent advancements will be incorporated in it accordingly. State owned Central Hatcheries shall maintain foundation stock of these selected breeds and take steps to produce and make available cockerels, pullets, day-old chicks, hatching eggs etc. for breeding and multiplication at farmers end through their sales outlets and taluka-level poultry farms etc.

- 6.5 State will continue to supply crossbred stocks of improved breeds like RIR, Black Australorp for low input commercial poultry. For this purpose, these types of stocks will also be maintained in the central hatcheries and poultry farms owned by State.
- 6.6 State will continue to have Duck farm for supply of foundation stock of selected duck breeds such as Khaki Campbell. Duck-fish farming shall also be tried in suitable areas.
- 6.7 State will introduce Japanese quail also in production chain at one or more of its central hatcheries for distribution of breeding material. Suitable licensing system for farming of Japanese quail will be introduced to prevent killing of Indian Quail in violation of Wild-life Protection Act.
- 6.8 Until validated information about breeds, breeding pattern, disease pattern, product development, market-development and economics etc. are available and activity is found to be viable, other bird species such as Emu, Turkey and Ostrich etc. will be kept open largely for introduction by private sector initiative.
- 6.9 Existing structure of Poultry breeding / farming will continue, hitherto. However, keeping in view the global scenario pertaining to various poultry / zoonotic emerging diseases, entire poultry farming activities rapidly flourishing under the ambit of private / commercial sector needs to be streamlined through baseline support (technical / monetary etc.) that can be extended only after recognition of these commercial units through registration. Thus, in view of safeguarding the interests of commercial poultry owners / poultry farms, a legislative support in form of Poultry Development and Regulation Act may be considered.

7. Breeding Policy For Equines, Pigs

7.1 Equines

Existing State Breeding policy 2006 does not include the species such as equines, pigs and rabbits. In this context, it is to point out that the horse breeding operations through the agency of Government were discontinued in the year 1923 and therefore the Animal Husbandry Department is mainly concerned with the matters relating to diseases of these animals or their control. Therefore, keeping in view the global scenario pertaining to various equine / zoonotic emerging diseases, entire equine farming activities will be provided with due technical support by Animal Husbandry department.

Breeding of thorough bred horses is mainly undertaken by stud farms for race activities. For this purpose they import stallions with the permission of the State Department. Therefore, there is no need to interfere the present breeding of thorough bred horses.

Since, there are no distinct and known breeds of equines in the state, at present no definite policy is formulated, as yet. However, in view of availability of certain local breeds with peculiar phenotypic characteristics, like Bhimthadi etc.,

efforts for identification and subsequent recognition of breeds in specific tract with reference to phenotypic characterization will be undertaken.

7.2 Pigs

There are no identified breeds of pigs in the state. Landrace, middle and large Yorkshire breeds of exotic origin are introduced in the country and to some extent cross breeding / upgrading of local pigs was taken up in an unregulated / unplanned manner. Since, there are no distinct and known breeds of pigs in the state, at present, no definite policy is formulated, as yet. But keeping in view the global scenario pertaining to various porcine emerging diseases, entire piggery farming activities will be provided with due technical support by Animal Husbandry department.

8. Policy Regarding Livestock Health Care

8.1 State is providing health care services for livestock through its District Polyclinics, Mini-Polyclinics and Dispensaries in state and local sector. It aims at providing mini-polyclinics in each taluka in phased manner. Similarly, one veterinary dispensary headed by a graduate veterinarian is aimed to be provided for 5000 cattle unit in general areas and for 3000 cattle unit in hilly and tribal areas. However, in Municipal Corporation / council areas the local body will be primarily responsible for veterinary health care.

8.2 Veterinary health-care includes disease prevention, disease diagnosis and surveillance, disease control and disease eradication and treatment of ailing animal etc. It promotes initiatives for providing door-delivery of animal health services and AI services through participation of unemployed veterinarians and non-governmental organizations.

8.3 Special emphasis will be laid in creating awareness for control of zoonotic diseases and veterinary drug abuse to safeguard human health.

8.4 State is committed to join Central Government's initiatives for disease prevention, disease control, disease eradication, disease diagnosis and surveillance and creation of disease free zone including zoonotic diseases under scheme like ASCAD and FMD-CP etc.

8.5 State is committed to effective service delivery by its network of regional disease investigation laboratories with referral laboratory at Pune.

9. Feed, Fodder, Animal Nutrition and Grazing Policy

It is observed that fodder crop cultivation is not up to the desired level. Usually the animals are fed with food crop residues. Only few progressive farmers and organized dairymen undertake feeding of chaffed fodder to the animals. Stocking of dry fodder in form of silage is also restricted to few places. The waste lands and gairans (community grazing lands) have not been developed as actual grazing lands. It is observed that green fodder and concentrate feed is supplied only to the productive animals (that too when they are in production). The dry-pregnant cows and buffalo helpers and male calves do not receive the desired nutritious feed on account of negligence of owner. A concept of fodder as a high value crop will be introduced among the dairy farmers. It will be encouraged to bring maximum land under fodder cultivation, by providing incentives for production and marketing of fodder seeds.

10. IVBP and Production of Vaccines and Diagnostic Reagents

It is important and mandatory to equip and modernize the veterinary Biological Vaccines production Institute situated at Pune, Popularly known as IVBP, as per the GMP norms. Fermentor technology will be adopted at IVBP for production of Bacterial Vaccines. Adequate funds will therefore be provided for modernization of IVBP to adhere to the GMP norms and for achieving increased level of production in consultation with Department of Animal Husbandry and dairying, Govt. of India; and IVRI, Bareilly is envisaged in larger public interest.

11. Credit need and Livestock Insurance

State will, by and large, follow Central Government's policy in respect of credit need of the sector of Livestock Development and Livestock Insurance. However, credit flow will also take place under schemes of State Government and local bodies. It aims at promoting livestock insurance through extension input, and making the same mandatory in schemes where Government assistance in terms of loan and subsidy is provided for Livestock purchase.

12. Product Development, Quality Control, Marketing and Export Promotion

12.1 State aims at providing full infrastructural support and policy support in this regard. Co-operative sector and private sector are playing significant role in this regard. Increased private capital investment in product development, processing, packaging, market development, market intelligence and marketing is envisaged.

12.2 State owned Quality Control Laboratory at Goregaon, Mumbai for quality testing for export and import purposes will be strengthened to meet the requirement of stringent quality standards of export markets and protecting domestic consumers.

12.3 Setting up of export-zones, pack houses etc by private sector initiatives for products of animal origin; such as meat and eggs is also aimed at for the purpose of export promotion.

12.4 State is committed to free-market policy under WTO regime. However, it will proactively ensure level playing ground for domestic producers in export as well as domestic market, by suitable instruments of fiscal and non-fiscal interventions.

13. Livestock Census, Statistics, Integrated Sample Survey

State aims at successful implementation of Livestock Census and carrying out Integrated Sample Survey as per Government of India Policies in this regard. It will strive to generate a reliable database for planning of various aspects of livestock development. State further aims at computerizing the database and putting the data generally required by the researchers, planners etc. in public domain through publications, reports, journals etc. and also by the web based instruments.

14. Veterinary Education, Human Resource Development, Extension Model and Research and Development

14.1 State has set up separate University for Animal and Fisheries Sciences at Nagpur (MAFSU) to give boost to Human Resource Development and Research & Development.

14.2 Existing training facilities in the Country with various training Institutions shall be utilized for imparting in-service training for skill up-gradation of field practitioners and subject matter experts. For this, suitable training module will be designed and component of training will be incorporated as essential components in major plan-schemes. In addition non-plan budget will also be

made available for in-service-training of subject matter specialists.

- 14.3 Similarly, it strives to set up a successful model for Government- NGO-self-employed youth-co-operative sector, farmers' self-help groups and private sector participation in extension work. However, public funding of extension model will be limited to Government institutions, Co-operative sector, reputed NGOs, self-help groups of farmers and self-employed youth.

15. Monitoring implementation, review and revision of the policy:

The Livestock Policy 2010 will be implemented by all the prominent players / participating agencies in the State, in true spirit and fervor. A system by utilizing the available machinery as well as infrastructure of Animal Husbandry Department for continuous monitoring and review with subsequent adoption of need based modifications will be brought in to ensure smooth and effective implementation of the policy.

This Government Resolution is available on website www.maharashtra.gov.in and its Unique Code No. is 20100514172540001.

By order and in the name of the Governor of Maharashtra.

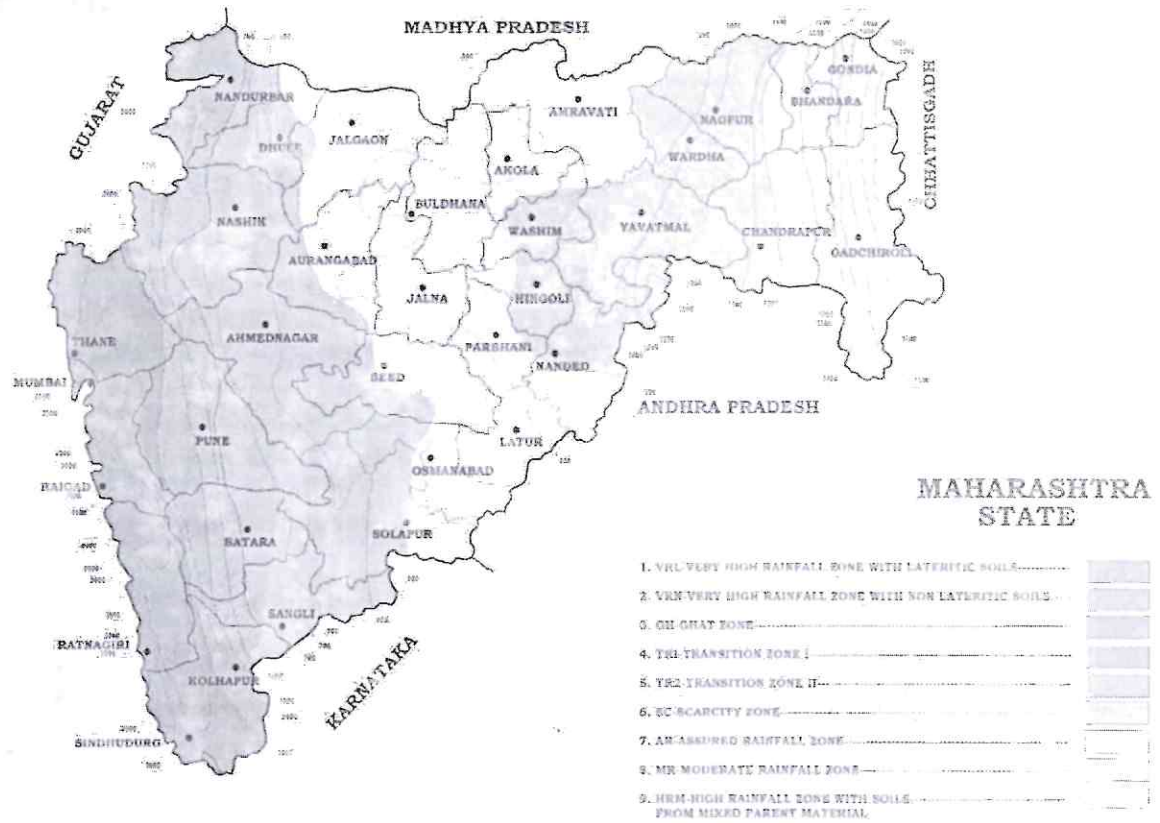


(Rajesh Aggarwal)

Secretary to the Government of Maharashtra

Copy to-

- Personal Secretary to Hon. Chief Minister, Mantralaya Mumbai.
- Personal Secretary to Hon. Minister(ADF) Mantralaya Mumbai
- Personal Secretary to Hon. State Minister (ADF) Mantralaya Mumbai
- Under Secretary to Hon. Chief Secretary Mantralaya Mumbai
- Secretary, Animal Husbandry, Dairy Development and Fisheries Department, Krishl Bhawan New Delhi
- Deputy Secretary, (Dairy Development) Agriculture & ADF Deptt. Mantralaya, Mumbai.
- Commissioner Animal Husbandry, Maharashtra State, Pune (5 copies)
- Commissioner, Dairy Development Department, Worli, Mumbai
- Managing Director, Mahanand Dairy, Mumbai
- Director, National Bureau of Animal Genetic Resources, Karnal, Haryana State
- Managing Director, Puna Shlok Ahilya Devi Maharashtra Mendhi Va Shelf Vikas Mahamandal, Gokhale Nagar, Pune
- District Collector (All)
- Chief Executive Officer, Zilla Parishad (All)
- Chief Executive Officer, Maharashtra Livestock Development Board, Akola
- Registrar, Maharashtra Animal and Fishery Science University, Nagpur
- President, Bhartiya Agro Industrial Foundation, Urlikanchan, Dist Pune
- Regional Joint Commissioner of Animal Husbandry (All)
- Joint Commissioner Animal Husbandry, Disease Investigation Section, Aundh, Pune.
- Joint Commissioner Animal Husbandry, Institute of Vety. Biological Products, Aundh, Pune.
- Regional Dairy Development Officer (All)
- District Deputy Commissioner of Animal Husbandry (All)
- Regional Manager, Frozen semen Laboratory Pune / Aurangabad (Harsool) / Nagpur
- District Animal Husbandry Officer, Zilla Parishad, (All)
- District Dairy Development Officer (All)
- Assistant Commissioner of Animal Husbandry, Bull Mother Farm, Nagpur/Aurangabad(Harsool).
- Assistant Commissioner of Animal Husbandry, Central Hatchery, Pune / Aurangabad / Kolhapur / Nagpur
- Livestock Development Officer, District Artificial Insemination Centre (All)
- Under Secretary, ADF-3 Agriculture & ADF Deptt. Mantralaya, Mumbai.
- Desk Officer, ADF-1/1A, Agriculture & ADF Deptt. Mantralaya, Mumbai. Select File



ANNEXURE-II

Area specific Breeding strategy and type of Germplasm to be used for genetic improvement in cattle with reference to Agro-climatic conditions

No.	Type of zone	Districts/	Talukas	Local predominant cattle breed	Other local cattle breed	Breeding policy	Breed of bull to be used
1	2	3	4	5	6	7	8
1	Very high rainfall with lateritic soils	Ratnagiri	Mandangad, Dapoli, Khed, Guhagar, Ratnagiri, Chiplun, Sangmeshwar, Lanja, Rajapur	-	Non-descript	UG / CB	Khillar, Dangi Red Kandhari/ Jersey (Exotic inheritance level upto 62.5%)
		Sindhudurg	Kankavali, Kudal, Savantwadi, Malwan, Vengurla, Vaibhavwadi, Devgad	-	Non-descript	UG / CB	Dangi, Khillar, Red Kandhari/ Jersey (Exotic inheritance level upto 62.5%)
2	Very high rainfall with non-lateritic soils	Thane	Talasari, Dahanu, Vasal, Palghar, Jawhar, Wada, Bhiwandi, Murbad, Thane, Kalyan, Ulhasnagar, Shahapur, Mokhada, Vikramgad, Ambemath	-	Non-descript	UG / CB	Dangi, Gir / Jersey, HF (Exotic inheritance level upto 62.5%)
		Raigad	Mahad, Karjat, Pen, Ailbag, Uran, Penvel, Khalapur, Mangaon, Roha, Sudhagad, Mhasala, Shrivardhan, Poladpur, Murud, Tala	-	Non-descript	UG / CB	Khillar, Dangi / Jersey (Exotic inheritance level upto 62.5%)
3	Ghat Zone	Nasik	Part of Peth, Igatpuri,	Dangi	Non-descript	SB/ UG	Dangi / Khillar, Dangi

Pune	Part of Maval, Part of Junnar, Part of Khed, Part of Ambegaon, Part of Mulshi, Part of Velhe, Part of Bhore	—	Non-descript	UG / CB	Khillar, Red Kandhari / Jersey (Exotic inheritance level upto 62.5%)
Thane	Part of Mokhada	—	Non-descript	UG / CB	Dangi / Jersey (Exotic inheritance level upto 62.5%)
Raigad	Part of Karjat, Part of Khalapur, Part of Sudhagad, Part of Mangaon, Part of Mahad, Part of Poladpur, Part of Mhasala,	—	Non-descript	UG / CB	Khillar, Dangi / Jersey (Exotic inheritance level upto 62.5%)
Ratnagiri	Part of Khed, Part of Chiplun, Part of Sangmeshwar, Part of Lanja, Part of Rajapur, Part of Mandangad.	—	Non-descript	UG / CB	Khillar, Dangi / Jersey (Exotic inheritance level upto 62.5%)
Sindhudurg	Part of Kenkavali, Part of Sawantwadi, Part of Kudal, Part of Vaibhavwadi.	—	Non-descript	UG / CB	Khillar, Dangi / Jersey (Exotic inheritance level upto 62.5%)
Ahmednagar	Part of Akole	Dangi	Non-descript	SB / UG / CB	Dangi / Dangi / Jersey (Exotic inheritance level upto 62.5%)
Satara	Part of Mahabaleshwar, Part of Jawali, Part of Patan,	—	Non-descript	UG / CB	Khillar, Red Kandhari / Jersey (Exotic inheritance level upto 62.5%)
Sangli	Part of Shirala	Khillar	Non-descript	SB / UG / CB	Khillar / Khillar / Jersey (Exotic inheritance level upto 62.5%)
Kolhapur	Part of Shahuwadi, Part of Panhala, Part of Radhanagari, Part of Budhargad, Part of Chandgad, Part of Aajra, Part of Gaganbawada	—	Non-descript	UG / CB	Khillar / Jersey, HF (Exotic inheritance level upto 62.5%)

	Dhule	Part of Sakri, Part of Navapur	--	Non-descript	UG / CB	Gir, Khillar / Jersey (Exotic inheritance level upto 62.5%)
4 Transition Zone-I	Nasik	Part of Surgana, Part of Peth, Part of Nasik, Part of Igatpuri	Dangi	Non-descript	SB / UG / CB	Dangi / Dangi, Gir / Jersey, HF (Exotic inheritance level upto 62.5%)
	Ahmednagar	Part of Akole	Dangi	Non-descript	SB / UG / CB	Dangi / Dangi, / Jersey, HF (Exotic inheritance level upto 62.5%)
	Pune	Part of Junnar, Part of Ambegaon, Part of Khed, Part of Maval, Part of Mulshi, Part of Velhe, Part of Bhore	--	Non-descript	UG / CB	Gir, Khillar, / HF, Jersey (Exotic inheritance level upto 62.5%)
	Satara	Part of Mahabaleshwar, Part of Jawali, Part of Patan,	--	Non-descript	UG / CB	Khillar, Dangi / Jersey (Exotic inheritance level upto 62.5%)
	Sangli	Part of Shirala	Khillar	Non-descript	SB / UG / CB	Khillar / Khillar / Jersey (Exotic inheritance level upto 62.5%)
	Kolhapur	Part of Shahuwadi, Part of Panhala, Part of Radhanagari, Part of Budhargad, Part of Chandgad, Part of Aajra, Part of Gaganbawada, Part of Gadhinglaj, Part of Kagal, Part of Karveer	--	Non-descript	UG / CB	Khillar / Jersey, HF (Exotic inheritance level upto 62.5%)
5 Transition Zone-II	Part of Nandurbar	Akkalkuwa, Akrani, Taloda, Part of Shahada, part of Nandurbar	--	Non-Descript	UG / CB	Gir, Dangi / Jersey (Exotic inheritance level upto 62.5%)
	Part of Dhule	Navapur, Part of Sakri	--	Non-descript	UG / CB	Gir, Khillar / Jersey, HF (Exotic inheritance level upto 62.5%)
	Part of Nashik	Part of Baglan, Part of Kalvan, Part of Dindori, Part of Chandwad, Part of Niphad, Part of Surgana, Part of Nashik,	Dangi (Igatpuri taluka)	Non-descript	SB / UG / CB	Dangi / Dangi, Khillar, Gir, / Jersey, HF (Exotic inheritance level upto 62.5%)

		Part of Igatpuri					
	Part of Ahmednagar	Part of Akole	Dangi	Non-descript	SB/UG / CB	Dangi / Dangi, / Jersey, HF (Exotic inheritance level upto 62.5%)	
	Part of Pune	Part of - Junner, Ambegaon, Khed, Maval, Mulshi, Haveli, Velhe, Bhore	-	Non-descript	UG / CB	Red Kandhari, Gir, Khillar, / HF, Jersey (Exotic inheritance level upto 62.5%)	
	Part of Satara	Part of - Mahabaleshwar, Wal, Jawali, Satara, Patan, Karad	-	Non-descript	UG / CB	Khillar, Dangi / Jersey, HF (Exotic inheritance level upto 62.5%)	
	Part of Sangli	Part of - Shirala, Walva	-	Non-descript	UG / CB	Khillar, Gir / HF, Jersey (Exotic inheritance level upto 62.5%)	
	Part of Kolhapur	Part of - Hatkanangle, Panhala, Shirol, Karveer, Kagal	-	Non-descript	UG / CB	Khillar, Gir / Jersey, HF (Exotic inheritance level upto 62.5%)	
6	Scarcity zone	Part of - Shahada, Nandurbar	-	Non-Descript	UG / CB	Gir, Dangi / Jersey (Exotic inheritance level upto 62.5%)	
	Part of Dhule	Sindkheda, Dhule, Part of - Shirpur, Sakri	-	Non-descript	UG / CB	Gir, Khillar / Jersey, HF (Exotic inheritance level upto 62.5%)	
	Part of Jalgaon	Part of - Amalner, Parola, Chalisgaon	-	Non-Descript	UG / CB	Gir, Khillar, Kankrej / Jersey, HF (Exotic inheritance level upto 62.5%)	
	Part of Nashik	Malegaon, Nandgaon, Yeola, Sinner, Part of - Baglan, Chandwad, Niphad	Dangi (Igatpuri taluka)	Non-descript	SB / UG / CB	Dangi, Khillar, Gir, / Jersey, HF (Exotic inheritance level upto 62.5%)	
	Part of Aurangabad	Vaijapur, Part of Gangapur, Palthan, Kannad	-	Non-descript	UG / CB	Khillar, Deoni, Gir / Jersey, HF (Exotic inheritance level upto 62.5%)	

	Part of Ahmednagar	Kopergaon, Shirampur, Sangamner, Rahuri, Newasa, Pathardi, Ahmednagar, Parnar, Shrogonda, Karjat, Jamkhed, Part of - Akole	Dangi (Akole taluka)	Non-descript	SB / UG / CB	Dangi / Dangi, Gir, Khillar, / HF, Jersey (Exotic Inheritance level upto 62.5%)
	Part of Beed	Ashti, Part of - Patoda, Gevrai, Kail, Beed, Dharur, Vadvani	-	Non-descript	UG / CB	Khillar, Lal kandhari / Jersey, HF (Exotic Inheritance level upto 62.5%)
	Part of Osmanabad	Bhoom, Paranda, Kalamb, Part of - Osmanabad, Lohara, Part of Tuljapur	-	Non-descript	UG / CB	Khillar, Deoni / Jersey, HF (Exotic inheritance level upto 62.5%)
	Part of Solapur	Malshiras, Pandharpur, Mohol, Madha, Sangola, Mangalwedha, Karmala, Part of - Akalkot, South Solapur, North Solapur, Barshi	Khillar (South Solapur, Mohol, Malshiras, Karmala, Mangalwedha, Pandharpur, Madha, Barshi, Akalkot, Sangola)	Non-descript	SB / UG / CB	Khillar / Khillar / Jersey, HF (Exotic inheritance level upto 62.5%)
	Part of Pune	Daund, Purandhar, Baramati, Indapur, Part of - Shirur, Havelli, Bhore, Velhe	-	Non-descript	UG / CB	Red Kandhari, Gir, Khillar, / HF, Jersey (Exotic Inheritance level upto 62.5%)
	Part of Satara	Phaltan, Man, Koregaon, Khataav, Part of - karad, Satara, Mahabaleshwar, Khandala	-	Non-descript	UG / CB	Khillar, Gir, Red Kandhari / Jersey, HF (Exotic Inheritance level upto 62.5%)
	Part of Sangli	Atpadi, Jat, Kawathemahankal, Miraj, Part of - Walwa	-	Non-descript	UG / CB	Khillar, Gir, Red Kandhari / HF, Jersey (Exotic Inheritance level upto 62.5%)
	Part of Kolhapur	Part of - Hatkanangale, Shiror	-	Non-descript	UG / CB	Khillar, Red Kandhari / Jersey, HF ((Exotic inheritance level upto 62.5%))
7 Assured Rainfall Zone	Part of Dhule	Part of Shirpur	-	Non-descript	UG / CB	Gir, Khillar Red Kandhari / Jersey, HF (Exotic inheritance level upto 62.5%)

	Part of Jalgaon	Chopda, Yawal, Raver, Edlabad, Bhusaval, Jalgaon, Erandole, Pachora, Jamner, Bhadgaon, Part of - Chalisgaon, Parola, Amalner	-	Non-descript	UG / CB	Gir, Khillar / Jersey, HF (Exotic inheritance level upto 62.5%)
	Part of Aurangabad	Soygaon, Sillod, Khultabad, Aurangabad, Part of - Kannad, Palthan, Gangapur	-	Non-descript	UG / CB	Khillar, Deoni, Gir / Jersey, HF (Exotic inheritance level upto 62.5%)
	Jalna	Jafrabad, Jalna, Ambad, Partur, Bhokardhan	-	Non-descript	UG / CB	Khillar, Red Kandhari / Jersey HF (Exotic inheritance level upto 62.5%)
	Part of Beed	Majalgaon, Ambejogai, Part of - Beed, Patoda, Gevrai, Purli, Kalj	-	Non-descript	UG / CB	Red kandhari, Khillar / Jersey, HF (Exotic inheritance level upto 62.5%)
	Latur	Latur, Ahmedpur, Udgir, Nilanga, AUSA, Chakur, Renapur, Shirur, Deoni, Shirur	Deoni (Ahmedpur, Udgir, Nilanga)	Non-descript	UG/CB	Deoni, Redkandhari, Khillar / Jersey HF (Exotic inheritance level upto 62.5%)
	Part of Osmanabad	Umarga, Part of Osmanabad, Tuljapur	-	Non-descript	UG / CB	Khillar, Deoni / Jersey, HF (Exotic inheritance level upto 62.5%)
	Part of Solapur	Part of - Akkalkot, North Solapur, South Solapur, Barshi	Khillar (South Solapur, Mohol, Malshiras, Karmala, Mangalwedha, Pandharpur, Madha, Barshi, Akkalkot, Sangola)	Non-descript	SB / UG / CB	Khillar / Khillar / Jersey, HF (Exotic inheritance level upto 62.5%)
	Part of Parbhani	Pathri, Jintur, Gangakhed, Palam, Parbhani	-	Non-descript	UG / CB	Redkandhari, Khillar, deoni / HF, Jersey (Exotic inheritance level upto 62.5%)
	Part of Nanded	Mukhed, Deglur,	Lal Kandhari (Mukhed, deglur,	Non-descript	SB / UG / CB	Redkandhari/ RedKandhari/ Jersey, HF (Exotic inheritance level upto 62.5%)

		Kandhar)				
	Part of Hingoli	Part of - Hingoli, Basmat, Aundha (N), Akhada Balapur	-	Non-descript	UG / CB	Redkandhari / Jersey , HF(Exotic inheritance level upto 62.5%)
	Buldhana	Sindkhed Raja, Deulgaoon Raja, Chikhali, Buldhana, Motala, Malkapur, Nandura, Jalgaon Jamod, Shergaon, Khangaon, Sangrampur, Part of - Mehekar, Lonar	-	Non-descript	UG / CB	Gir, Deoni / Jersey , HF(Exotic inheritance level upto 62.5%)
	Akola	Bafapur, Patur, Barshi Takli, Akola, Akot, Telhara, Murtijapur	-	Non-descript	UG / CB	Gir, Deoni / Jersey (Exotic inheritance level upto 62.5%)
	Washim	Karanja, Part of - Mangrulpir, Manora, Malegaon, Washim	-	Non-descript	UG / CB	Deoni, Gaolao / Jersey (Exotic inheritance level upto 62.5%)
	Amravati	Achalpur, Anjangaon Surji, Daryapur, Bhatkuli, Chandur Bajari, Amravati, Part of - Tiwasa, Chandur Railway, dharni, Chikhalidara, Dhamaogaon Railway, Morshi	-	Non-descript	UG / CB	Gir, Gaolao / Jersey (Exotic inheritance level upto 62.5%)
	Part of Yavatmal	Part of - Ner, Darva	-	Non-descript	UG / CB	Gaolao / Jersey (Exotic inheritance level upto 62.5%)
8 Moderate to Moderately high rainfall Zone	Part of Nanded	Nanded, Bhokar, Hadgaon, Naigaon, Dharmabad, Himayatnagar, Ardhapur, Part of - Kandhar, Biloli	Red Kandhari (Mukhed, deglur, Kandhar)	Non-descript	SB / UG / CB	Redkandhari / RedKandhari / Jersey , HF(Exotic inheritance level upto 62.5%)

	Part of Yavatmal	Yavatmal, Kalamb, Ralegaon Kelapur, Malegaon, Wani, Ghatanji, Digra, Mahagaon, Umerkhed, Pusad, Arni, Jari zamdi, Part of - Darva, Ner zamdi, Part of -	-	Non-descript	UG / CB	Gaolao / Jersey (Exotic inheritance level upto 62.5%)
	Wardha	Part of - Selu, Arvi, Karanja, Devali, Hinganghat, Samudrapur, Ashti, Shelu,	Gaolao (Arvi, Karanja, Ashti, Wardha, Kharangana)	Non-descript	SB / UG / CB	Gaolao / Gaolao, Gir, Redkandhari / Jersey, HF (Exotic inheritance level upto 62.5%)
	Part of Nagpur	Katol, Narkhed, Savner, Kalinweshwar, Hingna, Nagpur City, Nagpur rural, Parshivani, Ramtek, Kampti, Umred Part of - Kuhl, Bhiwapur, Mauda,	-	Non-descript	UG / CB	Gir, Gaolao / Jersey, HF (Exotic inheritance level upto 62.5%)
	Part of Chandrapur	Rajura, Bhadrawati, Warora, Chandrapur, Part of - Gond pimpri, Chimur, Rajura, Koparna, Ballarpur, Pombhurna, Jiwali, Nagbhid, Shindewahi, Brahmnapuri, Mul, Sawali	-	Non-descript	UG / CB	Gir / Jersey, HF (Exotic inheritance level upto 62.5%)
	Part of Hingoli	Part of - Kalamnuri	-	Non-descript	UG / CB	Redkandhari / Jersey, HF (Exotic inheritance level upto 62.5%)
9 High rainfall zone with soils formed from rocks of mixed origin	Part of Bhandara	Tiroda, Pawni, lakhandur, Lakhani, Part of - Mohadi, Tunisar	-	Non-descript	UG / CB	Gaolao / Jersey, (Exotic inheritance level upto 62.5%)
	Gondiya	Gondiya, Goregaon, Salekasa, Devari, Amgaon, Arjuni morgaon, Sadak arjuni, Tiroda	-	Non-descript	UG / CB	Gaolao, Deoni / Jersey, (Exotic inheritance level upto 62.5%)

ANNEXURE - III

Area specific Breeding strategy and type of Germplasm to be used for genetic improvement in buffaloes with reference to Agro-climatic conditions

No.	Type of zone	Districts/	Talukas	Local predominant Buffalo breed	Other local Buffalo breed	Breeding policy	Breed of buffalo bull to be used
1	2	3	4	5	6	7	8
1	Very high rainfall with lateritic soils	Ratnagiri	Mandangad, Dapoli, Khed, Guhagar, Ratnagiri, Chiplun, Sangmeshwar, Lanja, Rajapur	--	Non-descript	UG	Murrah, Surti, Jaffarabadi, Pandharpuri
		Sindhudurg	Kankavali, Kudal, Savantwadi, Malwan, Vengurla, Vaibhavwadi, Devgad	--	Non-descript	UG	Murrah, Surti, Pandharpuri
2	Very high rainfall with non-lateritic soils	Thane	Talasari, Dahane, Palghar, Jawhar, Wada, Vasai, Bhiwandi, Murbad, Thane, Kalyan, Ulhasnagar, Shahapur, Mokhada, Vikramgad, Ambemath	--	Non-descript	UG	Jaffarabadi, Murrah, Surti
		Raigad	Mahad, Karjat, Pen, Alibag, Uran, Panvel, Khalapur, Mangaon, Roha, Sudhagad, Mhasala, Shrivardhan, Poladpur, Murud, Tala	--	Non-descript	UG	Murrah, Surti

3	Ghat Zone	Nasik	Part of Peth, Igalpuri,	--	Non-descript	UG	Murrah, Jaffarabadi, Surti
		Pune	Part of Maval, Part of Junnar, Part of Khed, Part of Ambegaon, Part of Mulshi, Part of Velhe, Part of Bhor	--	Non-descript	UG	Murrah, Jaffarabadi, Pandharpuri, Surti
		Thane	Part of Mokhada,	--	Non-descript	UG	Murrah, Jaffarabadi, Surti
		Raigad	Part of Karjat, Part of Khalapur, Part of Sudhagad, Part of Mangaon, Part of Mahad, Part of Poladpur, Part of Mhasala,	--	Non-descript	UG	Murrah, Surti
		Ratnagiri	Part of Khed, Part of Chiplun, Part of Sangmeshwar, Part of Lanja, Part of Rajapur, Part of Mahdangad.	--	Non-descript	UG	Murrah, Surti, Jaffarabadi, Pandharpuri
		Sindhudurg	Part of Kankavali, Part of Sawantwadi, Part of Kudal, Part of Vaibhavwadi.	--	Non-descript	UG	Murrah, Surti, Pandharpuri
		Ahmednagar	Part of Akole	--	Non-descript	UG	Murrah, Jaffarabadi, Surti, Pandharpuri
		Satara	Part of Mahabaleshwar, Part of Jawali, Part of Patan,	--	Non-descript	UG	Murrah, Pandharpuri, Surti
		Sangli	Part of Shirala	--	Non-descript	UG	Murrah, Pandharpuri, Surti,

		Kolhapur	Part of Shahuwadi, Part of Panhala, Part of Radhanagari, Part of Budhargad, Part of Chandgad, Part of Aajra, Part of Gaganbawada	—	Non-descript	UG	Murrah, Pandharpuri, Surti, Jaffarabadi
		Dhule	Part of Sakri, Part of Navapur	—	Non-descript	UG	Jaffarabadi, Murrah, Surti
4	Transition Zone-I	Nasik	Part of Surgana, Part of Peth, Part of Nasik, Part of Igatpuri	—	Non-descript	UG	Jaffarabadi, Murrah, Surti, Pandharpuri
		Ahmednagar	Part of Akole	—	Non-descript	UG	Murrah, Jaffarabadi, Surti, Pandharpuri
		Pune	Part of Junnar, Part of Ambegaon, Part of Khed, Part of Maval, Part of Mulshi, Part of Velhe, Part of Bhore	—	Non-descript	UG	Murrah, Jaffarabadi, Pandharpuri, Surti
		Satara	Part of Mahabaleshwar, Part of Jawali, Part of Patan,	—	Non-descript	UG	Murrah, Pandharpuri, Surti
		Sangli	Part of Shirala	—	Non-descript	UG	Murrah, Pandharpuri, Surti,
		Kolhapur	Part of Shahuwadi, Part of Panhala, Part of Radhanagari, Part of Budhargad, Part of Chandgad, Part of Aajra, Part of Gaganbawada, Part of Gadhinglaj, Part of Kagal, Part of Karveer	—	Non-descript	UG	Murrah, Pandharpuri, Surti, Jaffarabadi

5	Transition Zone-II	Part of Nandurbar	Akkalkuwa, Akrani, Taloda, Part of Shahada, part of Nandurbar	--	Non Descript	UG	Jaffarabadi, Murrah, Surti
		Part of Dhule	Navapur, Part of Sakri	--	Non-descript	UG	Jaffarabadi, Murrah, Surti
		Part of Nashik	Part of Baglan, Part of Kalvan, Part of Dindori, Part of Chandwad, Part of Niphad, Part of Surgana, Part of Nashik, Part of Igatpuri	--	Non-descript	UG	Jaffarabadi, Murrah, Surti, Pandharpuri
		Part of Ahmednagar	Part of Akole		Non-descript	UG	Murrah, Jaffarabadi, Surti, Pandharpuri
		Part of Pune	Part of - Junner, Ambegaon, Khed, Maval, Mulshi, Haveli, Velhe, Bhore	--	Non-descript	UG	Murrah, Jaffarabadi, Pandharpuri, Surti
		Part of Satara	Part of - Mahabateshwar, Wai, Jawali, Satara, Patan, Karad	--	Non-descript	UG	Murrah, Pandharpuri, Surti
		Part of Sangli	Part of - Shirala, Watwa	--	Non-descript	UG	Murrah, Pandharpuri, Surti
		Part of Kolhapur	Part of - Halkanangle, Panhala, Shirol, Karveer, Kagal	--	Non-descript	UG	Murrah, Pandharpuri, Surti
6	Scarcity zone	Part of Nandurbar	Part of - Shahada, Nandurbar	--	Non Descript	UG	Jaffarabadi, Murrah, Surti

	Part of Dhule	Sindhkeda, Dhule, Part of - Shirpur, Sakri	--	Non-descript	UG	Jaffarabadi, Murrah, Surti
	Part of Jalgaon	Part of - Anainer, Parola, Chalisgaon	--	Non-Descript	UG	Jaffarabadi, Murrah, Surti
	Part of Nashik	Malegaon, Nandgaon, Yeola, Sinner, Part of- Baglan, Chandwad, Niphad	--	Non-descript	UG	Jaffarabadi, Murrah, Surti, Pandharpuri
	Part of Aurangabad	Vaijapur, Part of Gangapur, Paithan, Kannad	--	Non-descript	UG	Jaffarabadi, Murrah, Marathwadi, Surti
	Part of Ahmednagar	Kopergaon, Shirampur, Sangamner, Rahuri, Newasa, Pathardi, Ahmednagar, Parner, Shrogonda, Karjat, Jamkhed, Part of - Akole	--	Non-descript	UG	Murrah, Jaffarabadi, Surti, Pandharpuri
	Part of Beed	Ashti, Part of - Patoda, Gevrai, Kaji, Beed, Dharur, Vadvani	--	Non-descript	UG	Murrah, Marathwadi, Surti
	Part of Osmanabad	Bhoom, Paranda, Kalamb, Part of - Osmanabad, Lohara, Part of Tullapur	Marathwadi	Non-descript	SB/UG	Marathwadi / Murrah
	Part of Solapur	Maishiras, Pandharpur, Mohol, Madha, Sangola, Mangalwedha, Karmala, Part of - Akalkoat, South Solapur, North Solapur, Barshi	Pandharpuri	Non-descript	SB / UG	Pandharpuri/ Pandharpuri, Murrah, Jaffarabadi
	Part of Pune	Daund, Purandhar, Baramati, Indapur, Part of - Shirur, Havell, Bhori, Velhe	--	Non-descript	UG	Murrah, Pandharpuri, Jaffarabadi, Surti

		Part of Satara	Phaltan, Man, Koregaon, Khatav, Part of - karad, Satara, Mahabaleshwar, Khandala	-	Non-descript	UG	Murrah, Pandharpuri, Surti
		Part of Sangli	Atpadi, Jat, Kawathemahankal, Miraj, Part of - Walwa	-	Non-descript	UG	Murrah, Pandharpuri, Surti
		Part of Kolhapur	Part of - Hatkanangale, Shirol	-	Non-descript	UG	Murrah, Pandharpuri, Surti, Jaffarabadi
7	Assured Rainfall Zone	Part of Dhule	Part of Shirpur	-	Non-descript	UG	Jaffarabadi, Murrah, Surti
		Part of Jalgaon	Chopda, Yawai, Raver, Edlebad, Bhusaval, Jalgaon, Erandole, Pachora, Jamner, Bhadgaon, Part of - Challisgaon, Parola, Amalner	-	Non-descript	UG	Jaffarabadi, Murrah, Surti, Pandharpuri
		Part of Aurangabad	Soygaon, Sillod, Khultabad, Aurangabad, Part of - Kannad, Palthan, Gangapur	-	Non-descript	UG	Jaffarabadi, Murrah, Marathwadi, Surti
		Jalna	Jafarabad, Jalna, Ambad, Partur, Bhokardhan	-	Non-descript	UG	Jaffarabadi, Murrah, Marathwadi
		Part of Beed	Majalgaon, Ambejogai, Part of - Beed, Patoda, Gevrai, Parali, Kej	-	Non-descript	UG	Murrah, Marathwadi, Surti
		Latur	Latur, Ahimadpur, Udgir, Nilanga, Ausa, Chakur, Renapur, Devani, Shirur	Marathwadi	Non-descript	SB/UG	Marathwadi / Marathwadi, Murrah

	Part of Osmanabad	Umarga, Part of Osmanabad, Tuljapur	—	Non-descript	UG	Marathwadi, Murrah
	Part of Solapur	Part of - Akkalkot, North Solapur, South Solapur, Barshi	Pandharpuri	Non-descript	SB/UG	Pandharpuri/ Pandharpuri, Murrah, Jaffarabadi
	Part of Parbhani	Pathri, Jintur, Gangakhed, Palam, Parbhani	—	Non-descript	UG	Marathwadi, Murrah, Jaffarabadi
	Part of Nanded	Mukhed, Deglur	—	Non-descript	UG	Marathwadi, Murrah, Jaffarabadi
	Part of Hingoli	Part of - Hingoli, Basmat, Aundha (t), Akhada Balapur	—	Non-descript	UG	Murrah, Marathwadi, Jaffarabadi, Surti
	Buldhana	Sindkhed Raja, Deulgaon Raja, Chikhali, Buldhana, Motala, Malkapur, Nandura, Jalgaon Jamod, Shegaon, Khangaon, Sangrampur, Part of - Mehekar, Lonar	—	Non-descript	UG	Murrah, Nagpuri, Jaffarabadi, Surti
	Akola	Balapur, Patur, Barshi Takli, Akola, Akot, Telhara, Murtijapur	—	Non-descript	UG	Murrah, Nagpuri
	Washim	Karanja, Part of - Mangrulpir, Manora, Malegaon, Washim	—	Non-descript	UG	Murrah, Nagpuri
	Amravati	Achalpur, Anjangaon Surji, Daryapur, Bhatkuli, Chandur Bajar, Amravati, Part of - Tiwsa, Chandur Railway, Dharni, Chikhaldara, Dhamangaon Railway, Morshi	—	Non-descript	UG	Murrah, Nagpuri

8	Moderate to Moderately high rainfall Zone	Part of Yavatmal	Part of - Ner, Darva	--	Non-descript	UG	Murrah, Nagpuri
		Part of Nanded	Nanded, Bhokar, Hadgaon, Naigaon, Dharmabad, Himayatnagar, Ardhapur, Part of - Kandhar, Bilori	--	Non-descript	UG	Marathwadi, Murrah, Jaffarabadi
		Part of Yavatmal	Yavatmal, Kalamb, Ralegaon Kelapur, Malegaon, Wani, Ghatanji, Digra, Malegaon, Umerkhed, Pusad, Arni, Jari zamni, Part of - Darva, Ner	--	Non-descript	UG	Murrah, Nagpuri
		Wardha	Part of - Selu, Arvi, Karanja, Devali, Hinganghat, Samudrapur, Ashti,	--	Non-descript	UG	Nagpuri, Murrah
		Part of Nagpur	Katol, Narkhed, Savner, Kalmweshwar, Hingna, Nagpur City, Nagpur rural, Parshivani, Remtek, Kamati, Umred Part of - Kuhl, Bhiwapur, Mauda,	Nagpuri	Non-descript	SB/UG	Nagpuri / Nagpuri, Murrah
		Part of Chandrapur	Rajura, Bhadravali, Warora, Chandrapur, Part of - Gond pimpri, Chimur, Rajura, Korpana, Ballarpur, Pombhurna, Jiwati, Nagbhid, Shindewahi, Brahmapuri, Mui, Sawali	--	Non-descript	UG	Murrah, Nagpuri
		Part of Hingoli	Part of - Kalamnuri	--	Non-descript	UG	Murrah, Marathwadi, Jaffarabadi, Surli

9	High rainfall zone with soils formed from rocks of mixed origin	Part of Bhandara	Tiroda, Pawni, Lakhandur, Lakhani, Part of - Mohadi, Tumsar	—	Non-descript	UG	Murrah, Nagpuri
		Gondiya	Gondiya, Goregaon, Salakasa, Devari, Amgaon, Arjuni margaon, Sadak arjuni, Tiroda	—	Non-descript	UG	Murrah, Nagpuri
		Gadchiroli	Gadchiroli, Sironcha, Aheri, Etapalli, Chamorshi, Dhanora, Armori, Kurkheda, Korchl, Desalgani, Mulchera	—	Non-descript	UG	Nagpuri, Murrah
The abbreviations used in column no 7 stand for - S B— Selective Breeding, U G— Upgradation -							