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Government of India
Ministry of Agriculture and Farmers Welfare
Department of Animal Husbandry, Dairying & Fisheries

Krishi Bhawan, New Delhi

Dated July 5, 2018

Subject: Guidelines for Export/Import of Bovine Germplasm (Revised July 2018)

The undersigned with the approval of competent authority is directed to enclose herewith Guidelines for Export and Import of Bovine Germplasm (Revised July 2018). It is requested that the guidelines may be given wide publicity.



(Deepak Sethi)

Under Secretary to Government of India

Distribution:

1. Secretary, Animal Husbandry Department, All states as per list
2. Managing Directors, Milk Federation, All states as per list
3. Director, Animal Husbandry Department, All states as per list
4. Group Head, Animal Breeding, NDDB, Anand
5. Chief Executive Officers, Livestock Development Board/Agency, All states as per list
6. Director (C&DD), DADF, Krishi Bhawan
7. Dy. Commissioner (Trade), DADF, Krishi Bhawan

DEEPAK SETHI
Under Secretary
DADF

Copy for kind information to:

1. Executive Director, NDDB, Anand
2. PPS to Secretary/PPS to AHC/PPS to JS (C&DD)/JS (Trade)
3. Director (NIC), DADF with the request for uploading Guidelines on the Website of this Department.

Guidelines for export /import of bovine germplasm (Revised July 2018)

The import and export of the cattle/ buffalo germplasm is under the restricted list and is allowed against license(s) issued by the Directorate General of Foreign Trade, Ministry of Commerce on the recommendation of the Department of Animal Husbandry dairying & Fisheries.

Introduction of temperate dairy breeds in the country for crossbreeding indigenous non - descript cattle has been accepted for quite some time now. In pursuance to this need has been felt by a number of State Governments/ Organisations to import exotic germplasm to produce quality cross-bred animals. With the extension of the breeding programme and the artificial breeding network, a surge in demand for exotic germplasm is also expected. Accordingly, import of germplasm must be from the sires, which have been progeny tested or **genomically tested** and are in active use in cattle breeding.

There is a definite demand for the germplasm of Indian breeds of cattle and buffaloes in South America, South Asia and other countries. Keeping in view our responsibility towards conservation of the rich diversity, of indigenous breeds it is important to broadly identify germplasm of cattle and buffalo meant for breeding purposes and for the export. Imposing a complete ban on the export of Indigenous germplasm because of conservation concerns could be counterproductive, since such a ban may encourage the flow of germplasm through illegal trade which is not desirable.

Accordingly, it is essential to have guidelines in place for processing such applications for import and export of bovine germplasm, in order to streamline procedures and ensure efficient and transparent processing.

Guidelines for export /import of bovine germplasm

Guidelines for the Import of bovine germplasm:

- 1 Import of bovine germplasm will be permitted for breeding purpose only.
- 2 **Eligibility of Importers**
 - 2.1 Institutes/organizations capable of maintaining performance records of exotic germplasm shall only be permitted to import bovine germplasm and the capability of institutions in this regard will be evaluated by the Department of Animal Husbandry, Dairying and Fisheries (DAHDF).
 - 2.2 Application for Import of germplasm shall be accompanied with the following documents:
 - (i) No objection certificate from the State Government of the State in which germplasm is proposed to be utilized.

- (ii) Complete genetic and production data /information, including genetic marker report with respect to the germplasm proposed to be imported.
 - (iii) The justifications for import.
 - (iv) The future roadmap for utilization of imported germplasm.
 - (v) Information on feeding ingredients and feeding schedule of the animals.
- 2.3 The import shall be based on the standard lactation yield or projected standard lactation yield based on a minimum of first six months lactation, milk fat, protein, somatic cell count (SCC) and other milk component character standards. The type evaluation shall form the integrated component of selection. Breeding value for production and type traits shall be estimated on the basis of the daughters' born in the exporting country.
- 2.4 Information on the germplasm proposed to be imported shall be authenticated by agencies recognised by the Government of the country (for example , USDA in case of US, CDN for Canada, INRA for France, etc.) from which the germplasm is proposed to be imported.
- 2.5 The institutes/organization permitted to import bovine germplasm must maintain records to ensure traceability of imported germplasm. Post import information from the date of import to the date of disposal shall be submitted by the importer in prescribed formats to DAHDF (Annexure-I to VII) and State Governments.
- 2.6 The guidelines formulated by OIE, Codex Alimentarius and IETS shall be strictly adhered to while importing the genetic material.
- 2.7 The pre and post import quarantine measures for live animals and germplasm shall be strictly adhered in accordance with GOI health protocols.
- 2.8 Along with other documents the State shall submit notified copy of its bovine breeding policy.
- 2.9 State may generally be allowed to import upto one lakh doses of frozen semen and 100 frozen embryos in a year while import of live animals is to be discouraged. However, the Department may be open to examine the cases on State to State basis.
- 2.10 Only those agencies shall be allowed to import live animals who are maintaining A or B graded semen stations and have a network of AI technicians in the country.
- 2.11 The State/importing agency shall submit individual animal wise traceability report using UID, and data shall be uploaded on to INAPH data base.

- 2.12 The State/importing agency shall furnish the details of traceability of previous germplasm import, if applicable, upto individual animals along with success rate of AI/ embryo transfer.

3 Screening Committee:

- 3.1 A Technical screening committee constituted by DAHDF will critically evaluate data submitted by the importer and breeding companies duly authenticated by the recognised Government Agency in country of export.
- 3.2 All the applications for the import of germplasm will be examined by 'Trade and Investment Matter Committee' of the Department of Animal Husbandry, Dairying and Fisheries (DAHDF).

4 Veterinary Certificates:

- 4.1 The imports shall be regulated as per the provision of Livestock Importation Act, 1898, amended from time to time and as per the protocols/ veterinary certificates for import of cattle and buffaloes, gonads/ embryos/ semen as prescribed by DAHDF and as amended from time to time.

5: Order of import:

- 5.1 For import of germplasm, the order of preference shall be frozen semen, frozen embryos and live animals. Import of live animals shall be allowed only if there is a strong justification. Import shall be based on the assessment of the domestic requirement of bulls and bull mothers, and their availability in the country.

6 Standards for Import of Exotic Germplasm:

6.1 Semen:

6.1.1 Unsexed semen:

- 6.1.1.1 Semen shall be from progeny tested sires with positive sire indices/breeding values for conception rate (DPR/SCR), volume of milk and total fat and total protein.
- 6.1.1.2 Sire's daughters' average standard lactation yield shall be above 9000 kg in the case of HF and 6000 kg in the case of Jersey.

- 6.1.1.3 Sire's daughters' average milk fat shall be above 3.5% or above 315 kg for standard lactation yield in the case of HF; and above 4.5% or above 270 kg in the case of Jersey.
- 6.1.1.4 Sire's daughters' average protein % or total protein per lactation shall be above the average of the concerned breed in the exporting country
- 6.1.1.5 Sire's daughters' average somatic cell count (SCC) shall be below the prescribed limit average of the concerned breed in the exporting country or its appropriate breeding value or somatic cell score (SCS) may be considered if SCC is not available.
- 6.1.1.6 Reliability of breeding value for production characters shall be more than 80% for both HF and Jersey.
- 6.1.1.7 Sires shall have good type characters like udder and feet conformation.
- 6.1.1.8 Sire shall be free from all known **breed specific** genetic disorders including Bovine Leukocyte Adhesion Disease (BLAD), Deficiency of Uridine Monophosphate Synthase (DUMPS), Citrulinemia (Deficiency of Argininosuccinate Synthetase), Factor XI Deficiency, Complex Vertebral Malformation (CVM) and Brachyspina.
- 6.1.2: **Sexed Semen**
- 6.1.2.1 Sexed semen shall be from credible sources and shall meet the standards of sires given under item No. 6.1.1 or
- 6.1.2.2 Sexed semen could be from genomically tested sires meeting the following criteria:
- (a) The sire should have positive GEBVs (Genomic Estimated Breeding Values) for total milk yield, total milk fat, total milk protein and daughters pregnancy rate/sires conception rate.
 - (b) The reliability of GEBVs for milk, fat and protein yield should be above 50% for Jersey and above 65% for HF.
 - (c) The sire should have positive GEBV for type characters like udder and feet and leg conformation.
- 6.1.2.3 Sire shall be free from all known **breed specific** genetic disorders as mentioned at clause No. 6.1.1.8
- 6.1.2.4 The percentage of error of sex shall not be more than 10% and reduction in fertility shall not be more than 10% of normal semen use.

6.2 Embryos:

6.2.1 Embryos from a donor cows or heifers not genomically tested, the donor cow/heifers' dam should meet the following criteria:

- (a) Donor cows or heifer's dam should have the standard 1st lactation yield above 9,000 kg in the case of HF and above 6000 kg in the case of Jersey.
- (b) The average milk fat of the Donor cow's or heifers' dam shall be above 3.5% or 315 kg for standard 1st lactation yield in the case of HF and above 4.5% or above 270 kg in the case of Jersey.
- (c) The average protein % or total protein for standard 1st lactation yield of Donor cow's or genomically tested heifers' dam shall be above the average of the concerned breed in the exporting country.
- (d) The average somatic cell count (SCC) of Donor cow's or heifers' dam shall be below the prescribed limit average of the concerned breed in the exporting country or its appropriate breeding value or somatic cell score (SCS) may be considered if SCC is not available.

6.2.2 Embryos from genomically tested heifers, the heifers should meet following criteria:

- a) The Heifer should have positive GEBVs (Genomic Estimated Breeding Values) for total milk yield, total milk fat, total milk protein.
- b) The reliability of GEBVs for milk, fat and protein yield should be above 50% for Jersey and above 65% for HF.
- c) The heifer should have positive GEBV for type characters like udder and feet and leg conformation.

6.2.3 Semen of sire used for inseminating donor or genomically tested heifer for embryo production shall meet the specifications for semen given under item 6.1.

6.2.4 The donor cow or genomically tested heifer shall be free from all known **breed specific** genetic disorders as mentioned at clause No.6.1.1.8

6.3 Young bulls

6.3.1 The Genomically tested young bull should meet the criteria mentioned at clause No. 6.1.2.2.

6.3.2 The young bull not having genomic breeding value should meet the following criteria:

- (a) The dam of the young bull should meet the criteria mentioned at clause No. 6.2

(b) The sire of the young bull should meet the criteria mentioned at clause No. 6.1.1 or 6.1.2

6.3.3 The young bulls or genomically tested young bulls shall be free from all known **breed** specific genetic disorders as mentioned at clause No.6.1.1.8

6.4 Young Heifers

6.4.1 Early pregnant heifers with pregnancy not more than 4 to 5 months at shipping;

A. Donors Cows

6.4.2 Only young heifers born to dams or produced using embryos produced from donor cows meeting criteria mentioned at under 6.2 and by using semen of the sire meeting criteria mentioned at 6.1 shall be imported.

B: Donor Heifers

6.4.3 The heifers' dam shall meet the standards specified under 6.2 and sire shall meet the standards specified under 6.1

7 Import of germplasm of breeds of Indian origin

7.1 Government agencies/others identified by the State Government may be allowed to take up import of indigenous germplasm either in the form of semen, embryos or live animals.

7.2 Donor/animal shall be true to the breed type. The purity of breed shall be tested by using appropriate techniques

7.3 Performance of the donor/animal shall be above the elite animals of the concerned breed available in the India.

7.4 Standards for Import of Gir Frozen semen and embryos:

7.4.1 Unsexed/sexed Semen

7.4.1.1 Semen shall be from progeny tested sires with positive sire indices/breeding values for conception rate (DPR/SCR), volume of milk, fat yield and protein yield.

7.4.1.2 Sire's daughters' average standard lactation yield shall be above 4000 kgs.

7.4.1.3 Sire's dam's standard lactation yield shall be above 5000 kgs.

7.4.1.4 Sire's daughters' average milk fat shall be above 4.0% or above 160 kg.

- 7.4.1.5 Sire's dam's milk fat shall be above 4.0% or above 200 kgs.
- 7.4.1.6 Sire's daughters' and Sire's dam's average protein % or total protein per lactation shall be above the average of the Gir breed in the exporting country
- 7.4.1.7 Sire's daughters' and Sire's dam's average somatic cell count (SCC) shall be below the prescribed limit average of the Gir breed in the exporting country or its appropriate breeding value or somatic cell score (SCS) may be considered if SCC is not available.
- 7.4.1.8 Reliability of breeding value for production characters shall be more than 70%.
- 7.4.1.9 Sires shall have good type characters like udder and feet conformation.
- 7.4.1.10 Sire shall be free from all known **breed specific** genetic disorders including Bovine Leukocyte Adhesion Disease (BLAD), Deficiency of Uridine Mono-phosphate Synthase (DUMPS), Citrulinemia (Deficiency of Arginino succinate Synthetase), Factor XI Deficiency, Complex Vertebral Malformation (CVM) and Brachyspina.
- 7.4.1.11 The percentage of error of sex shall not be more than 10% and reduction in fertility shall not be less than 10% of normal semen used.

7.4.2 Embryos

- 7.4.2.1 Embryos from a donor cows or heifers (not genomically tested); the donor cow/heifer's dam should meet the following criteria:
 - 7.4.2.1.1 Donor cows or heifer's dam should have the standard 1st lactation yield of 4000 kg or best lactation yield of 5000 Kgs.
 - 7.4.2.1.2 The average milk fat of the heifer's dam or Donor cow's shall be above 4.0% or above 160 kg (First lactation) or 200 Kgs (Best lactation).
 - 7.4.2.1.3 The average protein % or total protein for standard 1st lactation or best lactation yield of Donor cow's or genomically tested heifer's dam shall be above the average of the concerned breed in the exporting country.
 - 7.4.2.1.4 The average somatic cell count (SCC) of Donor cow's or heifer's dam shall be below the prescribed limit average of the concerned breed in the exporting country or its appropriate breeding value or somatic cell score (SCS) may be considered if SCC is not available.

- 7.4.2.2 Embryos from genomically tested heifers; the heifers should meet the following criteria:
- 7.4.2.2.1 The Heifer should have positive GEBVs (Genomic Estimated Breeding Values) for total milk yield, total milk fat yield, and total milk protein yield.
- 7.4.2.2.2 The reliability of GEBVs for milk, fat and protein yield should be above 50%.
- 7.4.2.2.3 The heifer should have positive GEBV for type characters like udder and feet and leg conformation.
- 7.4.2.2.4 Semen of sire used for inseminating donor or genomically tested heifer for embryo production shall meet the specifications for semen given under item 7.4.1.
- 7.4.2.2.5 The donor cow or genomically tested heifer shall be free from all known breed specific genetic disorders as mentioned at clause No. 7.4.1.10.
- 7.5 Standards for Import of Sahiwal Frozen semen and embryos:
- 7.5.1 Unsexed/Sexed Semen
- 7.5.1.1 Semen shall be from progeny tested sires with positive sire indices/breeding values for conception rate (DPR/SCR), volume of milk, fat yield and protein yield.
- 7.5.1.2 Sire's daughters' average standard lactation yield shall be above 4000 kgs.
- 7.5.1.3 Sire's dam's standard lactation yield shall be above 5000 kgs.
- 7.5.1.4 Sire's daughters' average milk fat shall be above 4.0% or above 160 kg.
- 7.5.1.5 Sire's dam's milk fat shall be above 4.0% or above 200 kgs.
- 7.5.1.6 Sire's daughters' and Sire's dam's average protein % or total protein per lactation shall be above the average of the Sahiwal breed in the exporting country.
- 7.5.1.7 Sire's daughters' and Sire's dam's average somatic cell count (SCC) shall be below the prescribed limit average of the Sahiwal breed in the exporting country or its appropriate breeding value or somatic cell score (SCS) may be considered if SCC is not available.
- 7.5.1.8 Reliability of breeding value for production traits shall be more than 70%.
- 7.5.1.9 Sires daughters' shall have good type characters including udder and feet & leg conformation.

7.5.1.10 Sire shall be free from all known breed specific genetic disorders including Bovine Leukocyte Adhesion Disease (BLAD), Deficiency of Uridine Mono - phosphate Synthase (D UMPS), Citrulinemia (Deficiency of Arginino succinate Synthetase), Factor XI Deficiency, Complex Vertebral Malformation (CVM) and Brachyspina.

7.5.1.11 The percentage of error of sex shall not be more than 15% and reduction in fertility shall not be less than 10% of the normal semen used.

7.5.2 Embryos

7.5.2.1 Embryos from a donor cows or heifers (not genomically tested); the donor cow/heifer's dam should meet the following criteria:

7.5.2.1.1 Donor cows or heifer's dam shall have the standard 1st lactation yield above 5000 kg or best lactation yield above 5500 Kgs.

7.5.2.1.2 The average milk fat of the heifer's dam or Donor cow's shall be above 4.0% or above 200 kg (First lactation) or 220 Kgs (Best lactation).

7.5.2.1.3 The average protein % or total protein for standard 1st lactation or best lactation yield of Donor cow's or heifer's dam shall be above the average of the concerned breed in the exporting country.

7.5.2.1.4 The average somatic cell count (SCC) of Donor cow's or heifer's dam shall be below the prescribed limit average of the concerned breed in the exporting country or its appropriate breeding value or somatic cell score (SCS) may be considered if SCC is not available.

7.5.2.2 Embryos from genomically tested heifers; the heifers should meet the following criteria:

7.5.2.2.1 The Heifer shall have positive GEBVs (Genomic Estimated Breeding Values) for total milk yield, total milk fat yield, and total milk protein yield.

7.5.2.2.2 The reliability of GEBVs for milk, fat and protein yield should be above 50%.

7.5.2.2.3 The heifer should have positive GEBV for type characters including udder and feet and leg conformation.

7.5.2.2.4 Semen of sire used for inseminating donor or genomically tested heifer for embryo production shall meet the specifications for semen given under item 7.5.1.

7.5.2.2.5 The donor cow or genomically tested heifer shall be free from all known breed specific genetic disorders as mentioned at clause No.7.5.1.10.

Guidelines for Export of bovine germplasm:

- 1: Export of live animals (bovine) and bovine germplasm will be permitted for breeding purposes only.
- 2: The export of germplasm will be allowed subject to the fulfillment of the following conditions:-
 - 2.1: For export of germplasm, order of preference shall be: (i) frozen semen, (ii) frozen embryos and (iii) lastly live animals.
 - 2.2: Animals shall conform to breed characteristics.
 - 2.3: Milk production records of breed averages will be considered during export of live animals.
 - 2.4: Elite animals (top 20% of the production level) of each breed having best milk production level shall not be exported.
 - 2.5: Each year not more than exceed 5% of the estimated population of the concerned breed in India shall be exported.
 - 2.6: Export of live animals of some of the indigenous breeds categorised as **threatened/ endangered** shall not be allowed.
 - 2.7: The health certificate requested by the importing authorities will be provided by a registered Veterinarian duly authorized by DAHDF.
 - 2.8: The State Government of the State from which germplasm is proposed to be exported will issue an NOC for the proposed export. The State Government shall maintain detailed data on the exported animals and shall inform DAHDF on quarterly basis.
 - 2.9: For export of Embryos/ and ova, the collection and processing techniques as stipulated under section 3.3 Appendix 3.3.1.1 to 3.3.1.13 and micro- manipulation of the Bovine Embryos at Appendix 3.3.3.1 to **3.3.3.5** of the OIE Terrestrial Animal Health code (**2005**) as amended from time to time shall be adhered to.
 - 2.10: Collection and processing procedure of semen as per section 3.2, Appendix 3.2.1.1 to 3.2.1.10 of the OIE Terrestrial Animal Health code (**2005**) as amended from time to time shall be complied with.
 - 2.11: The exporting agency will comply with the rules and regulations of DAHDF. The exporting agencies are required to provide the following documents to DAHDF: (i) Import requirement of the country(s) which are interested in importing the bovine germplasm, (ii) import policy documents of the importing country and (iii) health protocols.

Format for submission of post-import information on bovine germplasm

1. Name of the organisation:
2. Address with telephone/fax numbers and email:
3. Year-wise and breed-wise number of bovine germplasm imported
 - (a) Bulls:
 - (b) Heifers:
 - (c) Embryos:
 - (d) Frozen Semen (sexed / unsexed):
 - (e) Others:
4. Country of origin of the imported germplasm:
5. Cost on CIF basis:
6. Purpose of importation:
7. Identification No., date of birth and pedigree details: (preferably by RFID tags for imported animals).
8. Name and address of the Farms/Semen Stations where the germplasm were stationed:
9. Best, average and life time lactation yield (in case of milch animal), number of frozen semen doses produced (in case of male stock) during life time/after importation and average production per year :
10. Age at culling/disposal of the imported animal as well as reason and mode of disposal :
11. Report of congenital anomalies in progeny, if any :
12. No. of lactation/calf born during life time/after importation (in case of heifer/cows) :
13. Traceability of progeny of imported stock and progeny records in terms of distribution, location, production records and disposal.
14. Other relevant information, if any.

Annexure-II

Imported frozen semen and Embryos usage bull-wise

Name of the agency

Quarter of reporting

SN	Bull No.	State and Districts	No. of imported doses used	Conception rate on first AI basis	Calves born		Any genetic defect observed	No. of female and male calves alive
					Male	Female		
Total								

Annexure-III

Performance of females born

SN	Name of the State	Name of the District	No. of daughters calved	Average age at first calving (months)	Average lactation yield of daughters (kg)
Total					

Annexure-IV

Performance of males born and used for semen production

SN	Name of the state	Name of the district	No. of males used for semen production
Total			

Annexure-V

Use of frozen semen produced from imported bulls - bull-wise

Name of the agency

Quarter of reporting

SN	Bull No.	State and Districts	No. of imported doses used	Conception rate on first AI basis	Calves born		Any genetic defect observed	No. of female and male calves alive
					Male	Female		
Total								

Annexure-VI

Performance of females born from the use of semen produced from imported bulls

SN	Name of the State	Name of the District	No. of daughters calved	Average age at first calving (months)	Average lactation yield of daughters (kgs)
Total					

Annexure-VII

Performance of males born from the semen produced from imported bulls

SN	Name of the state	Name of the district	No. of males used for semen production
Total			