

GOVERNMENT OF THE DEMOCRATIC SOCIALIST

REPUBLIC OF SRI LANKA

BID DOCUMENT FOR SUPPLY OF CATTLE & BUFFALO SEMEN

BID REFERENCE NUMBER: NLDB/06/01/SEMEN/2024

Date: 22/07/2024

NATIONAL LIVESTOCK DEVELOPMENT BOARD

NO. 40, NAWALA ROAD, NARAHENPITA,

COLOMBO 5

**BID DOCUMENT FOR SUPPLY OF CATTLE & BUFFALO SEMEN FOR THE NATIONAL LIVESTOCK
DEVELOPMENT BOARD FOR 2024**

BID REFERENCE NUMBER: NLDB/06/01/SEMEN- 2024

GENERAL CONDITIONS FOR SUPPLY OF CATTLE & BUFFALO SEMEN

1. The National Livestock Development Board (NLDB), Sri Lanka which is the largest government owned livestock organization of Sri Lanka established in 1973. It maintains 32 livestock farms for different livestock types for breeding purposes at present and 04 of them are maintained as large scale European breed Dairy Cattle farms supplying the demand of breeding materials of local farmers.

Sealed Bids are hereby invited from **international suppliers** by the General Manager, National Livestock Development Board, No. 40, Nawala Road, Narahenpita, Colombo 5, Sri Lanka, from cattle & Buffalo semen suppliers for supply of following semen quantities for the National Livestock Development Board's Farms.

	Type of Semen	Quantity
Jersey	Conventional type	2,000
	Sex Sorted	500
Friesian	Conventional type	1,000
	Sex Sorted	500
Buffalo Semen - Murrah	Conventional type	100
Buffalo Semen - Nili Ravi	Conventional type	100

- Port of Disembarking: Bandaranayake International Airport, Colombo, Sri Lanka
- Freight Terms: CPT(AIR) USD (\$) / EURO
- Terms of Payment: Letter of Credit

- (a) Specifications : Conventional semen from the breed of Jersey - As per the schedule 'A'
Conventional semen from the breed of Friesian- As per the schedule 'B'
Sex sorted semen from the breed of Jersey - As per the schedule 'C'
Sex sorted semen from the breed of Friesian - As per schedule "D"
Conventional semen from the breed of Murrah (Buffalo) - As per the schedule 'E'
Conventional semen from the breed of Nili Ravi (Buffalo) - As per the schedule 'F'

- (B) Annexures : 01 - Price Schedule
: 02 - Specimen Health protocol

2. VALIDITY PERIOD OF BIDS

Prices offered by the suppliers should be valid minimum period of 90days after the opening date of Bids for acceptance.

3. CLOSING OF BIDS

Envelopes containing sealed quotations shall be marked **"Bids for the supply of Cattle & Buffalo Semen for the NLDB"** addressed to the **"Chairman - Procurement Committee, National Livestock Development Board, No. 40, Nawala Road, Narahenpita, Colombo 5, Sri Lanka"** or should be sent to the e-mail address **supplies@nlldb.lk** on or before **2.30 p.m.(Sri Lankan Time) on 02nd September 2024**. Bids shall be closed at **2.30 p.m. Sri Lankan Time) on 02nd September 2024** and opened immediately after the closing time at the National Livestock Development Board, No. 40, Nawala Road, Narahenpita, Colombo 5. The Bidder or his accredited agent will be permitted to be present at the time of the opening of the Bids.

4. LATE QUOTATIONS

Late Bids will not be accepted and returned back unopened.

5. MODE OF PAYMENT

Payment terms will be by confirmed irrevocable Letter of Credit at sight, unless otherwise agreed. Suppliers should strictly conform to their terms and condition of our indents and Letter of Credit and should not request amendments. If confirmed L/C required, confirmation charges should be on bidder's accounts.

Orders may have to be cancelled and performance bond (if applicable) forfeited if suppliers request amendments / extensions to Letter of Credit.

6. METHOD OF PRICING AND SUBMISSION OF DOCUMENTS

All the documents including general conditions should be forwarded duly perfected before closing date and time as per the Condition No. 03

7. RIGHT OF THE PROCUREMENT COMMITTEE

- a) The Procurement Committee of the NLDB reserves the right to reject any or part of quotation and right to accept any part of the quotation and to order only such quantity as per the requirement.
- b) The Board is not responsible for re-imbursement of any payment for additional expenses or a loss which may be incurred by any supplier on supplying of Semen.
- c) Decision of the National Livestock Development Board would be final and conclusive.


Dr.K.G.J.S.Disnaka

GENERAL MANAGER

NATIONAL LIVESTOCK DEVELOPMENT BOARD

Date

Name and Address of the Supplier

Signature & seal of the Supplier

Annexure 01

The Chairman,
Procurement Committee,
National Livestock Development Board,
No:40, Nawala Road,
Narahenpita
Colombo - 05

Price schedule

Fill the below table & necessary fields in this document

Ite m No	Description	Qty (Doses)	Unit Price excluding taxes (USD/Euro)	Unit price with taxes (USD/Euro)	Total Value with taxes (USD/Euro)
01	Jersey – Conventional Type Semen	2,000			
02	Jersey – Sex Sorted Semen	500			
03	Friesian – Conventional Type Semen	1,000			
04	Friesian – Sex Sorted Semen.	500			
05	Buffalo Semen – Murrah Semen (Conventional Type)	100			
06	Buffalo Semen – Nili Ravi Semen (Conventional Type)	100			
	<i>Freight Chargers</i>				
	<i>Insurance</i>				
	<i>Semen Container Chargers</i>				
	<i>Other Chargers</i>				
	Total Cost				

- 1) The total price of the Bid **after Taxes**, any discounts offered and other chargers is:
In words:

In figures:

- 2) We undertake to supply the above items on terms stated overleaf.
3) We agree to complete for the supply within Days from the offer.
4) We agree to all the conditions in the document.

.....
Name of the Company

.....
Date

.....
Signature of the Bidder



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පணிපාලන නායක
Director General

+94 - 81 - 2388195

E-mail : dgaph@slt.net.lk

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கால்நடை உற்பத்தி, சுகாதாரத் திணைக்களம்
DEPARTMENT OF ANIMAL PRODUCTION & HEALTH



කාර්යාලය
அலுவலகம்
Office

+94 - 81 - 2388120
184/189/337/462

Web : www.daph.gov.lk

DAFH/VRA/5/4/2

17.02.2024

Veterinary health requirements for the importation of Bovine semen into Sri Lanka

The following requirements should be fulfilled

Status	Disease / Organism	Required test / Certification
Country free	Bovine Spongiform Encephalopathy Rift Valley Fever	Certification by the Government Veterinary Authority
Zone free	Foot and Mouth Disease Lumpy Skin Disease Anthrax Bovine brucellosis Bovine Viral Diarrhoea	Certification by the Government Veterinary Authority
Herd free	Enzootic Bovine Leucosis Infectious Bovine Rhinotracheitis - Infectious Pustular Vulvovaginitis (IBR- IPV). Blue Tongue Disease Chlamydiosis during the past 12 months prior to the semen collection and until the date of dispatch of semen	Certification by the Government Veterinary Authority
Tests	should have been tested and proven negative at least annually for five consecutive years Infectious Bovine Rhinotracheitis - Infectious Pustular Vulvovaginitis (IBR - II)V) – PCR Bovine Viral Diarrhoea –Antigen ELISA / PCR Blue tongue – PCR Leptospirosis - Microscopic agglutination test (MAT) Bovine genital campylobacteriosis (<u>Campylobacter fetus</u> subsp. Venerealis) - Testing Antibodies by ELISA Bovine tuberculosis - Intradermal tuberculin test Bovine brucellosis (<u>B.abortus</u> , <u>B.suis</u>) – ELISA Johne's disease – Testing Antibodies by ELISA Trichomoniasis - Culture of preputial washing of donor Coxiella burnetii – PCR	Laboratory certification

P.T.O

1. Should be healthy and no sign of any disease on the day of collection.
2. Should be born and have been residing immediately prior to the date of the semen collection in the exporting country
3. The breeds of the donor animal should be in compliance with Sri Lanka National Breeding Policy or approved by breeding committee in Sri Lanka.
4. The parents should not be related.
5. The semen be been collected from progeny tested and proven sire.
6. Requirements for approval of Artificial insemination Centers should be in accordance with the chapter 4.6 of International animal Health Code 2023.
7. The semen should be collected, handled, processed and stored strictly under the conditions stated in the international animal health code, OIE 2023 article 4.7.5, 4.7.6 and 4.7.7.
8. Parenteral line should be free from genetic defects and disorders.
9. The donor animals should have never been used for natural service.
10. The Artificial Insemination Centre has to be licensed by the Government Veterinary Authority of the exporting country and should be under the supervision of a Government veterinary Authority.
11. Detail description of health management protocol adopted at the Artificial Insemination Centre certified by the Government Veterinary Authority to be furnished together with the specimen Veterinary Health Certificate.
12. The certificate of the country of origin should be certified by the relevant authority

Health protocol may vary from time to time according to the disease status reported to WOAHA and the health status of the exporting country

Heema Abayaratne
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Dr. K.A.C.H.A. Kothalawala

CVO

DG / DAPH

Dr. (Mrs.) K.A.C.H.A. Kothalawala
Director General
Dept. of Animal Production & Health
P. O. Box 13, Gatambe
Peradeniya

Specifications for Jersey proven sire's semen**Performance of Bull, Parents, and Grandparents**

No	Requirement	Please mention agreed/not agreed	Evident Document /details are attached (Yes/No)	Remarks
1	Progeny Testing:			
	The bull must be progeny tested during the 2020/2021 evaluation period.			
	Indicate the number of daughters tested.			
2	Estimated Breeding Values (EBVs) with Reliability:			
	Milk Yield: +350 kg or higher (reliability >85%)			
	Fat Yield: +30 kg or higher with 5% fat (reliability >85%)			
	Protein Yield: +25 kg or higher with 3.4% protein (reliability >85%)			
3	Sire's Type Improver:			
	Bull's sire must possess a demonstrable record of improving udder and feet conformation.			
	Supporting documentation may include: - Linear type scores - Classification reports - Daughter evaluation records			
4	Genetic Health The bull must be certified free of known deleterious recessive alleles for:			
	-Bovine Leukocyte Adhesion Disease (BLAD)			
	-Deficiency of Uridine Mono-Phosphate Synthetase (DUMPS)			

	-Citrullinemia (deficiency of argininosuccinate synthetase)			
	-Factor XI Deficiency			
5	Pedigree and Lineage			
	-Bulls must possess pedigrees demonstrating a minimum of four generations without common ancestors.			
	-The following must be provided for the bull, parents, and all grandparents:			
	-Names and herd registration numbers			
6	Progeny testing details, including:			
	-EBVs for milk yield, fat yield, protein yield, and percentages			
	-Reliability values for all EBVs			
7	Dam's Production Records:			
	Dam's first standard lactation (305-day) yield must equal or exceed 7000 kg of milk with a minimum of 4.5% butterfat.			
8	Semen Quality:			
	Ejaculated sperm concentration: Approximately 10×10^8 /ml			
	Wave movement: 4-5 (vigorous)			
	Dead sperm: Not to exceed 20-30%			
	Abnormal sperm: Not to exceed 15-20% in the first ejaculate			
	Post-thaw motility: Approximately 60%			
	Forwarded progressive motility: Greater than 60%			

	Minimum sperm count per straw: 25million (0.5 ml straw), 12-15 million (0.25 ml straw)			
	Cold chain management of semen at -196 c (LN) up to the dispatch is essential			
9	Somatic Cell Count (SCC):			
	Bull, sire, and maternal grandsire should exhibit a history of low SCC in progeny test information, indicating strong udder health genetics.			
10	Fertility:			
	Conception rate data (if available) should be provided for the bull to demonstrate fertility effectiveness.			
11	Additional Requirements			
	Herd Registration: Semen donors must originate from officially registered herds. Suppliers must provide official Certificates of Registration for all bulls alongside them quotations.			
	Pedigree and Performance Records: Pedigree information, production records, and officially estimated sire breeding values (as detailed on page 2) must be submitted with quotations.			
	Language: All documentation, including history and performance details, must be provided in English.			

Specifications for Friesian proven sire's semen**Performance of Bull, Parents, and Grandparents**

No	Requirement	Please mention agreed/not agreed	Evident Document/ details are attached (Yes/No)	Remarks
1	Progeny Testing:			
	The bull must be progeny tested during the 2020/2021 evaluation period.			
	Indicate the number of daughters tested.			
2	Estimated Breeding Values (EBVs) with Reliability:			
	Milk Yield: +500 kg or higher (reliability >85%)			
	Fat Yield: +25 kg or higher with 4% fat (reliability >85%)			
	Protein Yield: +20 kg or higher with 3.5% protein (reliability >85%)			
3	Sire's Type Improver:			
	Bull's sire must possess a demonstrable record of improving udder and feet conformation.			
	Supporting documentation may include: - Linear type scores - Classification reports - Daughter evaluation records			
4	Genetic Health The bull must be certified free of known deleterious recessive alleles for:			
	-Bovine Leukocyte Adhesion Disease (BLAD)			

	-Deficiency of Uridine Mono-Phosphate Synthetase (DUMPS)			
	-Citrullinemia (deficiency of argininosuccinate synthetase)			
	-Factor XI Deficiency			
5	Pedigree and Lineage			
	Bulls must possess pedigrees demonstrating a minimum of four generations without common ancestors.			
	<i>The following must be provided for the bull, parents, and all grandparents:</i>			
	-Names and herd registration numbers			
	Progeny testing details, including			
	-EBVs for milk yield, fat yield, protein yield, and percentages			
	-Reliability values for all EBVs			
7	Dam's Production Records:			
	Dam's first standard lactation (305-day) yield must equal or exceed 8500 kg of milk with a minimum of 3.8 % butterfat.			
8	Semen Quality:			
	Ejaculated sperm concentration: Approximately 10×10^8 /ml			
	Wave movement: 4-5 (vigorous)			
	Dead sperm: Not to exceed 20-30%			
	Abnormal sperm: Not to exceed 15-20% in the first ejaculate			
	Post-thaw motility: Approximately 60%			
	Forwarded progressive motility: Greater than 60%			

	Minimum sperm count per straw: 25million (0.5 ml straw), 12-15 million (0.25 ml straw)			
	Cold chain management of semen at -196 c (LN) up to the dispatch is essential			
9	Somatic Cell Count (SCC):			
	Bull, sire, and maternal grandsire should exhibit a history of low SCC in progeny test information, indicating strong udder health genetics.			
10	Fertility:			
	Conception rate data (if available) should be provided for the bull to demonstrate fertility effectiveness.			
11	Additional Requirements			
	Herd Registration: Semen donors must originate from officially registered herds. Suppliers must provide official Certificates of Registration for all bulls alongside them quotations.			
	Pedigree and Performance Records: Pedigree information, production records, and officially estimated sire breeding values (as detailed on page 2) must be submitted with quotations.			
	Language: All documentation, including history and performance details, must be provided in English.			

Specifications for Jersey proven sire's sex Sorted Semen (Deep Frozen)

Semen should potentially give more than 95% of female births from total births.

Performance of Bull, Parents, and Grandparents

No	Requirement	Please mention agreed/ not agreed	Evident Document/ details are attached (Yes/No)	Remarks
1	Progeny Testing:			
	The bull must be progeny tested during the 2020/2021 evaluation period.			
	Indicate the number of daughters tested.			
2	Estimated Breeding Values (EBVs) with Reliability:			
	Milk Yield: +350 kg or higher (reliability >85%)			
	Fat Yield: +30 kg or higher with 5 % fat (reliability >85%)			
	Protein Yield: +25 kg or higher with 3.4% protein (reliability >85%)			
3	Sire's Type Improver:			
	Bull's sire must possess a demonstrable record of improving udder and feet conformation.			
	Supporting documentation may include: - Linear type scores - Classification reports - Daughter evaluation records			
4	Genetic Health The bull must be certified free of known deleterious recessive alleles for:			

	-Bovine Leukocyte Adhesion Disease (BLAD)			
	-Deficiency of Uridine Mono-Phosphate Synthetase (DUMPS)			
	-Citrullinemia (deficiency of argininosuccinate synthetase)			
	-Factor XI Deficiency			
5	Pedigree and Lineage			
	-Bulls must possess pedigrees demonstrating a minimum of four generations without common ancestors.			
	-The following must be provided for the bull, parents, and all grandparents:			
	-Names and herd registration numbers			
6	Progeny testing details, including:			
	-EBVs for milk yield, fat yield, protein yield, and percentages			
	-Reliability values for all EBVs			
7	Dam's Production Records:			
	Dam's first standard lactation (305-day) yield must equal or exceed 7000 kg of milk with a minimum of 4.5% butterfat.			
8	Semen Quality:			
	Ejaculated sperm concentration: Approximately 10×10^8 /ml			
	Wave movement: 4-5 (vigorous)			
	Dead sperm: Not to exceed 20-30%			
	Abnormal sperm: Not to exceed 15-20% in the first ejaculate			

	Post-thaw Motility: Approximately 50% (expect slightly lower than conventional semen)			
	Forwarded Progressive Motility: Greater than 50%			
	Minimum sperm count per straw: 10 million motile sperm cells per straw			
	Cold chain management of semen at -196 c (LN) up to the dispatch is essential			
9	Somatic Cell Count (SCC):			
	Bull, sire, and maternal grandsire should exhibit a history of low SCC in progeny test information, indicating strong udder health genetics.			
10	Fertility:			
	Conception rate data (if available) should be provided for the bull to demonstrate fertility effectiveness.			
11	Additional Requirements			
	<i>Sex-Sorting Documentation:</i> Certificates verifying the sex-sorting process and purity level must be provided.			
	The supplier should detail the technology used for sex-sorting			
	<i>Herd Registration:</i> Semen donors must originate from officially registered herds. Suppliers must provide official Certificates of Registration for all bulls alongside their quotations.			

	<i>Pedigree and Performance Records:</i> Pedigree information, production records, and officially estimated sire breeding values (as detailed on page 2) must be submitted with quotations.			
	<i>Language:</i> All documentation, including history and performance details, must be provided in English.			

Schedule - D

Specifications for Friesian proven sire's sex-sorted semen

Semen should have the ability to give more than 95% female births from total births.

No	Requirement	Please mention agreed/not agreed	Evident Document/ details are attached (Yes/No)	Remarks
1	Progeny Testing:			
	The bull must be progeny tested during the 2020/2021 evaluation period.			
	Indicate the number of daughters tested.			
2	Estimated Breeding Values (EBVs) with Reliability:			
	Milk Yield: +500 kg or higher (reliability >85%)			
	Fat Yield: +25 kg or higher with 4% fat (reliability >85%)			
	Protein Yield: +20 kg or higher with 3.5% protein (reliability >85%)			
3	Sire's Type Improver:			
	Bull's sire must possess a demonstrable record of improving udder and feet conformation.			
	- Supporting documentation may include: - Linear type scores - Classification reports Daughter evaluation records			
4	Genetic Health			
	The bull must be certified free of known deleterious recessive alleles for:			
	-Bovine Leukocyte Adhesion Disease (BLAD)			
	-Deficiency of Uridine Mono-Phosphate Synthetase (DUMPS)			
	-Citrullinemia (deficiency of argininosuccinate synthetase)			
	-Factor XI Deficiency			

5	Pedigree and Lineage			
	Bulls must possess pedigrees demonstrating a minimum of four generations without common ancestors.			
	<i>The following must be provided for the bull, parents, and all grandparents:</i>			
	-Names and herd registration numbers			
	Progeny testing details, including			
	-EBVs for milk yield, fat yield, protein yield, and percentages			
	-Reliability values for all EBVs			
7	Dam's Production Records:			
	Dam's first standard lactation (305-day) yield must equal or exceed 8500 kg of milk with a minimum of 3.8 % butterfat.			
8	Semen Quality:			
	Ejaculated sperm concentration: Approximately 10×10^8 /ml			
	Wave movement: 4-5 (vigorous)			
	Dead sperm: Not to exceed 20-30%			
	Abnormal sperm: Not to exceed 15-20% in the first ejaculate			
	Post-thaw Motility: Approximately 50% (expect slightly lower than conventional semen)			
	Forwarded Progressive Motility: Greater than 50%			
	Minimum sperm count per straw: 10million motile sperm cells per straw			
	Cold chain management of semen at -196 c (LN) up to the dispatch is essential			

9	Somatic Cell Count (SCC):			
	Bull, sire, and maternal grandsire should exhibit a history of low SCC in progeny test information, indicating strong udder health genetics.			
10	Fertility:			
	Conception rate data (if available) should be provided for the bull to demonstrate fertility effectiveness.			
11	Additional Requirements			
	Herd Registration: Semen donors must originate from officially registered herds. Suppliers must provide official Certificates of Registration for all bulls alongside their quotations.			
	Pedigree and Performance Records: Pedigree information, production records, and officially estimated sire breeding values must be submitted with quotations.			
	Language: All documentation, including history and performance details, must be provided in English.			

Specification for Murrah Semen

No	Requirement	Please mention agreed/not agreed	Evident Document/ details are attached (Yes/No)	Remarks
A				
1	Breed purity - 100% Nili Ravi			
2	Breed type - Dairy Breeds			
	Semen should be provided at least 02 unrelated bulls.			
3	Donor bulls should be unrelated for at least four generations. History of the bull indicating names and herd registration, parents and all grand parents should be produced along with the tender document.			
4	Dam's First standard lactation yield (305 days) not less than 2000kg of milk, butters fat \geq 65%. (should provide the dam's first lactation yield with butter fat % of each bulls selected)			
5	<i>progeny tested donor bulls are preferable, progeny</i> tested in year 2020/2021. (Indicate the number of daughters tested with EBVs)			
8	The donor bulls should be free from fertility problems.			
9	Bull's sire should be improver for type characters like foot and udder conformation			
10	Semen donors should be from registered herds with Official Certificates of Registration with Pedigree and Production records.			
11	Bulls should be free from all known genetic disorders like bovine leukocyte adhesion disease (BLAD), deficiency of uridinemono-phosphate synthetase (DUMPS), citrulinemia (deficiency of argino-succinate synthetase) and Factor XI.			

12	All details including history and performance should be in English language.			
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No	Requirement	Please mention agreed/not agreed	Evident Document/ details are attached (Yes/No)	Remarks
B	Semen Details			
1	Country of semen production			
2	The semen should be in 0.25 deep frozen semen straws with easy identification of the breed and sire.			
3	Ejaculated sperm concentration should be approximately 1000×10^6 /ml			
4	Mass motility should be \geq +++ (in 1 to 4 scale)			
5	Dead sperm should not exceed 20-30% and the abnormal sperm in the first ejaculation should not exceed 15-20%			
	Semen should be evaluated on the basis of functional integrity of sperm membrane (Fresh semen collected from bulls should be subjected to the hypo osmotic swelling (HOS) test). The mean sperm positive to HOS test should be $> 65\%$.			
6	Post thawing forwarded progressive motility should be more than 50%.			
7	frozen straw (each dose) should contain minimum 15 million sperms			
8	Cold chain management of semen (LN) at -196°C up to dispatch is essential			
9	Disease free status - semen must be free from the diseases that are in the health protocol provided by Veterinary Regulatory Division - DAPH			

Schedule - F

Specifications for Nili Ravi semen

No	Requirement	Please mention agreed/not agreed	Evident Document/ details are attached (Yes/No)	Remarks
A				
1	Breed purity - 100% Nili Ravi			
2	Breed type - Dairy Breeds			
	Semen should be provided at least 02 unrelated bulls.			
3	Donor bulls should be unrelated for at least four generations. History of the bull indicating names and herd registration, parents and all grand parents should be produced along with the tender document.			
4	Dam's First standard lactation yield (305 days) not less than 2500kg of milk, butters fat \geq 6.5%. (should provide the dam's first lactation yield with butter fat % of each bulls selected)			
5	<i>progeny tested donor bulls are preferable, progeny</i> tested in year 2020/2021. (Indicate the number of daughters tested with EBVs)			
8	The donor bulls should be free from fertility problems.			
9	Bull's sire should be improver for type characters like foot and udder conformation			
10	Semen donors should be from registered herds with Official Certificates of Registration with Pedigree and Production records.			
11	Bulls should be free from all known genetic disorders like bovine leukocyte adhesion disease (BLAD), deficiency of uridinemono-phosphate synthetase (DUMPS), citrulinemia (deficiency of argino-succinate synthetase) and Factor XI.			
12	All details including history and performance should be in English language.			

No	Requirement	Please mention agreed/not agreed	Evident Document/ details are attached (Yes/No)	Remarks
B	Semen Details			
1	Country of semen production			
2	The semen should be in 0.25 deep frozen semen straws with easy identification of the breed and sire.			
3	Ejaculated sperm concentration should be approximately 1000×10^6 /ml			
4	Mass motility should be \geq +++ (in 1 to 4 scale)			
5	Dead sperm should not exceed 20-30% and the abnormal sperm in the first ejaculation should not exceed 15-20%			
	Semen should be evaluated on the basis of functional integrity of sperm membrane (Fresh semen collected from bulls should be subjected to the hypo osmotic swelling (HOS) test). The mean sperm positive to HOS test should be > 65%.			
6	Post thawing forwarded progressive motility should be more than 50%.			
7	frozen straw (each dose) should contain minimum 15 million sperms			
8	Cold chain management of semen (LN) at - 196 °C up to dispatch is essential			
9	Disease free status - semen must be free from the diseases that are in the health protocol provided by Veterinary Regulatory Division - DAPH			