



# **Results-Framework Document (RFD)**

**for**

## **National Research Centre on Mithun**

**(2014-2015)**

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## **Section 1: Vision, Mission, Objectives and Functions**

### **Vision**

- Profitable and productive Mithun based livestock production system for North Eastern hilly tribes

### **Mission**

- To develop and facilitate dissemination of technologies relevant to efficient and profitable production of quality meat, milk and other products for improving the economic status of poor Mithun rearers of North Eastern region of our country.

### **Objectives**

- Genetic improvement of Mithuns
- Enhancing reproductive, productive efficiency and health status of Mithun
- Transfer of technology

### **Functions**

- Identification, evaluation, and characterization of Mithun germplasm available in the country
- Conservation and improvement of Mithun for meat and milk
- To act as a repository of germplasm and information centre on Mithun

**Section 2: *Inter se* priorities among Key Objectives, Success Indicators and Targets.**

Sl.No.	Objectives	Weight	Actions	Success Indicators	Unit	Weight	Target/Criteria value				
							Excellent	Very Good	Good	Fair	Poor
							100%	90%	80%	70%	60%
1	Genetic improvement of Mithuns	15	Selection of Mithun bulls/females with desirable phenotypic traits	Mithuns selected with desirable phenotypic traits	Number	8	6	4	2	0	0
			Assessment of genetic diversity of mithuns based on Haplotype block structure for growth and feed efficiency traits	SNP genotyping of mithun through analysis of genome wide data	Number	7	84	70	56	42	28
2	Enhancing reproductive, productive efficiency and health status of Mithun	50	Induction of puberty in mithuns through hormonal treatment (Kiss peptin)	Mithun heifers induced with puberty	Number	5	5	4	3	2	1
			Isolation and characterization of rumen microbes of mithun	Rumen microbes characterized	Number	8	5	4	3	2	1
			Evaluation of physical and biochemical parameters of Mithun semen	Bulls semen studied	Number	5	7	6	5	4	3
			Cryo-preservation of Mithun bull semen	Semen straws cryo-preserved	Number	10	1400	1200	960	720	480
			Molecular characterization of some important parasites of mithun based on marker gene	Characterization of helminth parasites	Number	7	2	1	0	0	0
			Survey for prevalence of important disease of mithun and other livestock in the region	Animals surveyed and investigated	Number	10	540	450	360	270	180
			Estimation of Immunoglobulin	Plasma samples assayed for Immunoglobulins	Number	5	43	36	29	22	15
3	Transfer of technology	15	Survey of Mithun rearing villages and interaction with Mithun rearing tribes for creating awareness about scientific animal husbandry practices	Villages surveyed	Number	5	13	11	9	7	5
			Demonstration of technologies developed for Mithun husbandry and organization of health camps under TSP	Technology and health camps organized	Number	10	22	18	14	10	6

	Publication/Documentation	5	Publication of the research articles in the journals having the NAAS rating of 6.0 and above	Research articles published	No.	3	5	4	3	2	1
			Timely publication of the Institute Annual Report (2013-2014)	Annual Report published	Date	2	30.06.2014	02.07.2014	04.07.2014	07.07.2014	09.07.2014
	Fiscal resource management	2	Utilization of released plan fund	Plan fund utilized	%	2	98	96	94	92	90
	Efficient Functioning of the RFD System	3	Timely submission of Draft RFD for 2014-2015 for Approval	On-time submission	Date	2	May 15, 2014	May 16, 2014	May 19, 2014	May 20, 2014	May 21, 2014
			Timely submission of Results for 2013-2014	On-time submission	Date	1	May 1 2014	May 2 2014	May 5 2014	May 6 2014	May 7 2014
	Enhanced Transparency / Improved Service delivery of Ministry/Department	3	Rating from Independent Audit of implementation of Citizens' / Clients' Charter (CCC)	Degree of implementation of commitments in CCC	%	2	100	95	90	85	80
			Independent Audit of implementation of Grievance Redress Management (GRM) system	Degree of success in implementing GRM	%	1	100	95	90	85	80
	Administrative Reforms	7	Update organizational strategy to align with revised priorities	Date	Date	2	Nov.1 2014	Nov.2 2014	Nov.3 2014	Nov.4 2014	Nov.5 2014
			Implementation of agreed milestones of approved Mitigating Strategies for Reduction of potential risk of corruption (MSC).	% of Implementation	%	1	100	90	80	70	60
			Implementation of agreed milestones for ISO 9001	% of implementation	%	2	100	95	90	85	80
			Implementation of milestones of approved Innovation Action Plans (IAPs).	% of implementation	%	2	100	90	80	70	60

### Section 03: Trend Values of the Success Indicators

Sl.No.	Objectives	Actions	Success Indicators	Unit	Actual Value for FY 12/13	Actual Value for FY 13/14	Target Value for FY 14/15	Projected Value for FY 15/16	Projected Value for FY 16/17
1	Genetic improvement of Mithuns	Selection of Mithun bulls/females with desirable phenotypic traits	Mithuns selected with desirable phenotypic traits	Number	4	5	4	7	8
		Assessment of genetic diversity of mithuns based on Haplotype block structure for growth and feed efficiency*	SNP genotyping of mithun through analysis of genome wide data	Number	-	-	70	72	-
2	Enhancing reproductive, productive efficiency and health status of mithun	Induction of puberty in mithuns through hormonal treatment (Kiss peptin)	Mithun heifers induced with puberty	Number	-	-	4	6	7
		Isolation and characterization of rumen microbes of mithun	Rumen microbes characterized	Number	-	-	4	6	8
		Evaluation of physical and biochemical parameters of Mithun semen	Bulls semen studied	Number	-	8	6	7	8
		Cryo-preservation of Mithun bull semen	Semen straws cryo-preserved	Number	-	-	1200	1600	1700
		Molecular characterization of some important parasites of mithun based on marker gene	Characterization of helminth parasites	Number	-	-	1	3	4
		Survey for prevalence of important disease of mithun and other livestock in the region	Animals surveyed and investigated	Number	440	400	450	450	500
		Estimation of Immunoglobulin	Plasma samples assayed for Immunoglobulins	Number	-	-	36	37	38
3	Transfer of technology	Survey of Mithun rearing villages and interaction with Mithun rearing tribes for creating awareness about scientific animal husbandry practices	Villages surveyed	Number	9	13	11	15	16
		Demonstration of technologies developed for Mithun husbandry and organization of health camps under TSP	Technology and health camps organized	Number	9	21	18	22	23
	Publication/Documentation	Publication of the research articles in the journals having the NAAS rating of	Research articles published	No.	8	4	4	5	6

		6.0 and above							
		Timely publication of the Institute Annual Report (2013-2014)	Annual Report published	Date	-	-	02.07.2014	-	-
	Fiscal resource management	Utilization of released plan fund	Plan fund utilized	%	99.90	99.80	96.00	99.00	99.00
	Efficient Functioning of the RFD System	Timely submission of Draft RFD for 2014-2015 for Approval	On-time submission	Date	-	-	May 16, 2014	-	-
		Timely submission of Results for 2013-2014	On-time submission	Date	-	-	May 2, 2014	-	-
	Enhanced Transparency / Improved Service delivery of Ministry/Department	Rating from Independent Audit of implementation of Citizens' / Clients' Charter (CCC)	Degree of implementation of commitments in CCC	%	-	-	95	-	-
		Independent Audit of implementation of Grievance Redress Management (GRM) system	Degree of success in implementing GRM	%	-	-	95	-	-
	Administrative Reforms	Update organizational strategy to align with revised priorities	Date	Date	-	-	Nov.2, 2014	-	-
		Implementation of agreed milestones of approved Mitigating Strategies for Reduction of potential risk of corruption (MSC).	% of Implementation	%	-	-	90	-	-
		Implementation of agreed milestones for ISO 9001	% of implementation	%	-	-	95	-	-
		Implementation of milestones of approved Innovation Action Plans (IAPs).	% of implementation	%	-	-	90	-	-

#### Section 4 (a): Acronyms

Sl. No.	Acronym	Description
1	AH	Animal Husbandry
2	NGOs	Non-Governmental Organizations
3	SAUs	State Agricultural Universities
4	KVKs	Krishi Vigyan Kendras
5	SNP	Single Nucleotide Polymorphism
6	NEH	North Eastern Hill
7	GWAS	Genome Wide Association Study
8.	TSP	Tribal Sub Plan
9	DNA	Deoxy Ribonucleic Acid

#### Section 4 (b): Description and definition of success indicators and proposed measurement methodology

Sl. No.	Success Indicator	Description	Definition	Measurement	General Comments
1	Mithuns selected with desirable phenotypic traits	Selection of mithuns with desirable phenotypic traits will be done from animals under field and these improved mithuns, particularly mithun bulls will be used for breeding purposes for Improvement of both farm and field animals in participatory mode with local tribal communities in the native tracts of mithuns.	The mithun populaiton of the country needs to be improved genetically as well as need conservation for future use as number of mithun population is decreasing over the years in most areas.	Number	The mithun population in the native tracts of mithun needs to be genetically improved with unique characters and to have a suitable breeding plan for their improvement / conservation.
2	SNP genotyping of mithun through analysis of genome wide data	Genotypic data will be generated using high density SNP panel to assess the genetic diversity and markers will be screened across the whole genome of mithun.	Genome wide association study will facilitate genomic selection of mithun to assess genetic worth of training population with	Number	Mlithun is used mainly for meat purpose. The selection and improvement based on growth and feed efficiency traits will result in greater accuracy and response

			no information of trait and pedigree		
3	Mithun heifers induced with puberty	Prepubertal mithun heifers will be selected based on ultrasound scanning of reproductive organs and hormonal profiles and Kisspeptin, a nero peptide will be administered for induction of puberty.	Age at puberty and regular cyclicity influences production efficiency in animals. However, delayed onset of puberty and anoestrus are two important reproductive problems hindering the economy of Indian livestock species including mithun. Therefore, efforts will be made to induce puberty in mithun	Number	The results of the proposed proposal will be helpful to frame strategies to ameliorate the problem of late puberty and anoestrusin mithun.
4	Rumen microbes characterized	Mithun have different dietary preferences to other ruminants. They used to browse tree leaves rich in tannin content in their natural habitat. The microbial population present in their rumen might be responsible for degradation of tannins, thereby bestowing them more tolerance to tannins and making dietary fibres and proteins available to them.	Some unique microbes might be available in the rumen of mithun. They have to be identified and characterized.	Number	Tannins are water-soluble polyphenols. They have been reported to be responsible for decreases in feed intake, growth rate, feed efficiency, net metabolizable energy, and protein digestibility animals. Therefore, foods rich in tannins are considered to be of low nutritional value.
5	Bulls semen studied	Semen collection through rectal massage method is standardized. Biochemical and physical profile of semen will be studied. Hormone profile of breeding mithun bulls will	Biochemical and hormonal profile of mithun bull semen	Number	Study of biochemical and physical parameters will be useful to formulate suitable mithun semen extender



		be studied			
6	Semen straws cryo-preserved	Cryo-preservation of semen of mithun bulls are already standardized and accordingly, more number of semen doses will be cryo-preserved for breeding purpose both in the farm and field conditions	Mithun semen will be cryo-preserved in liquid nitrogen	Number	Cryo-preservation of Mithun semen will be useful to study the freeze-ability of the Mithun sperm and to use these semen straws for breeding programme.
7	Characterization of helminth parasites	Different gastrointestinal helminth parasites harbored by the mithun will be identified based on taxonomy and molecular tools. The genetic diversity existing in the populations will be elucidated to find out phylogenetic and evolutionary relationship of these parasites.	Use of molecular tools based on the ribosomal DNA internal transcribed spacers (ITS-1 and ITS-2), 28 S ribosomal DNA and other mitochondrial genes provide reliable genetic markers for differentiation of parasite species and existence of the intermediate genotypes / strains of the parasite in a particular animal population.	Number	In particular, ITS-1, ITS-2 and 28S ribosomal DNA sequences have proven useful for the unequivocal differentiation between different parasite species and for the demonstration of the existence of pathogenic strains / intermediate genotypes.
8	Animals surveyed and investigated	Survey will be made in randomly selected villages across the Nagaland state and samples will be collected for the investigation of the prevalence and incidence of common diseases in farm and field condition.	Investigation of various diseases commonly affecting mithuns.	Number	It will be useful in preparing the disease map of the state for Mithuns.
9	Plasma samples assayed for Immunoglobulins	Plasma samples of mithuns will be analyzed for estimation of immunoglobulin level of animals.	Estimation of immunoglobulin level of	Number	It will be useful to understand the level of immunity available in the

			animals.		animals.
10	Villages surveyed	Villages in the mithun rearing area will be surveyed to collect information of traditional mithun rearing practices as well as introducing new technologies for the benefits of mithuns and their owners	Proper survey methodology will be followed and information will be collected and analyzed.	Number	Transfer of technology through extension activities will be important for identification of risk factors and barriers for successful transfer of technology developed by the Institute and strategies for addressing them.
11	Technology and health camps organized	Technology injection programme will be taken up in the mithun rearing area for demonstration of various technologies developed by the Institute over the years	Technology injection programme will be taken up in the mithun rearing area for demonstration of various technologies developed by the Institute	Number	Animal health cum vaccination camp will be organized in randomly selected village for control of parasites and Foot and Mouth disease.

**Section 5: Specific performance requirements from other departments that are critical for delivering agreed results.**

Location type	State	Organization Type	Organization Name	Relevant Success Indicator	What is your requirement from this organization	Justification for this requirement	Please quantify your requirement	What happens if your requirement is not met
STATE	Nagaland Arunachal Pradesh Manipur Mizoram	State departments of AH, SAUs, KVKs and NGOs	SAUs/State departments of AH, KVKs and NGOs	Mithuns selected with desirable phenotypic traits	Collaboration for undertaking work defined for the success indicator	Mithuns are available only in four NEH states and mutual cooperation of State AH Dept, SAUs, NGO, KVKs. is very important for success of the programmes	Cannot be quantified at this stage and will depend on case to case basis	The target value may not be achieved
STATE	Nagaland Arunachal Pradesh Manipur Mizoram	State departments of AH, KVKs and NGOs	SAUs/State departments of AH, KVKs and NGOs	Animals surveyed	Collaboration for undertaking work defined for the success indicator	Mithuns are available only in four NEH states and mutual cooperation of State AH Dept, SAUs, NGO, KVKs. is very important for success of the programmes	Cannot be quantified at this stage and will depend on case to case basis	The target value may not be achieved
STATE	Nagaland Arunachal Pradesh Manipur Mizoram	State departments of AH, KVKs and NGOs	SAUs/State departments of AH, KVKs and NGOs	Technology and health camps organized	Collaboration for undertaking work defined for the success indicator	Mithuns are available only in four NEH states and mutual cooperation of State AH Dept, SAUs, NGO, KVKs. is very important for success of the programmes	Cannot be quantified at this stage and will depend on case to case basis	The target value may not be achieved

**Section 6: Outcome / Impact of activities of organization/ Ministry.**

Sl. No	Outcome / impact	Jointly responsible for influencing this outcome / impact with the following organization(s)/ministry (ies)	Success indicator (s)	Unit	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
1	Genetic improvement of Mithuns	State Vety & AH Department, Nagaland	Number of mithun bulls/females selected with desirable phenotypic traits	Number	4	5	6	7	8
2	Improving the health status of Mithun	State Vety & AH Department, Nagaland	Percent reduction in helminthiasis in the farm and field	%	2.0	2.5	3.0	3.5	4.0

## Past Achievements of the Success Indicators

S.No.	Success indicator (s) *	Past Achievements of the Success Indicators							Mean of the Achievements	Projected value of the success indicator for 2014-15 as per the approved RFD 2013-14
		n <sup>th</sup> year	-	V 2009-2010	IV 2010-2011	III 2011-2012	II 2012-2013	I 2013-2014		
1	Mithuns selected with desirable phenotypic traits			2	2	2	4	5	3	6
2	SNP genotyping of mithun through analysis of genome wide data			-	-	-	-	24	-	70
3	Mithun heifers induced with puberty			-	-	-	-	-	-	-
4	Rumen microbes characterized			-	-	-	-	-	-	-
5	Bulls semen studied			-	-	-	8	12	10	7
6	Semen straws cryo-preserved			50	50	50	100	1455	341	1500
7	Characterization of helminth parasites			-	-	-	-	-	-	-
8	Animals surveyed and investigated			-	-	400	408	565	451.6	450
9	Plasma samples assayed for Immunoglobulins			-	-	-	-	-	-	-
10	Villages surveyed			-	2	4	9	13	7	4
11	Technology and health camps organized			-	3	6	9	21	9.75	9

\* New Success Indicators 2, 3,4,7,9, without any past achievements

## Classification of Success Indicators according to its Category

S.No.	Success Indicator(s)	Input	Activity	Internal Output	External Output	Outcome	Measures Qualitative Aspects
1	Mithuns selected with desirable phenotypic traits	FALSE	FALSE	TRUE	FALSE	FALSE	TRUE
2	SNP genotyping of mithun through analysis of genome wide data	FALSE	TRUE	FALSE	FALSE	FALSE	TRUE
3	Mithun heifers induced with puberty	FALSE	TRUE	FALSE	FALSE	FALSE	TRUE
4	Rumen microbes characterized	FALSE	TRUE	FALSE	FALSE	FALSE	TRUE
5	Bulls semen studied	FALSE	FALSE	TRUE	FALSE	FALSE	TRUE
6	Semen straws cryo-preserved	FALSE	FALSE	TRUE	FALSE	FALSE	TRUE
7	Characterization of helminth parasites	FALSE	FALSE	TRUE	FALSE	FALSE	TRUE
8	Animals surveyed and investigated	FALSE	FALSE	FALSE	TRUE	FALSE	TRUE
9	Plasma samples assayed for Immunoglobulins	FALSE	TRUE	FALSE	FALSE	FALSE	TRUE
10	Villages surveyed	FALSE	FALSE	FALSE	TRUE	FALSE	TRUE
11	Technology and health camps organized	FALSE	FALSE	FALSE	TRUE	FALSE	TRUE