Results-Framework Document (RFD)

for

Central Institute for Research on Buffaloes
(2012 –2013)

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Section 1:
Vision, Mission, Objectives and Functions

The Vision

To develop and propagate high yielding elite buffalo germplasm for quality milk and meat production while retaining inherent draughtability across different regions of the country

The Mission

To improve buffalo through identification, conservation and propagation of elite germplasm having high efficiency of reproduction and nutrient utilization for sustainable production and commercialization

Objectives

1. Buffalo genetic improvement through conventional and molecular approach
2. Assisted reproductive technology for faster multiplication of superior germplasm
3. Improvement in feed efficiency /region specific feeding modules
4. HRD and Capacity building / Technology showcasing through extension activities
5. Improving buffalo production system and value addition

Functions

To promote and undertake research in all aspect of buffalo production and transfer of technology. Genetic improvement associated progeny testing, performance recording, certified semen production, freezing and faster multiplication of superior germplasm involving biotechnological tools. Improvement of production, reproduction, nutrient utilization and buffalo husbandry practices to economize buffalo productivity through All India Network Project on Buffalo Improvement in collaboration with SAUs/SVUs and other national institutions and establish linkages with international agencies and dissemination of developed technologies.

Section-2

Inter se priorities among key objectives, success indicators and targets

Objectives	Weight (%)	Actions	Success Indicators	Unit	Weight (%)	Target/Criteria Value				
						Excellent 100%	Very Good 90%	Good 80%	Fair 70%	Poor 60%
Buffalo genetic improvement through conventional and molecular approach	45	Genomics/phenomics studies in buffaloes for developing buffalo specific SNP Chip	Creation/ updation of phenomics database of different breeds of buffalo	Number	4	500	450	400	350	300
			Creation of DNA bank database of the resource population	Number	3	300	250	200	180	170
			Sequencing, SNP detection and expression studies of various regions of candidate gene(s)	Number	3	20	15	12	10	08
			Densitometry and Mass Spectrometry of spots from 1D and 2DE gels	Number	3	10	9	8	7	6
			Proteolytic system and cytokine genes expression in udder health and physiology	Number	3	10	9	8	7	6
		Improvement in production and reproduction in Murrah and Nili-Ravi herd	Lactation yield in Murrah	Kg	2	2400	2350	2300	2250	2200
			Wet average in Murrah	Kg	2	8.0	7.8	7.5	7.3	7.1
			Calving interval in Murrah	Days	1	460	480	500	520	540
			AFC in Murrah	Months	1	44	46	48	50	52
			Calf mortality in Murrah	%	1	4.0	5.0	6.0	7.0	8.0
			Lactation yield in Nili-Ravi	Kg	2	2100	2050	2000	1950	1900
			Wet average in Nili-Ravi	Kg	2	8.0	7.8	7.5	7.3	7.1
			Calving interval in Nili-Ravi	Days	1	460	480	500	520	540
			AFC in Nili-Ravi	Months	1	42	43	44	45	46
			Calf mortality in Nili-Ravi	%	1	4.0	5.0	6.0	7.0	8.0
		Selection and test mating of 14th set of bulls and progeny testing of 9th set of bull	Selection of bull on the basis of pedigree records, semen and physical parameters	Date	3	30.11.2012	15.12.2012	31.12.2012	15.01.2013	31.01.2013
			Evaluation and selection of proven bulls of 9th set	Date	3	31.07.2012	31.08.2012	30.09.2012	31.10.2012	30.11.2012
			Release of 1st half of funds to the network centres (2012-13)	Date	2	31.08. 2012	30.09. 2012	31.10. 2012	30.11. 2012	31.12. 2012
		Dissemination of superior germplasm through production of disease free semen doses for AI	Semen doses production/ bull	Number	4	8000	7200	6400	5600	4800
			Artificial insemination in field	Number	3	4000	3500	3000	2500	2000
Assisted reproductive technology for faster multiplication of superior germplasm	11	IVM, fusion of oocytes and culture of cloned embryos	Matured oocytes fused and cultured for cloned embryo production	Number	5	500	450	400	350	300
		Integrated MOET & SOET for faster multiplication of elite buffalo germplasm	MOET & SOET flushing for embryo recovery	Number	6	30	27	24	21	18

Improvement in feed efficiency /region specific feeding modules	11	Developing and adoption of balanced feeding practices	Area specific mineral mixture	Kg	4	5000	4500	4000	3500	3000
			Complete feed block	Number	3	7000	6500	6000	5500	5000
		In-vitro evaluation of various modulators for methane mitigation	Fermentation pattern and gas production on various feed additives/plant extracts	Number	4	10	9	8	7	6
HRD and capacity building / technology showcasing through extension activities	11	Developing human resource in buffalo husbandry	Training human resource	Number	3	200	175	150	125	100
		Training programme on AI and buffalo husbandry	Training programme	Number	3	12	10	8	6	4
		Organization of buffalo mela, calf rallies, infertility treatment camps	Extension and transfer of technology	Number	3	8	7	6	5	4
		Publication of scientific information on buffalœs	Annual report	Date	1	30.06.2012	07.07.2012	15.07.2012	21.07.2012	31.07.2012
			Extension bulletins	Number	1	5	4	3	2	1
Improving buffalo production system and value addition	10	Soil reclamation and green fodder production	Green fodder produced	Quintals	4	88000	87500	87000	86500	86000
		Silage making	Silage made	Quintals	3	11000	10500	10000	9500	9000
		Grain production for feed concentrate	Grain produced	Quintals	3	4500	4000	3500	3000	2500
Efficient functioning of the RFD system	3	Timely submission of RFD for 2012-13	On-time submission	Date	2	23.03.2012	26.03.2012	27.03.2012	28.03.2012	29.03.2012
		Timely submission of Results for 2012-13	On-time submission	Date	1	01.05.2013	02.05.2013	0 3.05.2013	06.05.2013	07.05.2013
Administrative Reforms	5	Implement ISO 9001	Prepare ISO 9001 action plan	Date	1	04.06.2012	05.06.2012	06.06.2012	07.06.2012	08.06.2012
			Implementation of ISO 9001 action plan	Date	2	25.03. 2013	26.03 2013	27.03. 2013	28.03. 2013	29.03. 2013
		Implement mitigating strategies for reducing potential risk of corruption	% of implementation	%	2	100	95	90	85	80
Improving Internal Efficiency / responsiveness / service delivery of Ministry / Department	4	Implementation of Sevottam	Independent Audit of Implementation of Citizen's Charter	%	2	100	95	90	85	80
			Independent Audit of implementation of public grievance redressal system	%	2	100	95	90	85	80

Section 3:
Trend Values of the Success Indicators

Objectives	Action	Success Indicators	Unit	Actual Value for FY 10/11	Actual value for FY 11/12	Target value for FY 12/13	Projected Value for FY 13/14	Projected Value for FY 14/15
Buffalo genetic improvement through conventional and molecular approach	Genomics/phenomics studies in buffaloes for developing buffalo specific SNP Chip	Creation/ updation of phenomics database of different breeds of buffalo	Number	1000	800	450	600	600
		Creation of DNA Bank database of the resource population	Number	-	100	250	350	400
		Sequencing, SNP detection and expression studies of various regions of candidate gene(s)	Number	-	-	15	20	20
		Densitometry and Mass Spectrometry of spots from 1D and 2DE gels	Number	-	-	9	-	-
		Proteolytic system and cytokine genes expression in udder health and physiology	Number	-	10	9	-	-
	Improvement in production and reproduction in Murrah and Nili-Ravi herd	Lactation yield in Murrah	Kg	2247	2374	2350	2450	2500
		Wet Average in Murrah	Kg	7.45	7.83	7.8	8.3	8.5
		Calving interval in Murrah	Days	492	485	480	450	440
		AFC in Murrah	Months	49.92	51.91	46	42	41
		Calf mortality in Murrah	%	5	2.76	5.0	4.0	4.0
		Lactation yield in Nili-Ravi	Kg	1972	1998	2050	2150	2200
		Wet Average in Nili-Ravi	Kg	7.01	7.74	7.8	8.3	8.5
		Calving interval in Nili-Ravi	Days	500	464	480	450	440
		AFC in Nili-Ravi	Months	41.1	40.2	43	41	40
		Calf mortality in Nili-Ravi	%	4.39	2.34	5.0	4.0	4.0
	Selection and test mating of 14th set of bulls and progeny testing of 9th set of bull	Selection of bull on the basis of pedigree records, semen and physical parameters	Date	-	29.06.2011	15.12.2012	30.11.2013	30.11.2014
		Evaluation and selection of proven bulls of 9th set	Date	-	-	31.08.2012	31.07.2013	31.07.2014
		Release of 1st half of funds to the network centres	Date	-	31.07.2011	30.09. 2012	31.08. 2013	31.08. 2014
	Dissemination of superior germplasm through production of disease free semen doses for AI	Semen doses production/ bull	Number	5689	17838	7200	8500	9000
		Artificial Insemination in field	Number	3419	3308	3500	4000	4000
Assisted reproductive technology for faster multiplication of superior germplasm	IVM, fusion of oocytes and culture of cloned embryos	Matured oocytes fused and cultured for cloned embryo production	Number	-	-	450	500	550
	Integrated MOET & SOET for faster multiplication of elite buffalo germplasm	MOET & SOET flushing for embryo recovery	Number	-	08	27	-	-
Improvement in feed efficiency /region	Developing and adoption of balanced feeding practices	Area specific mineral mixture	Kg	-	-	4500	5500	6000

specific feeding modules		Complete feed block	Number	-	-	6500	7500	7500
	In-vitro evaluation of various modulators for methane mitigation	Fermentation pattern and gas production on various feed additives/plant extracts	Number	-	-	9	-	-
HRD and capacity building / technology showcasing through extension activities	Developing human resource in buffalo husbandry	Training human resource	Number	-	-	175	250	300
	Training programme on AI and buffalo husbandry	Training programme	Number	-	-	10	13	14
	Organization of buffalo mela, calf rallies, infertility treatment camps	Extension and transfer of technology	Number	-	-	7	10	12
	Publication of scientific information on buffalœs	Annual report	Date	-	08.07.2011	07.07.2012	30.06.2013	30.06.2014
		Extension bulletins	Number	-	-	4	5	5
Improving buffalo production system and value addition	Soil reclamation and green fodder production	Green fodder produced	Quintals	-	44962.5	87500	89000	90000
	Silage making	Silage made	Quintals		-	10500	11500	12000
	Grain production for feed concentrate	Grain produced	Quintals	-	-	4000	4600	4700
Efficient Functioning of the RFD System	Timely submission of RFD for 2012-13	On-time submission	Date	-	-	26.03.2012	-	-
	Timely submission of Results for 2012-13	On-time submission	Date	-	-	02.05.2013	-	-
Administrative Reforms	Implement ISO 9001	Prepare ISO 9001 action plan	Date	-	-	05.06.2012	-	-
		Implementation of ISO 9001 action plan	Date	-	-	26.03.2013	-	-
	Implement mitigating strategies for reducing potential risk of corruption	% of implementation	%	-	-	95	-	-
Improving Internal Efficiency / responsiveness / service delivery of Ministry / Department	Implementation of Sevottam	Independent Audit of Implementation of Citizen's Charter	%	-	-	95	-	-
		Independent Audit of implementation of public grievance redressal system	%	-	-	95	-	-

Section: 4

Description and Definition of Success Indicators and Proposed Measurement Methodology

Objective 1: Phenomics database and DNA bank of identified resource families shall be created. The candidate genes SNPs detection and gene expression quantification with respect to different traits will be carried out. Mass Spectrometry will be used on spots from1D and 2DE gels 2-D electrophoresis for pregnancy and mastitis related proteins identification. Overall *viz.* 305 days lactation yield, calving interval, reduction in calf mortality, wet average and AFC for Murrah and Nili-Ravi breeds will be improved with cumulative inputs. Selection and test mating of 14^{th} set and progeny testing of 9^{th} set of bull will be carried out under the buffalo progeny testing programme. The progeny tested semen and funds will be distributed to all the participating centres network project. Semen of the progeny tested/superior bulls will be cryopreserved and used/distributed for insemination in the field.

Objective 2: In the programme under faster multiplication of superior germplasm oocytes shall be matured fused with donor cell and cloned embryos shall be cultured. In integrated MOET/ SOET donor buffaloes shall be flushed after single/multiple ovulations. Recovered embryos will be transferred into the synchronized recipients and surplus embryos will be frozen.

Objective 3: This programme shall cover development and adoption of balanced feeding practices like area specific mineral mixture and complete feed block. Various feed additives/plant extracts shall be evaluated for fermentation pattern and gas production.

Objective 4: Training on buffalo husbandry and artificial insemination, buffalo mela and calf rallies shall be organized with public private partnership. Infertility treatment camps will be organized in association with other agencies. The extension literature in buffalo production shall be published in popular languages.

Objective 5: To improve the overall buffalo production system and round the year green fodder/silage supply shall be maintained for both the Murrah and Nili-Ravi herd of the Institute.

Section 5:

Specific Performance Requirement from other Departments

1. Semen freezing/ artificial insemination and embryo transfer technology will be popularized for better acceptability with Govt. and NGOs including farmers.
2. Dissemination of technologies by line departments.
3. Training programme on buffalo husbandry shall be in close association with other agencies like State AHD, NGOs, PNB Farmers training centre.

Section 6: Outcome/impact of activities of organization ministry

S.No	Outcome/impact of activities of organization/ RSCs	Jointly responsible for influencing this outcome/ impact with the following organization (s)/ departments / ministry (ies)	Success indicators	Unit	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
1	Improvement in the productivity through quality germplasm production, evaluation and dissemination	Buffalo network centres, CIRB, State and Central Agricultural Universities, Deptt. of various state govt.	Bull evaluated by test mating	Number	11	16	12	15	15
			Frozen semen doses produced	Number	55576	73095	50000	50000	50000
			Semen doses disseminated to the field	Number	59646	142791	60000	60000	60000
			Bull disseminated	Number	5	61	6	8	10
2	Testing of bulls based on the production performance of progenies born out of AI in the field for breed improvement	Network centres, state line department, private agencies and progressive farmers	Progenies born in the field	Number	1279	732	1000	1000	1000
3	Strengthening of human resource in AI and buffalo husbandry training programme and demonstration of technology developed by the Institute	CIRB, SAU's, State AHD, NGOs, ATMA, PNB Farmers training centres	Persons trained	Number	120	156	120	130	130
			Visitors	Number	676	306	500	600	600